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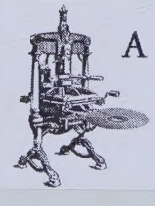

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FRONTISPIECE

President Dwight D. Eisenhower and Soviet Premier Nikita S. Khrushchev, leaders of the free and Communist worlds, respectively, meet on Sept. 15, 1959, at Andrews Air Force Base, Md., as the Soviet leader arrives in the United States for an official 13-day visit.

THE NEW YORK TIMES (PHOTO BY GEORGE TAMES)

The AMERICANA ANNUAL 1960

AN ENCYCLOPEDIA OF THE EVENTS OF 1959

LAVINIA P. DUDLEY
EDITOR IN CHIEF OF AMERICANA PUBLICATIONS

JOHN J. SMITH
EDITOR OF THE AMERICANA ANNUAL

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Foreword . . .

The completion of a decade is both an ending and a beginning. It is, in some respects, like rounding a corner onto a new avenue, the exploration of which promises to be an exciting and even challenging adventure. But passage from the 1950's to the 1960's signalizes not only the ending of one decade and the beginning of another; it also marks the transition from an earthbound age to a new space age in which conquest of the moon is only one of the more immediate goals. The question of how well man has equipped himself to travel the uncharted road ahead can be answered only in the future.

This is the 38th edition of a world-events yearbook which, in the past several years, has ranked as an international best-seller. THE AMERICANA ANNUAL now is widely used for reference and casual reading throughout most of the civilized world. During the past decade alone, THE ANNUAL has selected, analyzed, and summarized in approximately nine thousand fact-filled pages the significant information concerning the important discoveries, historical events, and personalities of ten momentous years. The history of the decade which has been called the "Fabulous Fifties"—like that of each year since 1922—was recorded in THE ANNUAL as it was being made, and it now stands as a key to much that will happen in the 1960's.

That part of the record for the year 1959 is the concern of this volume, with its hundreds of articles by specialists in their respective fields. Here, for example, are treated such timely scientific topics as the problem of *Radiation* (italics indicate article headings), peacetime applications of *Atomic Energy,* progress in such fields of medicine as *Cancer* and *Heart Disease,* studies in *Food Research* and *Nutrition,* current advances in *Missiles,* and the technological, medical, and legal aspects of *Space Flight.* Major international political developments are highlighted in such comprehensive surveys as those of *Africa,* the *Far East, Inter-American Affairs,* and the *Middle East;* in coverage of the travels and policies of President *Eisenhower* and Soviet Premier *Khrushchev;* and in the discussions of such important issues as *Disarmament, Summit Conference,* and *Foreign Policy of the United States.* Also covered are such major domestic developments in the *United States* as the admission to the Union of *Alaska* and *Hawaii,* effects of the strike in the *Iron and Steel* industry, and the passing from the scene of such figures as John Foster *Dulles,* George C. *Marshall,* and Frank Lloyd *Wright.*

Space allows only this very brief sampling of the vast number of newsworthy topics covered in these pages—topics which made the headlines yesterday and which form the steppingstones for the events of tomorrow. This book represents the thought and labor of thousands of persons—from contributing authors, advisers, and suppliers of specific information, to editorial and production staff members. To each of them who, with patience and good will, fought the battle of deadlines, the editor wishes to express his most sincere gratitude.

J. J. S.

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HANNA, A. J., *Weddell Professor of History, Rollins College:* FLORIDA (in part)

HANNA, PAUL L., *Professor of Social Sciences, University of Florida:* IRAQ; JORDAN; LEBANON

HANSEN, KERMIT H., *Administrator, Farmers Home Administration:* FARMERS HOME ADMINISTRATION

HANSON, EARL PARKER, *Consultant, Commonwealth Department of State:* PUERTO RICO

HARRIS, FLORENCE E., *Former Publications Editor, "Mineral Trade Notes," U.S. Bureau of Mines:* ABRASIVES; URANIUM; and other mineral articles (in part)

HARRISON, PHOEBE O'N., *Division of Information, Soil Conservation Service:* SOIL CONSERVATION

HARTUNG, PHILIP T., *Motion Picture Critic, "The Commonweal" and "Scholastic Magazines":* MOTION PICTURES

HAYES, RALPH, *Director, New York Community Trust:* COMMUNITY TRUSTS

HAYTON, ROBERT D., *Assistant Professor of Political Science, Hunter College:* CHILE; COLOMBIA; COSTA RICA; ECUADOR

HEAD, HOWARD T., *Consulting Radio Engineer:* RADIO AND TELEVISION (RADIO AND TELEVISION ENGINEERING)

HEGSTED, D. MARK, *Associate Professor of Nutrition, Harvard School of Public Health:* NUTRITION (in part)

HELMREICH, E. C., *Thomas Brackett Reed Professor of History and Political Science, Bowdoin College:* AUSTRIA

HENDRIX, JAMES PAISLEY, *Associate Professor of Medicine and Therapeutics, School of Medicine, Duke University:* MEDICINE

HERING, DORIS, *Associate Editor, "Dance" Magazine:* DANCE

HERMES, WALTER G., *Historian, Office of the Chief of Military History, Department of the Army:* NATIONAL SECURITY

HERSHEY, LEWIS B., *Lieutenant General, USA; Director, Selective Service System:* SELECTIVE SERVICE

HERTZBERG, MARIE P., *Office of Business Economics, U.S. Department of Commerce:* RETAIL STORE SALES

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HOEGH, LEO A., *Director, OCDM:* OFFICE OF CIVIL AND DEFENSE MOBILIZATION

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HOLBORN, HAJO, *Sterling Professor of History, Yale University:* GERMANY

HOLLIDAY, MALCOLM A., *Associate Professor of Pediatrics, University of Pittsburgh School of Medicine:* PEDIATRICS

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HORNER, M. E., *Director of News, National Safety Council:* ACCIDENTS

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HOWARD, LELAND, *Assistant Director of the Mint:* MINT ESTABLISHMENT, U.S.

HUDSON, WINTHROP S., *Professor of the History of Christianity, Colgate Rochester Divinity School:* RELIGION (PROTESTANTISM)

HUMM, HAROLD J., *Jacques Loeb Associate in Marine Biology, The Rockefeller Institute:* MARINE BIOLOGY

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HURLBUT, CORNELIUS S., JR., *Professor of Mineralogy, Harvard University:* MINERALOGY

HUTCHESON, AUSTIN E., *Professor of History, University of Nevada:* NEVADA (in part)

IGLAUER, ARNOLD, *Assistant Professor of Medicine, College of Medicine, University of Cincinnati:* HEART DISEASE (in part)

IRWIN, RAY W., *Associate Professor of History, New York University:* NEW YORK CITY; NEW YORK STATE (in part)

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JACOBSON, ANTON, *Research Associate, Office of the Attorney General of Wisconsin:* WISCONSIN

JAMES, CLIFFORD L., *Professor of Economics, The Ohio State University:* BANKING; CONSUMER CREDIT; COST OF LIVING

JENNINGS, JACK T., *The Cooperative League of the USA:* COOPERATIVES

JOHNSON, HOLGAR J., *President, Institute of Life Insurance:* INSURANCE (LIFE INSURANCE)

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JONES, ROGER W., *Chairman, U.S. Civil Service Commission:* CIVIL SERVICE, U.S.

JURJI, EDWARD J., *Professor of Islamics and Comparative Religion, Princeton Theological Seminary:* RELIGION (ORIENTAL RELIGIONS, ISLAM, AND EASTERN ORTHODOXY)

KAMINS, ROBERT M., *Administrative Assistant to U.S. Sen. Oren E. Long of Hawaii:* HAWAII

KAPLAN, BENJAMIN D., *Acting Director, Construction Industry Division, Business and Defense Services Administration:* BUILDING AND CONSTRUCTION

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KARTORIE, V. T., *Manager, Market Research, York Division of Borg-Warner Corp.:* AIR CONDITIONING AND REFRIGERATION

KEESECKER, RAYMOND P., *Editor, American Osteopathic Association:* OSTEOPATHY

KELLY, RALPH, *Commissioner of Customs, Treasury Department:* CUSTOMS, BUREAU OF

KENNEDY, KENNETH R., *Information Staff, TVA:* TENNESSEE VALLEY AUTHORITY

KENT, MARIAN G., *Associate Editor, "The American Journal of Nursing":* NURSING

KIM, YONGJEUNG, *President, Korean Affairs Institute:* KOREA

KING, LUDLOW, *Executive Vice President, National Machine Tool Builders' Association:* MACHINE TOOLS

KIRKPATRICK, EVRON M., *Executive Director, American Political Science Association:* POLITICAL SCIENCE

KLEIN, LAWRENCE R., *Editor-in-Chief, "Monthly Labor Review":* AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS; LABOR; WAGES AND HOURS

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KNORR, N. H., *President, Watch Tower Bible and Tract Society of Pennsylvania:* JEHOVAH'S WITNESSES

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LAMONT-HAVERS, RONALD W., *Medical Director, The Arthritis and Rheumatism Foundation:* ARTHRITIS

LANDIS, PAUL H., *State Professor of Sociology, State College of Washington; Author of "Population Problems," "Your Marriage and Family Living," etc.:* MARRIAGE AND DIVORCE

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LE GRAND, ALBERT, *Associate Professor of French, Queen's University, Kingston:* CANADIAN LITERATURE (FRENCH-CANADIAN LITERATURE)

LEIDEN, CARL, *The American University at Cairo:* PAKISTAN

LEIDT, WILLIAM E., *Editor, "Forth"; Director of Publications, National Council, Protestant Episcopal Church:* PROTESTANT EPISCOPAL CHURCH

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LONG, ERNEST E., *Secretary, General Council, United Church of Canada:* UNITED CHURCH OF CANADA

LOOSLI, CLAYTON G., *Dean, School of Medicine, University of Southern California:* RESPIRATORY DISEASES

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LYNCH, J. JOSEPH, S.J., *Director, Fordham Seismic Observatory:* SEISMOLOGY

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McCOLLY, DON W., *President, Wine Institute, San Francisco, Calif.:* WINE

McCONNELL, JOHN W., *Professor of Industrial and Labor Relations; Dean of the Graduate School, Cornell University:* OLD AGE

McCORMICK, RICHARD P., *Professor of History, Rutgers University:* NEW JERSEY (in part)

McGEE, J. C., *Director, Quebec Bureau of Statistics:* QUEBEC

McGINTY, GARNIE WILLIAM, *Professor of History, Louisiana Polytechnic Institute; Author, "A History of Louisiana":* LOUISIANA (in part)

McGOWAN, DONALD W., *Maj. Gen., NGUS; Chief National Guard Bureau:* NATIONAL GUARD

McGUIRE, JOHNSON, *Professor of Medicine, University of Cincinnati College of Medicine; Director, Cardiac Laboratory, Cincinnati General Hospital:* HEART DISEASE (in part)

MacINTOSH, A. W., *Lecturer in History, Dalhousie University:* NOVA SCOTIA

MacKINNON, FRANK, *Principal, Prince of Wales College, P.E.I.:* PRINCE EDWARD ISLAND

MacMILLAN, WILLIAM L., *President, American Spice Trade Association:* SPICES

McNEILY, J. W., *Public Relations Officer, Provincial Government of Newfoundland:* NEWFOUNDLAND

McNICKLE, GEORGE, *Research Assistant, "The Encyclopedia of Sports" (New and Revised Edition):* SPORTS, GAMES, AND SHOWS

MALCUIT, STANLEY V., *Staff Economist, Aluminum Company of America:* ALUMINUM

MANGER, WILLIAM, *Honorary Counselor, OAS:* ORGANIZATION OF AMERICAN STATES

MANNING, E. M., *Executive Director, Toy News Bureau, New York:* TOY INDUSTRY

MANSON, GRANT CARPENTER, *School of Fine Arts, University of Pennsylvania; Author, "Frank Lloyd Wright to 1910: The First Golden Age":* WRIGHT, FRANK LLOYD

MARRARO, HOWARD R., *Professor of Italian, Columbia University:* ITALY

MARSHALL, NORMAN S., *National Commander of The Salvation Army in the U.S.:* SALVATION ARMY

MARTIN, H. E., *Director of Publications, Department of the Provincial Secretary, Alberta:* ALBERTA

MARTIN, J. A., JR., *Crosby Professor of Religion, Amherst College:* RELIGION (INTRODUCTION)

MAYER, HAROLD M., *Professor of Geography, University of Chicago; Former Director of Research, Chicago Plan Commission:* CITY PLANNING

MEADOWS, JOHN C., *Professor of Sociology, The University of Georgia:* GEORGIA (in part)

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MITCHELL, BERENICE B., *Commodity Industry Analyst, Division of Foreign Activities, U.S. Bureau of Mines:* MINERAL PRODUCTION; articles on minerals (in part)

MITCHELL, W. L., *Commissioner, Social Security Administration:* SOCIAL SECURITY

MOGER, ALLEN W., *Professor of History, Washington and Lee University:* VIRGINIA (in part)

MONTGOMERY, I. J., *Supervisor, Alaska Merit System:* ALASKA

MOORE, CHARLES W., *Associate Professor of Architecture, University of California, Berkeley:* ARCHITECTURE

MOORE, E. G., *Director, Information Division, Agricultural Research Service:* AGRICULTURAL RESEARCH SERVICE

MOOS, MALCOLM C., *Administrative Assistant to the President of the United States; Professor of Political Science (on leave), The Johns Hopkins University:* DULLES, JOHN FOSTER

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MORLEY, MARJORIE, *Manitoba Provincial Librarian and Director of Library Services:* MANITOBA; WINNIPEG

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MOURSUND, ANDREW, *Editor, "News of Norway," Norwegian Embassy in Washington, D.C.:* NORWAY

MUNROE, JOHN A., *Professor and Chairman, Department of History, University of Delaware; Author, "Federalist Delaware, 1775–1815":* DELAWARE (in part)

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NICHOLS, HERBERT B., *Information Officer, Geological Survey:* GEOLOGICAL SURVEY

NICHOLS, MADALINE W., *Specialist in Latin American Affairs:* ARGENTINA; BRAZIL; GUATEMALA

NOBLE, ISABEL, *Professor of Home Economics, University of Minnesota:* FOOD RESEARCH

NUQUIST, ANDREW E., *Chairman, Department of Political Science, University of Vermont:* VERMONT (in part)

O'DONNELL, MAURICE E., *Assistant Director, Bureau of Governmental Research, University of Maryland:* BALTIMORE; MARYLAND (in part)

OEHSER, PAUL H., *Chief, Editorial and Publications Division, Smithsonian Institution:* SMITHSONIAN INSTITUTION

OLIVIER, CHARLES P., *Emeritus Professor of Astronomy and Former Director, Flower and Cook Observatories, University of Pennsylvania:* ASTRONOMY

OLSON, F. C. W., *Head, Environmental Studies Branch, U.S. Navy Mine Defense Laboratory, Panama City, Fla.:* OCEANOGRAPHY

ORVIG, SVENN, *Associate Professor of Meteorology, McGill University:* ARCTIC EXPLORATION

OSBORNE, HARLOW D., *Assistant Chief, National Income Division, Office of Business Economics, U.S. Department of Commerce:* BUSINESS DATA, U.S.

OSLIN, GEORGE P., *Publicity Director, Western Union Telegraph Company:* TELEGRAPHY

PATE, MAURICE, *Executive Director, UNICEF:* UNITED NATIONS CHILDREN'S FUND

PEET, ROY W., *Manager, Association of American Soap and Glycerine Producers, Inc.:* SOAP AND SYNTHETIC DETERGENTS

PÉPIN, EUGENE, *Lecturer on Air and Space Law at the Universities of Paris and Strasbourg:* SPACE FLIGHT (SPACE LAW)

PHILLIPS, JEWELL CASS, *Professor of Political Science, University of Pennsylvania:* PENNSYLVANIA (in part); PHILADELPHIA

PORTER, J. R., *Chairman, Department of Bacteriology, State University of Iowa:* BACTERIOLOGY

PRAETORIUS, ROBERT L., *Economist, International Monetary Fund:* EXCHANGE RATES

PRICE, G. BALEY, *Chairman, Department of Mathematics, University of Kansas:* MATHEMATICS

PRITIKIN, ROLAND I., *Eye Surgeon and Consulting Ophthalmologist; Author, "Essentials of Ophthalmology":* OPHTHALMOLOGY (in part)

QUESADA, E. R., *Administrator, Federal Aviation Agency:* FEDERAL AVIATION AGENCY

RANDALL, CHARLES E., *Forestry Information Specialist; Formerly with U.S. Forest Service:* FORESTRY; LUMBER

RAYMOND, ELLSWORTH, *USSR Area Specialist and Associate Professor of Government, New York University:* COMMUNISM; ESTONIA; LATVIA; LITHUANIA; UNION OF SOVIET SOCIALIST REPUBLICS

READ, W. T., *Consulting Chemist:* CHEMISTRY

REEVES, RUSSELL H., *Assistant Managing Editor, Cleveland "Plain Dealer":* CLEVELAND

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RICHMOND, A. C., *Vice Admiral, USCG; Commandant, U.S. Coast Guard:* COAST GUARD, U.S.

RILEY, LYMAN W., *University of Pennsylvania Library:* FRIENDS, RELIGIOUS SOCIETY OF

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ROBINSON, RICHARD D., *Staff Member, Harvard Center for Middle Eastern Studies:* TURKEY

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ROLLAND, SIEGFRIED B., *Asst. Professor of History and Social Science, University of Idaho:* IDAHO (in part)

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RONNE, FINN, *Captain, U.S. Naval Reserve: Antarctic Explorer:* ANTARCTICA

ROSENBLUM, LILA, *Director of Public Information, Field Service, National Committee on Employment of Youth, National Child Labor Committee:* CHILD LABOR (in part)

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ROWSE, DONOVAN, *Author and Publicist:* AUSTRALIA; BURMA; CEYLON; NEW ZEALAND; WEST INDIES FEDERATION; and other Commonwealth countries

SALE, ROBERT C., *State Librarian, Connecticut State Library:* CONNECTICUT (in part)

SAMPSON, JESSE, *Professor and Head, Department of Veterinary Physiology and Pharmacology, College of Veterinary Medicine, University of Illinois:* VETERINARY SCIENCE

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SAUNDERS, KEITH, *American Aviation Publications, Inc.:* AERONAUTICS; MISSILES

SCHELLBACH, LEWIS L., *Vice Pres., Standard & Poor's Corporation, New York City:* STOCKS AND BONDS

SCHRENK, H. H., *Managing Director, Industrial Hygiene Foundation of America, Inc.:* INDUSTRIAL HEALTH AND SAFETY

SCHWARTZ, CHARLES F., *Chief, North American Division, Western Hemisphere Department, International Monetary Fund:* INCOME

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SCOTT, CHESTER C., *Sociologist, Illinois Youth Commission:* CRIME (DELINQUENCY AND CRIME PREVENTION)

SEAMAN, R. G., *Editor, "Rubber World":* RUBBER

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SMITH, SAMRAY, *Editor, "ALA Bulletin," American Library Association:* AMERICAN LIBRARY ASSOCIATION

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SOBOROFF, BURTON J., *Associate Professor of Otolaryngology, University of Illinois College of Medicine:* DEAFNESS

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SOMMERS, DAVIDSON, *Vice President, IBRD:* INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

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STEVENSON, GEORGE S., *National and International Consultant, National Association for Mental Health, Inc.:* PSYCHIATRY AND MENTAL HEALTH

STILES, KENT B., *Stamp Editor, "The New York Times":* PHILATELY

STOKES, WILLIAM S., *Professor of Comparative Political Institutions, Claremont Men's College; Author, "Latin American Politics"* (1959): CUBA; HONDURAS; PERU

STOODY, RALPH, *Genl. Secy. and Director, Commission on Public Relations and Methodist Information of The Methodist Church:* METHODIST CHURCH

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SUTTON, RICHARD L., JR., *Author, "Diseases of the Skin"* (11th ed. 1956): DERMATOLOGY

SWETNAM, GEORGE, *Staff, "The Pittsburgh Press":* PITTSBURGH

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TUGGLE, KENNETH H., *Chairman, ICC:* INTERSTATE COMMERCE COMMISSION

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TURNER, ALLAN R., *Archival Assistant, Saskatchewan Archives Board, Regina:* SASKATCHEWAN

TURNER, ARTHUR C., *Chairman, Division of Social Sciences, and Professor of Political Science, University of California, Riverside:* AFRICA; COUNCIL OF EUROPE; EUROPEAN ATOMIC ENERGY COMMUNITY; EUROPEAN COAL AND STEEL COMMUNITY; EUROPEAN ECONOMIC COMMUNITY; FAR EAST; MIDDLE EAST; NORTH ATLANTIC TREATY ORGANIZATION

UNDERHILL, FRANK H., *Former Professor of History, University of Toronto:* CANADA (THE YEAR 1959 IN CANADA)

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WALKER, GEORGE L., *Staff Writer, "The Detroit News":* DETROIT

WALKER, JEROME H., *Executive Editor, "Editor and Publisher":* NEWSPAPERS

WALLACE, ANTHONY F. C., *Visiting Assoc. Professor of Anthropology, University of Pennsylvania:* ANTHROPOLOGY

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WARREN, FOREST G., *Chief, Near East Section, Bureau of Foreign Commerce, U.S. Department of Commerce:* SUDAN

WASSER, HENRY, *Assistant Professor of English, The City College of New York:* AMERICAN LITERATURE

WATERMAN, ALAN T., *Director, National Science Foundation:* NATIONAL SCIENCE FOUNDATION

WATSON, ROBERT C., *Commissioner of Patents:* PATENTS AND TRADEMARKS

WEBB, RICHARD E., *Director, Reference and Library Division, British Information Services:* COMMONWEALTH OF NATIONS; GREAT BRITAIN

WEBSTER, CLIFFORD W., *Editor, "Bakers Review":* BAKING INDUSTRY

WEINSTOCK, HERBERT, *Music Editor and Reviewer; Author, "Music as an Art," and other works:* BLOCH; LANDOWSKA; MUSIC; VILLA-LOBOS

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WEMHOFF, PETE, *Editor, "Automotive News":* AUTOMOBILES

WHITE, RUTH M., *Assistant to the Executive Secretary, Public Library Association:* LIBRARIES

WHITTIER, SUMNER G., *Administrator of Veterans Affairs:* VETERANS ADMINISTRATION

WILBER, DONALD N., *Author, "Iran Past and Present"; Author and Editor, "Afghanistan":* AFGHANISTAN; IRAN

WILLIAMS, JAMES R., *Vice President, Health Insurance Institute:* INSURANCE (HEALTH INSURANCE)

WILSON, JOHN S., *Reviewer of Jazz Records, "The New York Times" and "High Fidelity" Magazine:* RECORDS, PHONOGRAPH (JAZZ RECORDS)

WINSTON, ELLEN, *Commissioner, North Carolina State Board of Public Welfare:* SOCIAL WELFARE

WIRTH, CONRAD L., *Director, National Park Service:* NATIONAL PARKS AND MONUMENTS

WOODWARD, DOROTHY, *Professor of History, University of New Mexico:* NEW MEXICO (in part)

WOODWARD, MARC, *Health News Institute, New York:* DRUGS

WRIGHT, GORDON, *Professor of History, Stanford University:* FRANCE; FRENCH COMMUNITY

WRIGHT, QUINCY, *Professor, Woodrow Wilson Department of Foreign Affairs, University of Virginia:* FOREIGN POLICY OF THE U.S.

WRIGHT, RALPH, *Director, Washington (D.C.) Branch Office, ILO:* INTERNATIONAL LABOR ORGANIZATION

ZAFRA, NICHOLAS, *Professor of History (Retired), University of the Philippines:* PHILIPPINES

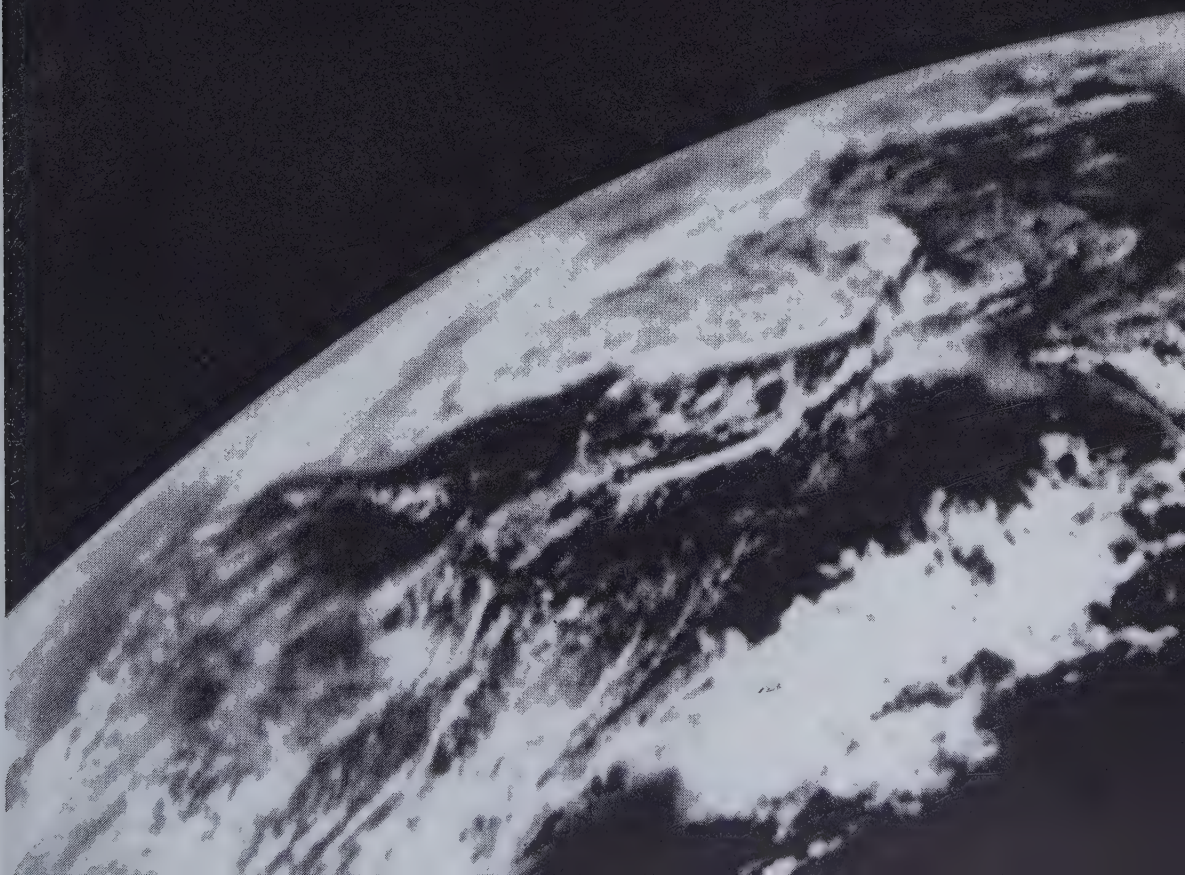
ZELUFF, VIN, *Managing Editor, "Electronic Equipment Engineering":* ELECTRONICS

ZUBKOFF, HARRY M., *Publications Writer, Office of the Secretary of the Air Force:* AIR FORCE, U.S.

Opposite page: **The earth as photographed from approximately 700 miles up on Aug. 24, 1959, by a camera installed in a recoverable capsule in the nose cone of an Air Force Atlas missile. Part of South America can be seen at the center horizon; the dark triangular area slightly left of center is the Amazon River delta. Africa is at the lower left.**

U.S. AIR FORCE

CHRONOLOGY
the events of 1959



CHRONOLOGY . . 1959

PART 1 . . The Outstanding Dates of the Year

JANUARY

1—Cuban President Fulgencio Batista resigns and flees the country, as rebel forces under Fidel Castro take Santiago de Cuba.

First stage in reduction of tariffs within European Economic Community goes into effect.

2—USSR launches Lunik I (Mechta) rocket which soared past moon (Jan. 4) into orbit around sun.

Castro forces take over Havana; Dr. Manuel Urrutia is proclaimed provisional president of Cuba.

3—President Eisenhower signs document proclaiming Alaska 49th state of Union; signs executive order redesigning U.S. flag to contain 49 stars.

4—Soviet First Deputy Premier Anastas I. Mikoyan arrives in Washington on two-week visit to U.S.

4–5—Anti-European rioting by Africans demanding independence in Léopoldville, Belgian Congo, results in 71 persons killed.

8—Gen. Charles de Gaulle takes office as president of France for seven-year term.

10—Michel Debré takes office as premier of France.

17—President Eisenhower and Soviet First Deputy Premier Mikoyan confer in Washington on Germany, disarmament, and other world problems.

19—Virginia's school segregation and school closure laws held unconstitutional in court actions.

22—Argentine general strike collapses after 4 days, in face of strong government antistrike measures.

25—Pope John XXIII says he will call ecumenical council to seek unity of world Christian communities.

26—Italian Premier Amintore Fanfani resigns, following split in coalition cabinet.

27—At opening of 21st Congress of Soviet Communist Party in Moscow, Soviet Premier Khrushchev says Soviet space rocketry has gained military superiority for socialist world.

FEBRUARY

2—Public school integration begins at Norfolk, Va.

3–4—Premiers of 12 African autonomous republics of French Community confer with French President de Gaulle in Paris, in first meeting of Community's Executive Council.

5—U.S. State Department reveals tape recording of radio conversation by Soviet pilots while shooting down U.S. Air Force transport over Soviet Armenia on Sept. 2, 1958.

16—Antonio Segni becomes premier of Christian Democratic cabinet of Italy, ending three-week impasse.

Fidel Castro takes office as premier of Cuba.

17—Vanguard II satellite is launched into orbit.

19—British Prime Minister Macmillan, Greek Premier Karamanlis, Turkish Premier Menderes, Greek Cypriote leader Archbishop Makarios III, and Turkish Cypriote leader Kutchuk sign agreement in London to constitute Cyprus an independent republic.

19–20—President Eisenhower and Mexican President Adolfo López Mateos confer at Acapulco, Mexico; agree on construction of Diablo Dam and U.S.–Mexican economic collaboration.

21—British Prime Minister Macmillan arrives in Moscow.

MARCH

1—Archbishop Makarios returns to Cyprus after three-year exile.

2–3—African nationalists riot in Nyasaland, following outlawing of African National Congress and arrest of Hastings Banda, congress president; 32 Africans killed by security forces.

3—U.S. Army launches Juno II rocket carrying 13.4-pound Pioneer IV space probe toward moon.

3—British Prime Minister Macmillan and Soviet Premier Khrushchev end talks in Moscow without agreement on Berlin or other issues.

Iran announces it no longer recognizes as valid the clauses in 1921 pact with USSR which give the Soviet Union the right to move troops into Iran if forces threatening USSR enter Iran.

4—Pioneer IV passes moon, heads for orbit around sun.

5—U.S. signs bilateral defense pacts with Iran, Pakistan, and Turkey, in Ankara, Turkey.

9—Iraq government reports that pro-Nasser rebellion in Mosul region has been crushed after 3 days.

13—Fighting breaks out in Lhasa, Tibet, between populace and Chinese Communist forces.

16—President Eisenhower, in nationwide address, says U.S. will not forsake people of West Berlin but is willing to take part in summit talks if foreign ministers conference promises fruitful outcome.

17—Canadian Secretary of State for External Affairs Sidney E. Smith dies in Ottawa, aged 62.

18—President Eisenhower signs legislation for admission of Hawaii as 50th state of Union.

Project Argus, involving three nuclear detonations at altitudes of 300 miles, is revealed to have taken place in South Atlantic on Aug. 27, Aug. 30, and Sept. 6, 1958.

20—New Delhi reports that open warfare against Chinese Communists has broken out in Tibet, with Tibetan populace joining rebellious Khamba tribes.

20–23—President Eisenhower and Prime Minister Macmillan confer at Camp David, Md., and in Washington on West's position concerning West Berlin in forthcoming foreign ministers meetings.

24—Iraq Premier Abdul Karim al-Kassem announces Iraq's withdrawal from Baghdad Pact.

28—Chinese Communist Premier Chou En-lai dissolves Tibetan government headed by Dalai Lama; puts Panchen Lama at head of Preparatory Committee for Tibetan Autonomous Region.

31—Dalai Lama of Tibet crosses border into India, seeking asylum.

APRIL

1—Foreign ministers of U.S., Britain, France, and West Germany end two-day talks in Washington; state desire to negotiate with USSR, but will stand firm with NATO allies against Soviet pressure.

2–4—North Atlantic Council meets in Washington; restates determination to uphold freedom of West Berlin and West's rights and duties there.

4—Federation of Mali, linking Senegal and Soudan, comes into being, with Modibo Keita as premier.

9—Seven astronauts are named by National Aeronautics and Space Administration to undergo training for space flights (Project Mercury).

Frank Lloyd Wright dies at Phoenix, Ariz., aged 89.

13—Discoverer II satellite is first of Discoverer series to be launched into polar orbit in attempt (unsuccessful) to recover capsule from space.

President Eisenhower, in letter to Soviet Premier Khrushchev, calls for Soviet acceptance of "on-site inspection" of nuclear test ban, or, as step toward total ban, to agree to banning of tests up to 50 kilometers altitude.

15—John Foster Dulles resigns as secretary of state because of illness.

22—Christian A. Herter is sworn in as secretary of state.

23—Chinese Communists claim to have dispersed rebels in southeast Tibet and sealed border to India.

Soviet Premier Khrushchev rejects President Eisenhower's proposals of April 13 on nuclear test ban.

25—St. Lawrence Seaway is opened to traffic.

27—Liu Shao-chi succeeds Mao Tse-tung as chairman of Chinese People's Republic.

29–30—Foreign ministers of U.S., Britain, France, and West Germany, meeting in Paris in preparation for Big Four foreign ministers conference, agree on "package proposal" on Germany.

MAY

1—President Sékou Touré of Guinea and Prime Minister Kwame Nkrumah of Ghana sign draft agreement in Conakry, Guinea, for Union of Independent African States.

11—Foreign ministers of U.S., USSR, Britain, and France open conference at Geneva, with representatives of East and West Germany present as advisers.

21—UAR detains Danish freighter *Inge Toft* in Suez Canal and orders unloading of Israeli cargo.

24—John Foster Dulles dies in Washington, D.C., aged 71.

28—Two monkeys (Able and Baker) are recovered safely in Atlantic from nose cone of Jupiter rocket which reached altitude of 300 miles.

JUNE

1—Tunisian President Habib Bourguiba signs new constitution establishing presidential-type republic.

3—New constitution becomes effective in Singapore, ending status as British crown colony.

4—Cuban agrarian reform law is promulgated, providing for state appropriation of large landholdings.
Howard Green is named Canadian secretary of state for external affairs.
West German Chancellor Adenauer reverses his decision (revealed on April 7) to relinquish chancellorship.
8—At Big Four foreign ministers conference in Geneva, West presents general terms for West Berlin settlement, including proviso that Western powers retain rights granted in Occupation Statute of 1945.
9—At Geneva conference, Soviet Foreign Minister Gromyko rejects West's terms for West Berlin settlement, and demands that West end its occupation.
18—Queen Elizabeth II and Prince Philip arrive in St. John's, Newfoundland, to begin six-week tour of Canada.
19—Senate rejects nomination of Lewis L. Strauss as secretary of commerce.
26—Queen Elizabeth II and President Eisenhower dedicate St. Lawrence Seaway at St. Lambert, Quebec.
27—Queen Elizabeth II and Vice President Nixon dedicate St. Lawrence hydro project at Massena, N.Y.
29—Soviet First Deputy Premier Frol R. Kozlov opens Soviet Exhibition at Coliseum in New York.
30—Lewis L. Strauss resigns as secretary of commerce.

JULY

2—Russians fire 4,400-pound payload, containing two dogs and a rabbit, into upper atmosphere; animals are recovered safely.
5—Indonesian President Sukarno issues decree restoring 1945 Constitution and dissolving Constituent Assembly.
Saar is economically integrated with West Germany.
Israeli Premier David Ben-Gurion and cabinet resign on issue of sale of arms to West Germany.
15—Some 500,000 steelworkers go on strike, halting greater part of U.S. steel output.
17—Cuban President Urrutia resigns in dispute with Premier Castro over Communist influence in government.
21—Frederick H. Mueller is named secretary of commerce.
22—Iraq government announces quashing of revolt (begun on July 15) in Kirkuk area.
24—Vice President Nixon opens American National Exhibition in Moscow; Nixon and Soviet Premier Khrushchev engage in informal debate.
30—Laos reports that former Pathet Lao guerrillas have reopened attacks on posts in Sam Neua Province.
31—Indian President Rajendra Prasad issues proclamation taking over state government of Kerala and ousting Communist regime.

AUGUST

1—Vice President Nixon, in radio-television address from Moscow, defends U.S. foreign policy and way of life; bids Soviet Premier Khrushchev direct talents toward improvements at home instead of seeking to expand communism abroad.
5—Big Four foreign ministers conference in Geneva adjourns indefinitely, without agreement.
7—Explorer VI satellite is launched into orbit with apogee of 26,383 miles.
12—High schools in Little Rock, Ark., reopen on desegregated basis.
12–18—Foreign ministers of 21 American states confer in Santiago, Chile; sign Declaration of Santiago, censuring dictatorial regimes but condemning efforts by other governments to overthrow them.
19—Malayan elections result in victory for Alliance Party, pro-Western group led by Tengku Abdul Rahman.
21—Hawaii is proclaimed 50th state by President Eisenhower in Washington.
26—President Eisenhower arrives in Bonn to begin 12-day visit to Germany, Britain, and France.
Chinese Communist Party declares that claims for 1958 production gains in China were greatly overstated; adopts reduced goals for 1959.
28—USSR states it will not conduct nuclear weapons tests as long as West does likewise.
Indian Prime Minister Nehru charges that Chinese Communists have conducted aggressive raids on Indian territory along Tibetan border.
28–29—President Eisenhower visits Queen Elizabeth II at Balmoral, Scotland.

SEPTEMBER

3—Communist China, in note to India, charges India with aggression in border areas.
4—Laos asks U.N. to send emergency force to help defend Laos against "aggression" by North Vietnam.
9—Dalai Lama calls for U.N. action against Chinese Communist oppression in Tibet.
13—Soviet Lunik II space rocket strikes moon at 9:02 P.M. (Greenwich Civil Time) after flight of 36 hours. President Eisenhower signs Labor Reform Act of 1959, aimed at curbing abuses by unions.
15—Maj. Gen. George P. Vanier takes office as governor general of Canada.
15–27—Soviet Premier Khrushchev in U.S. for tour and official talks; visits Washington, New York, Los Angeles, San Francisco, Des Moines, and Pittsburgh.
16—French President de Gaulle, in Paris address, offers Algerians right to choose independence, integration with France, or autonomous federal regime associated with France.
18—Khrushchev, in address to U.N. General Assembly, calls for complete disarmament, except for police units, within four years.
Vanguard III satellite is launched into orbit.
26—Ceylonese Prime Minister S.W.R.D. Bandaranaike dies in Colombo of wounds inflicted by assassin.
26–27—Typhoon Vera sweeps across central Honshu, Japan, leaving 4,464 killed and several hundred missing.
27—Khrushchev and Eisenhower end three-day talks at Camp David, Md.; agree on new talks on Berlin issue and expansion of U.S.–USSR exchange program.
30—Khrushchev arrives in Peking for four-day visit during Chinese Communist regime's 10th anniversary celebration.

OCTOBER

4—USSR launches Lunik III "interplanetary station" to provide information on outer space.
7—Lunik III takes first photos of far side of moon.
Premier Kassem of Iraq wounded in assassination attempt.
8—Prime Minister Macmillan's Conservative Party wins overwhelming victory in British elections.
9—President Eisenhower invokes Taft-Hartley Act in steel strike.
13—Explorer VII satellite is launched into orbit.
16—Gen. George C. Marshall dies in Washington, aged 78.
20—Indian border police and Chinese Communist force clash in Ladakh; 9 Indians killed, 10 captured.
26—At mass demonstration in Havana against U.S. "aggression," Premier Castro charges U.S. allowed bombing planes to take off from U.S. territory.
30–31—Belgian-led troops clash with African nationalists in Stanleyville, Belgian Congo; 70 killed.

NOVEMBER

2—Charles Van Doren tells House Special Committee on Legislative Oversight that his role as contestant on TV quiz show in 1956–57 was "fixed."
3—Israeli elections result in victory for Premier Ben-Gurion's Mapai Party.
6—U.N. investigating subcommittee reveals it found no clear evidence indicating direct participation by North Vietnamese troops in Laotian fighting.
7—Supreme Court upholds Taft-Hartley Act 80-day injunction against steel strike; workers return.
20—Ministers of Britain, Sweden, Norway, Denmark, Austria, Switzerland, and Portugal, meeting in Stockholm, initial convention for European Free Trade Association (Outer Seven).
30—János Kádár, Hungarian Communist Party secretary, says Soviet troops will remain in Hungary as long as international situation makes it necessary.

DECEMBER

1—U.S., USSR, and 10 other nations sign treaty in Washington to reserve Antarctica for scientific and other peaceful purposes.
Britain and UAR resume diplomatic relations.
Thomas S. Gates, Jr., named secretary of defense, succeeding Neil H. McElroy.
3–22—President Eisenhower makes 22,370-mile goodwill tour of three continents, visiting Italy, Turkey, Pakistan, Afghanistan, India, Iran, Greece, Tunisia, France, Spain, and Morocco.
4—Rhesus monkey (Sam) is sent 55 miles into space in rocket and recovered safely in Atlantic.
12—U.N. General Assembly elects Poland to Security Council seat, in compromise whereby Poland is to resign at end of 1960 in favor of Turkey.
13—Archbishop Makarios III is elected president of Cyprus.
17—Pope John XXIII installs seven new cardinals (including two Americans) in Vatican ceremonies.
19—Western and Eastern scientists disagree on controls for underground nuclear tests; Geneva conference on nuclear test ban recesses until 1960.
19–21—Eisenhower, Macmillan, de Gaulle, and Adenauer confer in Paris and Rambouillet; communiqué announces invitation to Khrushchev for summit talks in Paris, early in 1960.
20—Local elections take place in Belgian Congo as first step toward self-rule; nationalist boycott is effective in Léopoldville.
22—President Eisenhower, in talks with Moroccan King Mohamed V in Casablanca, agrees to U.S. evacuation of military bases by end of 1963.
26—Gov. Nelson A. Rockefeller announces withdrawal from race for Republican presidential candidacy; says he will not accept vice presidential nomination.
30—Khrushchev accepts Western proposal for opening of summit talks in Paris on May 16, 1960.
U.S.S. *George Washington*, first of new class of nuclear submarines capable of firing Polaris missile, is commissioned at Groton, Conn.
30–31—Violence in Douala, French Cameroons, prior to inauguration of independence (on Jan. 1, 1960) results in about 30 persons killed.

PART 2 . . Chronological Index of the Year's Events

ON the following pages are indexed the principal world events of 1959. Main subject headings are indexed in alphabetical order, while specific events under each subject heading are listed chronologically (in order of their occurrence). Articles on many of the persons, countries, organizations, and other subjects may be found in the main text of this volume.

The Chronological Index is intended primarily to aid the reader in finding the dates on which the most important events of 1959 occurred. It is, therefore, a selected list of the year's most significant events, rather than a complete list of all events under all subject headings, though it does serve also as a guide to the year's important developments in any subject, particularly in the major countries.

In many instances events have been listed under both the general subject headings and under the specific names of the events or persons concerned; for example, the dedication of the St. Lawrence Seaway by President Eisenhower and Queen Elizabeth II on June 26 is covered under the headings EISENHOWER, ELIZABETH II, and ST. LAWRENCE SEAWAY AND POWER PROJECT. In other instances, events concerning persons whose names are less familiar to most readers may be found under the name of the country or general subject involved. The outstanding United States diplomatic and other appointments are listed under the heading UNITED STATES. Cross-references used herein refer only to headings within this Index.

ACADEMY AWARDS—See MOTION PICTURES

ACCIDENTS AND DISASTERS

Aviation

West German Lufthansa Super-Constellation crashes near Rio de Janeiro, Brazil; 36 killed, **Jan. 11**

Twin-engine Austral Airlines plane crashes in sea at Mar del Plata, Argentina; 51 killed, **Jan. 16**

American Airlines Electra turboprop airliner crashes into East River, New York City; 65 killed, **Feb. 4**

Capital Airlines Viscount airliner explodes in thunderstorm near Baltimore, Md.; 31 killed, **May 12**

Trans World Airline Super-Constellation explodes near Olgiate Olona, Italy; 68 killed, **June 26**

U.S. Air Force jet fighter crashes into school and housing area in Naha, Okinawa; 16 killed, **June 30**

British DC-3 crashes north of Barcelona, Spain; 32 persons (mainly British students) killed, **Aug. 19**

French DC-7 airliner crashes at Bordeaux, France; 54 killed, **Sept. 24**

Braniff Airways turboprop airliner explodes in air near Buffalo, Texas; 34 killed, **Sept. 29**

Piedmont Airlines DC-3 crashes near Waynesboro, Va.; 26 killed, **Oct. 30**

National Airlines DC-7B crashes into Gulf of Mexico southeast of New Orleans; 42 killed, **Nov. 16**

Trans-World Airlines Constellation crashes into residential area near Midway Airport, Chicago; 11 killed, **Nov. 24**

Allegheny Airlines plane crashes into mountain near Montoursville, Pa.; 25 killed, **Dec. 1**

Colombian C-46 airlines, with 46 aboard, disappears in Caribbean area, **Dec. 8**

Brazilian turboprop airliner collides with Brazilian Air Force trainer and crashes in Rio de Janeiro suburb; 38 killed, **Dec. 22**

Earthquakes

Earthquake shakes southern Taiwan; 15 killed, **Aug. 15**

Quakes strike Yellowstone National Park area; estimated 28 killed, **Aug. 17–20**

Earthquake hits southern Veracruz State, southeastern Mexico; 16 killed, **Aug. 26**

Fires and Explosions

Fire in Arkansas Negro Boys Industrial School (near Little Rock) kills 21 boys in dormitory, **Mar. 5**

World War II demolition bombs are accidentally detonated at Dagupan, Philippines; 38 killed, **Apr. 11**

Resort hotel burns at Stalheim, Norway; 24 persons, mostly American tourists, killed, **June 23**

Two railroad tank cars carrying butane gas explode on trestle over Ogeechee River beach near Meldrim, Ga.; 22 picnickers killed, **June 28**

Danish excursion boat explodes and burns near Haderslev, Denmark; 53 killed, **July 8**

Truck loaded with dynamite and fertilizer blows up in Roseburg, Oreg.; 13 killed, **Aug. 7**

Fire and explosions hit gasoline-laden tanker and two barges in Houston harbor, Texas; 7 killed, **Nov. 8**

Explosion and fire at Jamuri Bazar, West Bengal, India, result in 46 killed, **Nov. 29**

Explosion destroys 2 apartment buildings in Dortmund, Germany; 26 killed, **Dec. 13**

Floods

Dam gate breaks at Rivadelago, Spain; 132 dead and missing, as floods sweep village, **Jan. 9**

Floods following heavy rains and cyclones in Malgache Republic leave 305 dead, 23 missing, **Mar. 28**

Floods in Argentina, Brazil, and Uruguay cause over 124 deaths, **Apr. 18–21**

Floods in South Africa have resulted in at least 60 deaths, Durban reports, **May 24**

Torrential rains in Hong Kong sweep away shacks of Chinese refugees; 45 killed, 5 missing, **June 12–15**

Floods in Kwangtung Province, southern China, cause at least 187 deaths, **June 24**

Flash floods sweeps away part of village of Caserio Las Juntas, Colombia; at least 184 killed, **June 30**

Floods in southern Japan leave 34 dead, 29 missing, **July 14–15**

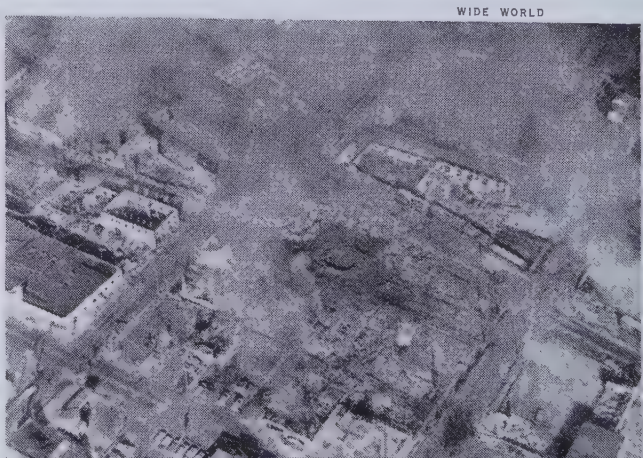
Floods in West Pakistan leave over 100 dead, **July 15**

Flash floods in central and southern Taiwan leave 649 dead, 530 missing, **Aug. 8–9**

Floods and tidal wave in Fukien Province, China, leave 47 dead and 74 missing, **Sept. 14**

ACCIDENTS AND DISASTERS—*(Left)* Typhoon Vera, which struck Japan on September 26–27 and claimed at least 4,464 lives, left this scene of ruin at the port city of Nagoya. *(Right)* Truck loaded with explosives blew up at Roseburg, Oreg., on August 7, leveling several blocks of buildings and killing 13 persons. Dark crater in center shows the point of explosion.

WIDE WORLD



Floods in Surat, western India, result in an estimated 500 dead and missing, **Sept. 18**
Floods in central Rio Grande do Sul, Brazil, result in over 100 dead, **Sept. 26–27**
Malpasset Dam, near Fréjus, French Riviera, bursts; flood results in 421 dead, 82 missing, **Dec. 2**

Hurricanes, Tornadoes, and Typhoons

Tornado strikes St. Louis, Mo.; 21 killed, **Feb. 10**
Gale strikes Northumberland Strait between New Brunswick and Prince Edward Island; 12 killed, 22 missing, **June 19**
Hurricane Debra hits Texas coast, **July 25**
Heavy winds, rains, and floods in southern Brazil leave 46 dead, **Aug. 13–14**
Typhoon Georgia cuts through central Japan; 274 dead and missing, **Aug. 14**
Typhoon Iris strikes coast of Fukien Province, China; 720 persons killed, 996 missing, **Aug. 20**
Typhoon Sarah hits South Korea; at least 669 killed, **Sept. 17–19**
Typhoon Vera sweeps across Central Honshu and other areas of Japan; 4,464 killed, hundreds missing, **Sept. 26–27**
Hurricane Gracie sweeps inland near Charleston, S.C., causing heavy crop and property damage, **Sept. 29**
Hurricane and floods hit Pacific coast states of Jalisco and Colima, Mexico; 1,452 killed, **Oct. 27–28**
Typhoon hits Philippines; 160 dead or missing, **Dec. 18**

Marine

Danish ship *Hans Hedtoft* strikes iceberg and sinks off Greenland; 95 lost, **Jan. 30**
Two Newfoundland trawlers capsize in heavy seas off northeast coast; 47 believed lost, **Feb. 9**
Nile River excursion boat sinks about 10 miles north of Cairo, Egypt; 150 drown, **May 8**
Interisland ship capsizes off Palawan Island, Philippines; 90 missing, **Aug. 20**

Railroads

Train plunges into ravine in West Java, Indonesia; 92 persons killed, **May 28**
Two trains collide head-on near São Paulo, Brazil; about 60 persons killed, **June 5**
Train collides with bus near Lauffen, Germany; 37 killed, **June 20**

Miscellaneous

Motion picture theater collapses in village of Kucuk Yali, Turkey; 35 killed, **Jan. 24**
Passenger truck crashes and burns on Pan American Highway near Cortazar, Mexico; 28 killed, **Mar. 3**
Stampede at outdoor show in Pusan, South Korea, kills 68, **July 17**
New apartment building collapses in Barletta, Italy; 58 killed, **Sept. 16**
Fire and gas kill 47 miners trapped in coal mine at Kirkintilloch, Scotland, **Sept. 18**
Stampede among religious pilgrims near Bombay, India, results in 75 killed, **Sept. 20**
Truck collides with bus carrying college students near New Brunswick, N.J.; 12 killed, **Oct. 9**
Landslides caused by typhoon kill at least 27 persons on Okinawa, Ryukyu Islands, **Oct. 17**

ADEN
Arab rulers of 6 states in West Aden sign constitution in Aden for Federation of the Arab Emirates of the South, **Feb. 11**

ADENAUER, Konrad—See also GERMANY
Confers with U.S. Secretary of State Dulles in Bonn on Berlin crisis, **Feb. 7–8**
Confers with French President de Gaulle in Paris on Berlin, **Mar. 4**
Confers with British Prime Minister Macmillan in Bonn on Berlin, **Mar. 12–13**
Announces intention to relinquish chancellorship of West Germany and seek election as president, **Apr. 7**
In Bonn address, states he has changed his mind about relinquishing chancellorship, **June 5**
In London talks with Macmillan, agrees to discuss Berlin issue in summit conference, **Nov. 17–19**
Confers with de Gaulle in Paris on NATO military problems and international issues, **Dec. 1–2**
Meets with President Eisenhower, Macmillan, and de Gaulle in Paris and Rambouillet to prepare ground for summit conference, **Dec. 19–21**

AFGHANISTAN
Economic cooperation agreement signed with USSR, following talks between Prime Minister Prince Muhammad Da'ud and Soviet leaders in Moscow, **May 28**
Prince Muhammad Da'ud and Indian Prime Minister Nehru, in Kabul, reaffirm neutralist position, **Sept. 15**
King Muhammed Zahir Shah and Prince Da'ud confer with President Eisenhower in Kabul, **Dec. 9**

AFRICA—See also individual African countries
Liberian President William V. S. Tubman, Guinea President Sékou Touré, and Ghana Prime Minister Kwame Nkrumah confer at Sanoquelli, Liberia; communiqué calls for 1960 conference to set up "Community of African states," **July 16–19**

WIDE WORLD

ACCIDENTS AND DISASTERS—Mourners gather around coffins of victims of disastrous dam burst, December 2, near Fréjus in the French Riviera. Flood killed more than 400 persons.

Leaders of 9 independent African nations meet in Monrovia, Liberia, on African problems; call for recognition of Algerian rebel regime, **Aug. 4–8**

AIR CRASHES—See ACCIDENTS AND DISASTERS

AIR FORCE, U.S.—See MISSILES AND ROCKETS; SPACE FLIGHT; UNITED STATES—*Armed Forces*

ALABAMA—See NEGROES, AMERICAN

ALASKA
Becomes 49th state of Union, **Jan. 3**

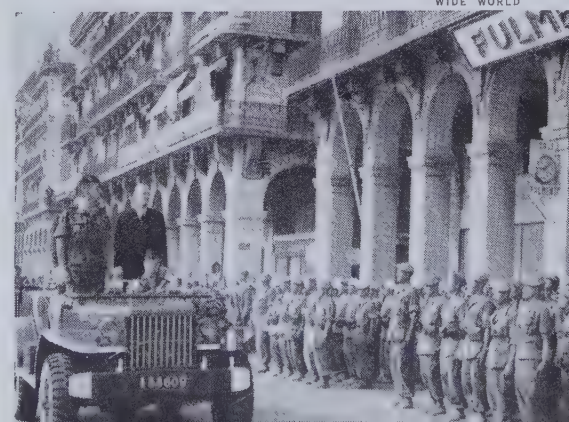
ALBANIA—See COMMUNISM; KHRUSHCHEV

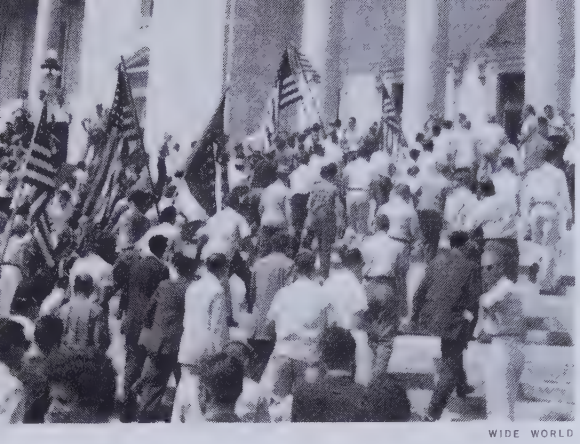
ALCORN, Meade—See REPUBLICAN PARTY

ALGERIA—See also FRANCE
Several thousand imprisoned nationalists are freed in clemency move by French cabinet, **Jan. 13**
French Premier Debré, arriving in Constantine on 3-day visit, pledges Algeria will never be separated from France, **Mar. 22**
Municipal elections begin; nationalist terrorists kill 8 persons and kidnap over 20, **Apr. 19**
Grand electors chose 32 senators (20 Moslems, 12 Europeans) for French Senate; moderates and liberals victorious over rightist extremists, **May 31**
French forces begin large-scale offensive in Kabylia region, **July 22**
French President de Gaulle, in Paris address, offers Algerians choice of independence, integration with France, or autonomous federal regime associated with France, **Sept. 16**
Rebel provisional regime, in statement from Tunis, states willingness to discuss conditions of cease-fire and Algerian self-determination, but insists that it be

ALGERIA—Gen. Jacques Massu (l.) and Paul Delouvrier, French delegate general, stand in military vehicle as they inspect Moslem troops in Algiers, May 13—the first anniversary of uprising which led to de Gaulle's return to power. In January 1960, Massu's dismissal as Algiers region commander sparked revolt of European settlers in the city.

WIDE WORLD





WIDE WORLD

ARKANSAS—Segregationists demonstrate at the state capitol in Little Rock, August 12, as public high schools reopened in the city with six Negro students enrolled.

regarded as spokesman for Algerians until they have had chance to vote, **Sept. 28**
Rebel provisional regime accepts truce talks, but proposes that Ahmed Ben Bella and four other rebel leaders imprisoned in France since 1956 serve as rebel delegates to talks, **Nov. 20**

AMBASSADORS—See UNITED STATES—*Appointments and Resignations*

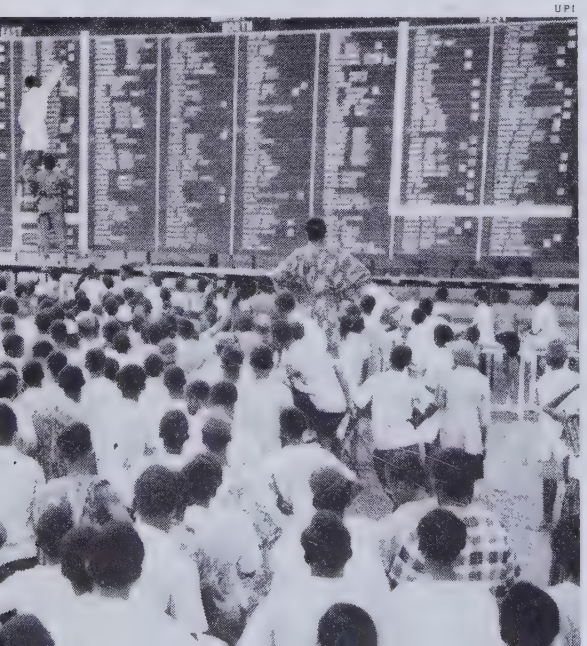
AMERICAN NATIONAL EXHIBITION—See also NIXON
Closes after six-week run in Moscow, having been seen by about 2,700,000 persons, **Sept. 4**

ANTARCTICA
Twelve nations, including U.S. and USSR, sign treaty in Washington to preserve Antarctica for scientific and other peaceful purposes, and to bar military activity, including atomic tests, **Dec. 1**

ARAB LEAGUE
Council, meeting in Cairo, warns Rumania, Hungary, and Poland against permitting Jewish emigration to Israel, **Mar. 9**
Political Committee, meeting in Beirut, Lebanon, seeks to end rift between Iraq and UAR, **Apr. 2–7**
Council, meeting in Casablanca, Morocco, backs Suez blockade of Israel and Arab economic boycott against Israel, **Sept. 1–8**

ARGENTINA—See also FRONDIZI
Federal police, supported by tanks, smash sitdown strike of meat-packing workers in Buenos Aires; Peronist unions call national strike, **Jan. 17**
General strike paralyzes economy; hundreds of strike leaders arrested, **Jan. 19**
Government places key industries under military control, **Jan. 20**
General strike collapses in face of strong government measures, **Jan. 22**

BRITISH WEST AFRICA—Voters in Lagos, Nigeria, inspect results of December 12 election for federal legislature. Nigeria is due to gain independence in October 1960.



UPI

Peronists and Communists riot in Buenos Aires in protest against austerity program, **Apr. 3**
Cabinet of President Frondizi resigns under pressure from army and navy leaders, **June 22**
Frondizi, acceding to army pressure, reinstates Gen. Carlos Toranzo Montero, who was relieved (Sept. 2) as commander in chief, **Sept. 4**
General strike by some 2 million workers protests against austerity program, **Sept. 23–24**

ARGUS, Project—See ATOMIC ENERGY

ARKANSAS
Voters of Little Rock, in recall election, oust three Little Rock School Board members backed by Gov. Orval E. Faubus, **May 26**
Federal court in Little Rock holds that state law closing schools is unconstitutional, **June 18**
Central High School and Hall High, in Little Rock, reopen on desegregated basis, as police hold back demonstrating mobs, **Aug. 12**

ARMY, U.S.—See SPACE FLIGHT; UNITED STATES—*Armed Forces*

ATOMIC ENERGY—See also DISARMAMENT; UNITED STATES—*Armed Forces*
Soviet scientists announce that world's largest atom smasher has been put into operation at Dubna, USSR, **Jan. 23**
Project Argus, involving 3 nuclear detonations at 300-mile altitude in South Atlantic, revealed to have taken place on Aug. 27, Aug. 30, and Sept. 6, 1958; strong interference with radar and radio reported, **Mar. 18**
U.S. has highest concentration of radioactive strontium-90 in world, it is revealed by Joint Congressional Committee on Atomic Energy, **Mar. 21**
U.S. Atomic Energy Commission and National Academy of Sciences announce plans for new investigations of radiation peril in nuclear fall-out, **Mar. 24**
Savannah, first atomic-powered merchant ship, is launched at Camden, N.J., **July 21**
President Eisenhower creates Federal Radiation Council to establish standards of safety against radiation hazards, **Aug. 14**
International Atomic Energy Agency opens conference in Vienna, Austria, **Sept. 22**
France advises U.N. of its intention to conduct nuclear test explosion unless U.S., Britain, and USSR agree to "renounce their nuclear armament," **Nov. 4**
U.S. and USSR sign agreement in Washington for co-operation in nuclear research, **Nov. 24**

AUSTRALIA—See also MENZIES
Announces agreement with USSR to restore diplomatic relations (broken off in 1954), **Mar. 16**
Viscount Dunrossil is named governor general by Queen Elizabeth II, **Nov. 12**

AUSTRIA—See also ITALY
General elections result in gains for Socialists, although Chancellor Julius Raab's People's Party retains lead in National Assembly, **May 10**
Raab heads new coalition cabinet of People's Party and Socialists, **July 16**
March staged in Austrian Tirol protests alleged Italian violation of rights of Austrian Tirolese in South Tirol, **Sept. 13**

AVIATION—See ACCIDENTS AND DISASTERS

AYUB KHAN, Mohammed—See PAKISTAN

BAGHDAD PACT—See CENTRAL TREATY ORGANIZATION

BANDARANAIKE, S. W. R. D.—See CEYLON

BASEBALL—See SPORTS

BATISTA, Fulgencio
Resigns as president of Cuba and flees to Dominican Republic, **Jan. 1**
Arrives in Lisbon for exile in Portugal, **Aug. 20**

BAUDOUIN I, King of the Belgians—See also BELGIAN CONGO; BELGIUM
Arrives in Washington on 3-week tour of U.S., **May 11**

BEATRIX, Princess of the Netherlands
Arrives in New York on 11-day visit to U.S., **Sept. 11**

BELGIAN CONGO—See also BELGIUM
Anti-European rioting in Léopoldville by Africans demanding independence results in 71 Africans killed, **Jan. 4–5**
Clashes between Belgian-led troops and native nationalists in Stanleyville result in over 70 persons killed, **Oct. 30–31**
King Baudouin I arrives in Stanleyville on 2-week tour of Belgian Congo, **Dec. 17**
Local elections take place as first step in projected program for self-rule; nationalist boycott is effective in Léopoldville, **Dec. 20**
Five nationalist parties, meeting in Kisantu, demand independence from Belgium, **Dec. 24**

BELGIUM—See also BAUDOUIN I; BELGIAN CONGO
Announces program toward gradual establishment of self-rule in Belgian Congo, **Jan. 13**
Strike of coal miners ends after 12 days, as unions accept plan for resettling miners of mines to be closed as uneconomical, **Feb. 24**
King Baudouin I returns to Brussels, after 3-week tour of U.S., **June 1**

BEN-GURION, David—See also ISRAEL
Heads new Israeli coalition cabinet, **Dec. 16**

BERLIN—See GERMANY; KHRUSHCHEV

BETANCOURT, Romulo—See VENEZUELA
BOHLEN, Charles E.
Recalled as ambassador to Philippines to serve as special assistant to secretary of state, **Sept. 21**
BOLIVIA
Anti-American riots break out in La Paz, Cochabamba, and Oruro, **Mar. 4**
Uprising in La Paz by rightist Bolivian Socialist Falange Party is crushed by militia; at least 22 persons killed, **Apr. 19**
BOURGUIBA, Habib—See also TUNISIA
Re-elected president of Tunisia, **Nov. 8**
BOXING—See SPORTS
BRAZIL
Storms cause heavy flooding in southern Brazil; severe crop and livestock damage reported, **Apr. 13–21**
Rhinoceros wins protest vote (later disqualified) in São Paulo municipal election, **Oct. 4**
Anti-government revolt by about a dozen air force officers fails, **Dec. 3–4**
BRITISH CAMEROONS
Voters, in plebiscite, choose to continue as U.N. trusteeship rather than become part of Northern Nigeria, **Nov. 7**
BRITISH EAST AFRICA
Sir Patrick Renison named to succeed Sir Evelyn Baring as governor of Kenya, **Sept. 16**
Tanganyika will receive internal self-government in 1960, Gov. Sir Richard Turnbull announces, **Dec. 15**
BRITISH SOMALILAND—See ETHIOPIA
BRITISH WEST AFRICA
Northern Nigeria obtains internal self-rule, **Apr. 15**
Federal elections take place in Nigeria; tribal clashes and other disorders occur in Calabar Province, **Dec. 12**
Nigerian Prime Minister Alhaji Abubakar Tafawa Balawa, leader of victorious Northern Peoples Congress, announces 17-member cabinet, **Dec. 20**
BUDGET, U.S.
In budget message to Congress, President Eisenhower calls for spending of $77,030 million in 1960 fiscal year against estimated revenue of $77,100 million, **Jan. 19**
BULGARIA
Concludes agreement with U.S. for resumption of diplomatic relations (broken off in 1950), **Mar. 27**
Names Peter Voutov as minister to U.S., which designates Edward Page, Jr., as envoy to Sofia, **Nov. 23**
BURMA
President Tito of Yugoslavia visits Burma, **Jan. 8–9**
Premier Ne Win discusses border problems in Karachi, Pakistan (**Oct. 6–8**) and New Delhi, India (**Oct. 8–9**)

CAMEROONS—See BRITISH CAMEROONS; FRENCH CAMEROONS
CANADA—See also DIEFENBAKER; ELIZABETH II; ST. LAWRENCE SEAWAY AND POWER PROJECT
Gov. Gen. Vincent Massey, in address at opening of Parliament in Ottawa, pledges Canadian support of Western policy to maintain freedom of West Berlin, **Jan. 15**
Arnold D. P. Heeney named ambassador to U.S., **Jan. 17**
Secretary of State for External Affairs Sidney E. Smith dies in Ottawa, **Mar. 17**
Signs pact with U.S. for defense cooperation in sphere of atomic energy, **May 22**
Howard Green named secretary of state for external affairs, **June 4**
Queen Elizabeth II and Prince Philip arrive at St. John's, Newfoundland, to begin 6-week tour of Canada, **June 18**
Prime Minister Diefenbaker and U.S. Secretary of State Herter confer in Ottawa on forthcoming East-West talks at Geneva, **July 11**
Queen Elizabeth II approves appointment of Maj. Gen. George P. Vanier as governor general, **Aug. 1**
Quebec Premier Maurice Duplessis dies in Schefferville, Quebec, aged 69, **Sept. 7**
Paul Sauvé sworn in as Quebec premier, **Sept. 11**
Vanier is installed as governor general, **Sept. 15**
Delegation headed by External Affairs Secretary Green meets with U.S. delegation at Camp David, Md.; agreement reached to station U.S. nuclear weapons at defense bases in Canada, **Nov. 8–9**
CASTRO, Fidel—See also CUBA
Rebel forces take over in Havana, following ouster of Batista regime; Castro, in Santiago de Cuba, names Dr. Manuel Urrutia Lleo as provisional president of Cuba, **Jan. 2**
Named by President Urrutia as head of Cuban armed forces, **Jan. 3**
Makes triumphal entry into Havana, **Jan. 8**
In address to mass rally in Havana, defends executions of war criminals of Batista regime and says Cuba owes U.S. no explanations, **Jan. 21**
Takes office as premier of Cuba, **Feb. 16**
Arrives in Washington on 11-day unofficial visit to U.S., **Apr. 15**
Resigns as premier, charging President Urrutia with near-treasonable acts, **July 17**
Resumes premiership, **July 26**
At Havana mass rally, denounces U.S. for allegedly permitting take-off from U.S. territory of planes which bombed Cuba on Oct. 21, **Oct. 26**

UPI

CANADA—Queen Elizabeth II is presented with flowers as she visits a school during tour of Quebec City, June 23.

CENTRAL AFRICAN REPUBLIC
Adopts new constitution as autonomous republic of French Community, **Feb. 9**
CENTRAL TREATY ORGANIZATION—See also IRAQ
Council of Middle East Treaty Organization (Baghdad Pact) meets in Karachi, Pakistan; communiqué warns of continuing danger of international communism in Middle East, **Jan. 26–28**
Iran, Turkey, and Pakistan sign separate defense pacts with U.S. in Ankara, Turkey, providing for U.S. aid in event of aggression, **Mar. 5**
Secretariat of Middle East Treaty Organization announces members' decision to change name to Central Treaty Organization (CENTO), **Aug. 19**
Council, meeting in Washington, warns against Soviet propaganda campaign against Iran, **Oct. 7–9**
CEYLON
Prime Minister S. W. R. D. Bandaranaike dissolves coalition government and forms new regime solely of members of his Freedom Party, **June 9**
Bandaranaike dies in Colombo of wounds inflicted by assassin, **Sept. 26**
Wijayananda Dahanayake becomes premier, **Sept. 26**
Parliament is dissolved and new elections are set for 1960, after Dahanayake government barely survives confidence vote, **Dec. 5**
CHAD
Adopts constitution as autonomous republic of French Community, **Mar. 31**
François Tombalbaye takes office as premier, **June 18**
CHICAGO
Democrats sweep municipal elections; Mayor Richard J. Daley and other officials re-elected, **Apr. 7**
Queen Elizabeth II and Prince Philip visit city, **July 6**
CHILE—See ORGANIZATION OF AMERICAN STATES
CHINA—See also CHOU EN-LAI; INDIA; TIBET
Communist Premier Chou En-lai and Soviet Premier Khrushchev sign agreement in Moscow for Soviet aid to China totaling 5 billion rubles in next 8 years, **Feb. 7**
Tibetans clash with Communist troops in Lhasa, **Mar. 13**
Premier Chou dissolves Tibetan regime headed by Dalai Lama; orders exercise of rule by preparatory committee for Tibetan Autonomous Region, headed by Panchen Lama, **Mar. 28**

CASTRO—Cuban Premier Fidel Castro is greeted at Washington airport, April 15, as he arrives for speaking tour.

WIDE WORLD

WIDE WORLD

CHICAGO—Stepping ashore at lakeside dock on July 6, Queen Elizabeth II is welcomed by Illinois Governor William G. Stratton, while Mrs. Stratton waits to present roses.

Fighting has erupted between Tibetan rebels and Chinese Communist forces in Tsinghai Province and Sikang area, New Delhi reports, **Apr. 9**

Communist forces have dispersed rebels in southeast Tibet, killed or captured some 2,000, and sealed border to India, Peking reports, **Apr. 23**

Liu Shao-chi is elected chairman of Chinese People's Republic, succeeding Mao Tse-tung, by National People's Congress in Peking, **Apr. 27**

Five Communists jets have been shot down in clashes near Matsu, Nationalists report in Taiwan, **July 5**

Statement by Central Committee of Communist Party declares that 1958 production figures were greatly overstated; grain output was 250 million metric tons instead of 375 million, **Aug. 26**

Peking government, in note to India, accuses India of aggression in border areas occupied by Chinese troops and claimed by India, **Sept. 3**

Peking announces changes in top military leadership; Marshal Lin Piao named as minister of defense and Marshal Lo Jui-ching as army chief, **Sept. 17**

Communist forces in Ladakh, India, release 10 Indian border policemen captured on Oct. 20, **Nov. 14**

Henry Pu Yi, former emperor of China and Japanese puppet state of Manchukuo, has been pardoned, following imprisonment as war criminal, Peking announces, **Dec. 4**

CHOU EN-LAI—See also CHINA; NEHRU

In address at opening of Chinese National People's Congress in Peking, says China scored huge economic gains in 1958; denounces U.S. policy as militaristic; says Tibetan Dalai Lama was abducted, **Apr. 18**

In message to Indian Prime Minister Nehru, charges India with "trespassing" in frontier areas, but calls for friendly negotiations to settle dispute, **Sept. 9**

In report to committee of National People's Congress, urges peaceful settlement of border dispute with India, but rejects McMahon Line as determining border, **Sept. 11**

In letter to Nehru, proposes armed forces of India and China withdraw 20 kilometers from border and that a conference be held on boundary problem, **Nov. 7**

In letter to Nehru, proposes meeting on December 26 to discuss border issue, **Dec. 17**

CHURCHILL, Winston

Visits President Eisenhower at the White House, **May 4–7**

Celebrates 85th birthday, **Nov. 30**

CHINA—Tibetans surrender arms in their capital at Lhasa after armed revolt, beginning March 13, was crushed by Chinese Communists troops. The Dalai Lama fled to India.

SOVFOTO

CIVIL LIBERTIES—See ARKANSAS; CIVIL RIGHTS COMMISSION; NEGROES; SUPREME COURT

CIVIL RIGHTS COMMISSION—See also UNITED STATES—*Congress*

In report to President Eisenhower, recommends federal action, including appointment of temporary federal registrars, to ensure Negro voting rights in certain sections of South, **Sept. 7**

COLOMBO PLAN

Eleventh annual conference is held in Jakarta, Indonesia; endorses plans for expanded economic aid to non-Communist Southeast Asian countries, **Oct. 26–Nov. 6**

COMMUNISM—See also SUPREME COURT and individual nations of Communist bloc

Foreign ministers of Warsaw Pact nations and Communist China confer in Warsaw, Poland (**Apr. 27–28**), on policy in forthcoming East-West foreign ministers talks; communiqué notes improved prospects of easing international tension, **Apr 29**

Council for Mutual Economic Assistance (USSR, Poland, Czechoslovakia, Hungary, Rumania, Bulgaria, and Albania) meets in Tiranë, Albania; outlines measures for further economic integration and speed-up of industrial development, **May 13–16**

International Youth Festival takes place in Vienna, Austria, **July 26–Aug. 4**

U.S. Court of Appeals in Washington rules that Communist Party must register with government as agent of USSR, **July 30**

U.S. Communist Party holds convention in New York; Gus Hall elected general secretary, **Dec. 10–14**

CONGO, Republic of

Rival political factions riot in Brazzaville; over 120 persons killed; French troops, called in by Premier Fulbert Youlou, re-establish order, **Feb. 16–21**

Adopts constitution as autonomous republic of French Community, **Feb. 23**

CONGRESS, U.S.—See UNITED STATES—*Congress*

COSTELLO, Frank

Deprived of U.S. citizenship for concealing bootlegging activities when naturalized in 1925, **Feb. 20**

COUNCIL FOR MUTUAL ECONOMIC ASSISTANCE—See COMMUNISM

CRANBERRIES

Secretary of Health, Education, and Welfare Flemming warns public that some cranberries from Pacific Northwest have been contaminated with weed-killer which produced cancer in rats, **Nov. 9**

CUBA—See also CASTRO; UNITED STATES—*Foreign Affairs*

Regime of President Fulgencio Batista falls and Batista flees to Dominican Republic; rebels under Fidel Castro move to take power, **Jan. 1**

Castro forces take over Havana; Castro, in Santiago de Cuba, names Dr. Manuel Urrutia Lleo as provisional president, **Jan. 2**

Urrutia names Castro as head of armed forces, **Jan. 3**

Urrutia takes up duties in Havana; names Dr. José Miro Cardona as premier, **Jan. 5**

Urrutia dissolves Congress, **Jan. 6**

New government recognized by U.S., **Jan. 7**

Castro makes triumphal entry into Havana, **Jan. 8**

Maj. Jesús Sosa Blanco, head of anti-Castro operations in Oriente Province during rebellion, sentenced to death, following trial in Havana Sports City Stadium, **Jan. 23**

Urrutia and cabinet approve Fundamental Law of the Republic (effective pending new elections), **Feb. 8**

Premier José Miro Cardona and cabinet resign, **Feb. 13**

Castro takes office as premier, **Feb. 16**

Major Sosa Blanco executed after retrial, **Feb. 18**

Castro orders end to war crimes trials by military courts; remaining cases to go before civil courts (war crimes executions unofficially estimated to total 621), **May 15**

Castro's agrarian reform law, providing for state expropriation of large landholdings, is promulgated, **June 4**

Government takes over 2,357,600 acres of ranch land in Camaguey Province, **June 25**

Severs diplomatic relations with Dominican Republic, **June 26**

Maj. Pedro L. Díaz Lanz, chief of air force, resigns, charging Communist influence in armed forces and government, **June 30**

Castro resigns as premier, charging near-treasonable acts by President Urrutia; Urrutia resigns, **July 17**

Dr. Osvaldo Dorticós Torado is inducted as president; cabinet asks Castro to remain as premier, **July 18**

Castro resumes premiership, **July 26**

Some 1,000 persons reported arrested as anti-Castro plot is crushed, **Aug. 10**

Force of counter-revolutionaries reported fighting government troops in Las Villas Province, **Aug. 12**

Castro states that counter-revolution has been crushed, **Aug. 13**

Maj. Raúl Castro is given direct control of armed forces, **Oct. 16**

Over 300,000 persons stage protest demonstration in Havana against "aggression" from U.S., **Oct. 26**

In note to U.S., rejects U.S. note of Oct. 27 protesting Cuban hostility; lists grievances against U.S. and calls for change in U.S. policy toward Cuba, **Nov. 13**

WIDE WORLD

DULLES—(*Left*) Former Secretary of State John Foster Dulles gestures from his wheel chair at Walter Reed Hospital during visit of President Eisenhower and Sir Winston Churchill, May 5. (*Right*) Body of Dulles, who died on May 24, is borne on caisson to Arlington National Cemetery. In background, across Arlington Memorial Bridge, is Lincoln Memorial.

CYPRUS
- Greek Premier Constantine Karamanlis and Turkish Premier Adnan Menderes confer in Zurich, Switzerland; reach agreement on republican status for Cyprus, **Feb. 5–11**
- Heads of governments of Britain, Greece, and Turkey, and leaders of Greek and Turkish Cypriotes, confer in London; sign agreement to constitute Cyprus an independent republic, **Feb. 17–19**
- British authorities end 4-year state of emergency in Cyprus; release over 900 political prisoners, **Feb. 22**
- Archbishop Makarios III arrives in Nicosia, after 3-year exile, **Mar. 1**
- Gov. Sir Hugh Foot announces 12-man provisional cabinet, with Makarios as foreign minister, **Apr. 5**
- Makarios is elected first president of republic by Greek Cypriotes, **Dec. 13**

CZECHOSLOVAKIA
- Communist Party Central Committee introduces unified price system and increases prices on agricultural products to spur farm output, **June 19**

DAHOMEY—See also MALI FEDERATION
- Adopts constitution as autonomous republic of French Community, **Feb. 14**

DALAI LAMA—See also CHINA; TIBET
- Enters India, seeking asylum from Chinese Communists, **Mar. 31**
- In statement at Tezpur, India, says Chinese Communists violated all pledges of Tibetan autonomy contained in Sino-Tibetan agreement of 1951, and that he left Tibet of his own accord, **Apr. 18**
- In cablegram to U.N. Secretary General Hammarskjöld, calls for immediate U.N. intervention against Chinese Communist action in Tibet, **Sept. 9**

DEBRÉ, Michel—See also FRANCE
- Takes office as premier of France, **Jan. 10**
- On arrival in Algiers, says French sovereignty will continue in Algeria, **Feb. 8**
- Confers with British Prime Minister Macmillan in London on Anglo-French policy regarding issues in Europe, Africa, and Middle East, **Apr. 13–14**

DE GAULLE, Charles—See also FRANCE
- Takes office as president of France for 7-year term, **Jan. 8**
- Confers with U.S. Secretary of State Dulles in Paris on Berlin crisis, **Feb. 6**
- Confers with West German Chancellor Adenauer in Paris on Berlin, **Mar. 4**
- Confers with British Prime Minister Macmillan in Paris on Berlin, **Mar. 9–10**
- In Paris press conference, backs summit talks on German problem; calls for East-West program to spur economic development of impoverished areas of world, **Mar. 25**
- Arrives in Milan on 5-day state visit to Italy, **June 23**
- In talks with President Gronchi and other Italian leaders, reportedly calls for western Mediterranean alliance, including France, Italy, Spain, and Morocco, **June 24**
- Has audience with Pope John XXIII in Vatican, **June 27**
- Confers with President Eisenhower in Paris on policy regarding Berlin and other problems, **Sept. 2–3**
- In Paris address, offers Algerians choice of independence, integration with France, or federal autonomy in close union with France, **Sept. 16**
- Confers with Chancellor Adenauer in Paris, **Dec. 1–2**
- In address at Saint-Louis, Senegal, says Mali Federation will accede to full sovereignty with aid and accord of France, **Dec. 12**
- Confers with President Eisenhower in Paris on France's role in NATO, **Dec. 19**
- Confers with Eisenhower, Macmillan, and Adenauer in Paris and Rambouillet on 4-power summit conference in 1960, **Dec. 19–21**

DEMOCRATIC PARTY
- National Committee announces decision to hold 1960 convention at Los Angeles, **Feb. 27**
- Democratic Advisory Council concludes 3-day conference in New York, with most of the leading candidates for the 1960 presidential nomination—including Adlai E. Stevenson, Sen. Hubert H. Humphrey, Sen. John F. Kennedy, and Sen. Stuart Symington—in attendance, **Dec. 7**

DESEGREGATION—See ARKANSAS; NEGROES; VIRGINIA

DE VALERA, Eamon—See also IRELAND
- Elected president of Ireland, **June 17**

DIEFENBAKER, John
- Confers with British Prime Minister Macmillan in Ottawa on policy for easing world tensions, **Mar. 18**
- Temporarily assumes foreign affairs portfolio, following death of Sidney E. Smith, **Mar. 17–June 4**

DIRKSEN, Everett M.
- Chosen as Republican leader in Senate, **Jan. 7**

DISARMAMENT—See also ANTARCTICA; EISENHOWER; KHRUSHCHEV; UNITED NATIONS—*General Assembly*
- White House statement says new data from U.S. nuclear tests indicate greater difficulty in detection of underground explosions than had been believed; expresses doubt that methods recommended by 1958 Geneva conference of East-West scientists could pinpoint underground explosions, **Jan. 5**
- U.S., in note to USSR, rejects Soviet proposal for immediate resumption of talks on reducing danger of surprise attack, **Jan. 15**
- At Geneva talks on banning nuclear tests, British Chief Delegate David Ormsby-Gore presents West's plan for creation of international staff to detect nuclear tests, **Jan. 26**
- At Geneva talks, Soviet Chief Delegate Semyon K. Tsarapkin rejects Ormsby-Gore's proposals, declaring presence of foreign observers would create friction and be harmful to state security, **Jan. 27**
- At Geneva talks, Tsarapkin presents list of major issues involving supervision of test ban; insists on USSR-British-U.S. unanimity of action, **Jan. 30**
- At Geneva talks, U.S. and British delegates reject Soviet demand for unanimity as making possible a paralysis of inspection machinery, **Feb. 2**
- U.S. Chief Delegate James J. Wadsworth presents U.S. plan for step-by-step ban on nuclear weapons tests; first step would be controlled ban on tests in lower atmosphere and under water, **Apr. 13**
- In Geneva talks, USSR agrees to West's proposal for study by experts of problem of detecting nuclear tests in outer space, **June 15**
- U.S., British, and Soviet scientists, in report to Geneva conference on banning nuclear tests, recommend that satellites be used to detect nuclear explosions in outer space, **July 10**
- U.S. to extend suspension of nuclear weapons tests to end of 1959, State Department says, **Aug. 26**
- Britain announces continuation of suspension of nuclear tests, **Aug. 27**
- USSR states it will not conduct nuclear weapons tests as long as Western powers do likewise, **Aug. 28**
- U.S., Britain, France, and USSR announce establishment of 10-nation Disarmament Committee to negotiate on disarmament, **Sept. 7**
- British Foreign Secretary Lloyd presents to U.N. General Assembly a three-stage disarmament program for consideration by 10-nation group, **Sept. 17**
- At Geneva talks, USSR agrees to study on detection of underground nuclear explosions, **Nov. 24**
- U.S., Britain, and USSR agree in Geneva on plan for control organization to be established when treaty banning nuclear weapons tests is signed, **Nov. 30**
- At Geneva talks, West and East scientists disagree on controls for underground nuclear tests; talks recess until January 1960, **Dec. 19**

NEW YORK HERALD TRIBUNE (PHOTO BY JAMES KAVALLINES)

ECLIPSE—Solar eclipse of October 2, as it appeared over New York City. View is from New Jersey, across the Hudson.

DISCOVERER SATELLITES—See SPACE FLIGHT

DIXON-YATES CONTRACT
- U.S. Court of Claims in Washington upholds Dixon-Yates private power contract; assesses $1,867,545 in cancellation costs against government, **July 15**

DOMINICAN REPUBLIC—See also VENEZUELA
- Reports crushing invasion force supported by Cuba, **June 23**
- Minister of Labor Ramón Marrero Aristy dies under mysterious circumstances in burning car near Constanza, **July 17**

DULLES, John Foster
- Confers with Soviet First Deputy Premier Mikoyan in Washington on disarmament and other problems, **Jan. 5**
- On return to Washington following talks with British Prime Minister Macmillan in London (Feb. 4), French President de Gaulle in Paris (Feb. 6), and West German Chancellor Adenauer in Bonn (Feb. 7–8), says U.S. and Western allies have reaffirmed policy to stand firm against Soviet threat to West Berlin, **Feb. 9**
- Takes leave of absence for medical reasons, **Feb. 9**
- Has cancer, medical report reveals, **Feb. 14**
- Resignation as secretary of state is formally accepted by President Eisenhower, **Apr. 16**
- Commissioned by President Eisenhower as special presidential consultant on foreign affairs, **Apr. 23**
- Awarded Medal of Freedom by president, **May 20**
- Dies in Washington, D.C., aged 71, **May 24**

DUPLESSIS, Maurice—See CANADA

EARTH SATELLITES—See SPACE FLIGHT

EARTHQUAKES—See ACCIDENTS AND DISASTERS

ECLIPSE
- Total solar eclipse occurs, **Oct. 2**

EDUCATION—See also ARKANSAS; NEGROES; VIRGINIA
- President Eisenhower's Science Advisory Committee, in report, *Education for the Age of Science*, recommends doubling (at least) of annual investment in education, **May 23**
- U.S. Office of Education releases report of 11 educators who toured USSR, May 8–June 6, 1958; report says Russians have "grand passion" for education and are striving to outstrip U.S., **Sept. 5**

EGYPT—See UNITED ARAB REPUBLIC

EISENHOWER, Dwight D.
- Signs document proclaiming Alaska 49th state of Union; signs executive order redesigning U.S. flag to contain 49 stars, **Jan. 3**
- In State of Union message, calls for long-term planning for national security and growth, **Jan. 9**
- Confers with Soviet First Deputy Premier Mikoyan in Washington on Germany, disarmament, and other world problems, **Jan. 17**
- In budget message to Congress, calls for $77,030 million in federal spending for 1960 fiscal year, with revenue estimated at $77,100 million, **Jan. 19**
- In annual Economic Message to Congress, stresses need for wage restraint by unions and balanced budget to maintain price stability; says most of ground lost during recession has been regained, **Jan. 20**
- In message to Congress, presents 20-point program to protect labor, management, and public against abuses in unions, **Jan. 28**
- In message to Congress, calls for food-for-peace plan to replace farm price support system, **Jan. 29**
- In report to Congress on U.S. space exploration, outlines 10-year program of space probes, **Feb. 2**
- Presents 7-point civil rights program to Congress, calling for federal support of school integration, **Feb. 5**
- Visits Mexican President López Mateos at Acapulco, Mexico; agreement reached on construction of Diablo Dam and on U.S.–Mexican collaboration on economic problems, **Feb. 19–20**
- At press conference, says that since U.S. would not fight ground war against USSR in Europe, there is no need to increase U.S. forces there; does not rule out nuclear war if hostilities result from Berlin crisis, **Mar. 11**
- In message to Congress, calls for appropriation of $3,930 million for foreign aid under Mutual Security Program for fiscal year 1960, **Mar. 13**
- In address to nation, says U.S. will not forsake people of West Berlin; would be willing to participate in summit talks if preliminary foreign ministers negotiations indicated possibility of fruitful summit outcome, **Mar. 16**
- Signs legislation for admission of Hawaii as 50th state of Union, **Mar. 18**
- Confers with British Prime Minister Macmillan at Camp David, Md., and in Washington, on problem of Germany and possibility of summit conference, **Mar. 20–23**
- Signs bill for extension of Selective Service Act for 4 years, **Mar. 23**
- In address to opening session of North Atlantic Council in Washington, stresses need for Allied unity in face of Soviet pressure, **Apr. 2**
- In address at Gettysburg, Pa., says U.S. foreign aid is essential to prevent Communist domination of world, **Apr. 4**
- Names 34-member advisory committee to aid in planning national cultural center in Washington, **Apr. 11**
- In letter, calls upon Soviet Premier Khrushchev to withdraw Soviet objection to "on-site inspection" for nuclear test ban, or, as first step, to accept ban of tests in atmosphere to height of 50 kilometers, **Apr. 13**
- In letter to Khrushchev, calls for extension to higher altitudes of first-phase atmospheric agreement on nuclear tests, **May 5**
- In special message to Congress, calls for legislation on interstate highway program, home building, and wheat-surplus problem, **May 13**
- Asks Congress to pass legislation to abolish interest ceilings on savings bonds and Treasury bonds, and to increase limit on national debt to $295 billion, **June 8**
- Asks Congress to put foreign military aid on permanent legislative basis, **June 24**
- Vetoes bills to control prices and output of wheat and tobacco, **June 25**
- With Queen Elizabeth II, dedicates St. Lawrence Seaway at St. Lambert, Quebec, **June 26**
- Confers with Soviet First Deputy Premier Frol R. Kozlov in Washington on Berlin crisis and possibility of summit meeting, **July 1**
- Vetoes omnibus housing bill, **July 7**
- Proclaims Captive Nations Week (beginning July 19) and signs congressional resolution for annual observance, **July 17**
- In radio-television address, calls for labor-reform bill to eliminate corruption from labor-management field, **Aug. 6**
- Signs bill for U.S. participation in Inter-American Development Bank, **Aug. 7**
- Signs $39,228,239,000 defense appropriations bill, **Aug. 18**
- Committee to Study the United States Military Assistance Program, in final report to president, warns against cut in foreign military aid, **Aug. 20**
- Proclaims Hawaii 50th state of Union, **Aug. 21**
- Arrives in Bonn; assures West Germans of U.S. determination to uphold freedom of West Berlin, **Aug. 26**
- Confers with West German Chancellor Adenauer in Bonn on forthcoming visit to U.S. by Soviet Premier Khrushchev; arrives in London, **Aug. 27**
- Arrives in Balmoral, Scotland, and is received by Queen Elizabeth II, **Aug. 28**
- Has vetoed $1.2 billion civil works appropriation bill, White House announces, **Aug. 28**
- Ends visit with Queen Elizabeth II; confers with Prime Minister Macmillan outside London on tactics for negotiating with Communists, **Aug. 29**
- Appears with Macmillan on London radio-television broadcast; says there must be promise of fruitful results if there is to be a summit conference, **Aug. 31**
- Concludes talks with Macmillan; arrives in Paris, **Sept. 2**
- Confers with French President de Gaulle in Paris on policy regarding Berlin and other East-West issues, **Sept. 2–4**
- Confers with Italian Premier Segni in Paris, **Sept. 3**
- Vetoes second housing bill, **Sept. 4**
- Returns to Washington after visits to West Germany, Britain, and France, **Sept. 7**

Vetoes second public works bill calling for expenditure of $1,185 million in civil works projects, **Sept. 9**
Signs Labor-Management Reporting and Disclosure Act of 1959, placing new restrictions on unions and providing for protection of union members' democratic rights, **Sept. 14**
Signs bill exempting radio and television stations and networks from obligation to grant "equal time" to all political candidates in news broadcasts, **Sept. 14**
Approves legislation permitting rise in interest rates of U.S. savings bonds, **Sept. 22**
Signs housing bill providing for construction of 37,000 units of public housing, and $650 million, one-year urban renewal program, **Sept. 23**
Confers with Soviet Premier Khrushchev at Camp David, Md., and Gettysburg, Pa.; agreement reached for new talks on Berlin, expansion of U.S.–USSR exchange program, and on other matters, **Sept. 25–27**
At Washington news conference, says talks with Khrushchev have removed threat to negotiated settlement on Berlin, as well as barriers against Big Four summit meeting, **Sept. 28**
Signs bill appropriating $3,225,813,000 for foreign aid, **Sept. 28**
In talks with steel industry and union leaders, calls for resumption of stalled negotiations on ending strike, **Sept. 30**
Signs executive order invoking Taft-Hartley Act, in effort to end dock strike, **Oct. 6**
Creates board of inquiry to report on steel strike, **Oct. 9**
In address at ground-breaking ceremonies for Eisenhower Presidential Library at Abilene, Kans., calls for all free nations to take part in program of development of underdeveloped areas, **Oct. 13**
Acts to transfer Army Ballistic Missile Agency to National Aeronautics and Space Administration, **Oct. 21**
Leaves Washington on 11-nation friendship tour; in departure message, says international disarmament based on "mutual verification" is first essential step in reduction of international tensions, **Dec. 3**
Confers with Italian President Gronchi and Premier Segni in Rome; communiqué says U.S. and Italy will pursue policies aimed at reducing armaments, **Dec. 4–5**
Received by Pope John XXIII in private audience at Vatican, **Dec. 6**
Confers with Turkish President Bayar and Premier Menderes in Ankara, **Dec. 6–7**
Confers with Pakistani President Mohammed Ayub Khan in Karachi, **Dec. 7–8**
Confers with King Muhammad Zahir Shah of Afghanistan and Prime Minister Prince Muhammad Da'ud in Kabul; arrives in New Delhi, India, and begins talks with Indian Prime Minister Nehru, **Dec. 9**
In address to Indian Parliament, says U.S. is committed to "ceaseless search" for ways to true disarmament, but will aid allies and friends to resist aggression, **Dec. 10**
Confers briefly with Iranian Shah Mohammed Riza Pahlavi and addresses Iranian Parliament in Teheran; arrives in Athens, Greece, **Dec. 14**
In address to Greek Chamber of Deputies, reaffirms Western pursuit of peace as based on military, economic, and spiritual strength, **Dec. 15**
Confers with Tunisian President Habib Bourguiba at La Marsa, **Dec. 17**
Confers with Macmillan, de Gaulle, and Adenauer in Paris and Rambouillet; communiqué announces invitation to Khrushchev to meet in Big Four summit conference in 1960, **Dec. 19–21**
Confers with Generalissimo Francisco Franco in Madrid, **Dec. 21**
Confers with Moroccan King Mohamed V in Casablanca; communiqué announces U.S. agreement to evacuate Moroccan military bases by end of 1963, **Dec. 22**
Returns to Washington, after 22,370-mile, 11-nation goodwill tour, **Dec. 22**
In Christmas message, calls on non-Communist world to join in long-term program of aid to peoples who need help, **Dec. 23**
In statement at Augusta, Ga., announces that U.S. reserves right to resume nuclear weapons tests after end of 1959, **Dec. 29**

ELECTIONS, U.S.
State and municipal elections held in U.S., **Nov. 3**

ELIZABETH II, Queen—See also CANADA
Arrives at St. John's, Newfoundland, to begin tour of Canada, **June 18**
With President Eisenhower, dedicates St. Lawrence Seaway at St. Lambert, Que., **June 26**
With Vice President Nixon, dedicates St. Lawrence hydroelectric power project at Massena, N.Y., **June 27**
Arrives in Chicago on brief sightseeing tour, **July 6**
Returns to London after 46-day tour of Canada, **Aug. 2**

EL SALVADOR
President José María Lemus discusses economic and other problems with President Eisenhower during visit to Washington, **Mar. 10–13**

ETHIOPIA
Emperor Haile Selassie negotiates settlement of dispute between Egyptian and Ethiopian branches of Coptic Church, during visit to UAR, **June 24–28**

WIDE WORLD

EISENHOWER—President Eisenhower (r.) confers with Secretary of State Herter before a cabinet meeting. The president named Herter on April 18 as successor to Dulles.

Haile Selassie obtains Soviet loan of 400 million rubles for Ethiopian economic development, during visit to USSR, **June 29–July 13**
Clashes between Somalis and Ethiopians along British Somaliland border have resulted in 26 killed, it is reported, **Dec. 10**

EUROPEAN ECONOMIC COMMUNITY
First stage in reduction of tariffs and other trade barriers among member nations goes into effect, **Jan. 1**

EUROPEAN FREE TRADE ASSOCIATION (OUTER SEVEN)
Ministers of Britain, Sweden, Norway, Austria, Denmark, Portugal, and Switzerland, meeting at Stockholm, Sweden, initial a convention establishing free trade area, **Nov. 20**

EUROPEAN MONETARY AGREEMENT
European Fund comes into operation, taking over assets of former European Payments Union, **Jan. 15**

EXPLORER SATELLITES—See SPACE FLIGHT
EXPLOSIONS—See ACCIDENTS AND DISASTERS

FAIRS—See AMERICAN NATIONAL EXHIBITION; SOVIET EXHIBITION OF SCIENCE, TECHNOLOGY, AND CULTURE
FEDERAL RADIATION COUNCIL—See ATOMIC ENERGY

FINLAND
Vieno Johannes Sukselainen forms Agrarian minority cabinet, **Jan. 13**
President Urho K. Kekkonen confers with Soviet Premier Khrushchev in Leningrad on Soviet-Finnish relations, during visit to USSR, **Jan. 22–25**

FIRES—See ACCIDENTS AND DISASTERS

FLAG, U.S.
President Eisenhower signs executive order redesigning flag to contain 49 stars, as Alaska becomes 49th state of Union, **Jan. 3**
New 49-star flag is raised officially for first time throughout nation, **July 4**
New flag (to become official on July 4, 1960) is unfurled, containing 50 stars, as Hawaii becomes 50th state of Union, **Aug. 21**

FLEMMING, Arthur S.—See CRANBERRIES
FLOODS—See ACCIDENTS AND DISASTERS
FOOTBALL—See SPORTS
FOREIGN AID—See EISENHOWER; UNITED STATES—*Congress*
FOREIGN MINISTERS CONFERENCE—See SUMMIT CONFERENCE
FORMOSA—See CHINA

FRANCE—West German Chancellor Adenauer (r.) is greeted on his arrival in Paris, December 1, by President de Gaulle. The two leaders discussed France's attitude toward NATO.

WIDE WORLD

FRANCE—See also ALGERIA; DE GAULLE; DISARMAMENT; FRENCH COMMUNITY; SUMMIT CONFERENCE
Gen. Charles de Gaulle takes office as president for 7-year term; names Michel Debré as premier, **Jan. 8**
Premier Debré and cabinet take office, **Jan. 10**
National Assembly and Senate of Fifth Republic convene for first time, **Jan. 15**
National Assembly approves Debré cabinet and program for reform of Algeria under French sovereignty, **Jan. 16**
Nine-man Constitutional Council, to decide on constitutionality of legislation, comes into existence, **Feb. 20**
Informs North Atlantic Council that portion of French Mediterranean fleet designated to come under NATO command in wartime will remain under French command, **Mar. 11**
Senate of Fifth Republic is chosen by grand electors; moderates in majority, **Apr. 26**
National Assembly votes to make Algerian budget a matter of assembly's legislation, **June 11**
Signs one-year monetary and trade agreements with Tunisia, **Sept. 5**
National Assembly, 441–23, backs de Gaulle's Algerian policy, **Oct. 16**
Advises U.N. of intention to conduct nuclear explosion unless other atom powers reject nuclear armaments, **Nov. 4**
National Assembly, 427–71, approves bill for state financial aid to Roman Catholic schools, **Dec. 24**
FRENCH CAMEROONS—See also UNITED NATIONS—*General Assembly*
Violence in Douala, prior to inauguration of independence (on Jan. 1, 1960), results in about 30 persons killed, including several Europeans, **Dec. 30–31**
FRENCH COMMUNITY—See also DE GAULLE; MALI FEDERATION
Premiers of 12 African autonomous republics confer with French President de Gaulle in Paris to organize Executive Council, **Feb. 3–4**
Seven-man Court of Arbitration is sworn in, **May 5**
Sahel-Bénin Union (loose administrative grouping of Ivory Coast, Upper Volta, Niger, and Dahomey) holds first meeting at Abidjan, Ivory Coast, **May 29–30**
Seven member states of former French West Africa sign agreement in Paris for customs union, **June 9**
Premiers of four former states of French Equatorial Africa meet at Brazzaville, Congo, to establish customs union, **June 23–24**
Senate is inaugurated in Paris, **July 15**
FRONDIZI, Arturo—See also ARGENTINA
Arrives in Washington on state visit to U.S., **Jan. 20**
In address to U.S. Congress, says Argentina needs credits and other aids to help establish sound economy, **Jan. 21**

GABON
Adopts constitution as autonomous republic of French Community, **Feb. 19**
GATES, Thomas S., Jr.
Resigns as secretary of navy, **Feb. 3**
Named deputy secretary of defense, **May 18**
Named secretary of defense, **Dec. 1**
GENEVA CONFERENCES—See DISARMAMENT; SUMMIT CONFERENCE
GEORGIA—See NEGROES
GERMANY—See also ADENAUER; EISENHOWER; KHRUSHCHEV; SAAR; SUMMIT CONFERENCE
West German government supports Western Big Three's rejection of Soviet proposals to constitute West Berlin a "free city," **Jan. 5**
East German Premier Otto Grotewohl ends 3-day visit to Cairo; UAR agrees to establish consular relations with East German regime, **Jan. 7**
Premier Grotewohl leaves India after 5-day visit, failing to persuade India to establish diplomatic relations with East Germany, **Jan. 16**

GHANA—On his 17-day visit to India, which concluded January 8, Prime Minister Nkrumah of Ghana (left) holds one of a series of conferences with Prime Minister Nehru.

UPI

Soviet Premier Khrushchev and East German leaders, in communiqué on talks in Berlin, pledge USSR and East Germany will seek German peace treaty; call for 6-power foreign ministers talks and summit conference, **Mar. 11**
West Germany, in note to USSR, rejects Soviet protest (Apr. 21) against West German rearmament and acquisition of nuclear arms, **May 9**
Christian Democratic Union, with some internal dissension, endorses Chancellor Adenauer's decision not to relinquish chancellorship, **June 5**
East German leaders visit USSR and confer with Soviet leaders (June 8–20); joint communiqué calls for conclusion of German peace treaty and warns that if Western powers bar treaty, East Germany will conclude separate peace with states willing to sign, **June 20**
Dr. Heinrich Luebke is elected president of West Germany by special electoral college, **July 1**
Luebke is sworn in as president of West Germany, succeeding Theodor Heuss, **Sept. 15**
West German Social Democrats adopt new political program dropping traditional Marxist aims, at party congress in Bad Godesberg, **Nov. 13–15**
Bonn government rejects Soviet protest note against West German rearmament with atomic weapons, **Dec. 15**
Synagogue at Cologne is defaced with anti-Semitic slogans; two members of right-wing German Reichs Party arrested, **Dec. 25**
GHANA
Prime Minister Kwame Nkrumah returns from 3-week visit to India and the UAR, **Jan. 12**
National Assembly adopts second 5-year development plan, involving outlay of about £G342 million and including Volta River hydroelectric project, **Mar. 5**
Prime Minister Kwame Nkrumah and Guinea President Sékou Touré sign draft agreement in Conakry, Guinea, for Union of Independent African States, **May 1**
GOLDFINE, Bernard
Given suspended sentence of one year in prison and $1,000 fine for contempt of Congress, by federal court in Washington, **July 24**
GOLF—See SPORTS
GOMUŁKA, Władysław—See POLAND
GREAT BRITAIN—See also CYPRUS; DISARMAMENT; ELIZABETH II; MACMILLAN; SUMMIT CONFERENCE
Annual White Paper on defense outlines program to equip armed forces with nuclear weapons, **Feb. 10**
House of Commons approves bill to suspend Malta's constitution and put island under rule of appointed governor's council, **Feb. 16**
Signs financial agreement with UAR in Cairo, ending dispute arising from 1956 nationalization of Suez Canal, **Feb. 28**
Announces that revolt of Oman tribesmen in Sultanate of Muscat and Oman has been quelled after nearly two years of sporadic fighting, **Apr. 10**
Announces that arms will be sold to Iraq, **May 11**
Announces plan for space research program, beginning with earth satellite, to be launched possibly with U.S. aid, **May 12**
Keel for first atomic submarine is symbolically laid at Barrow in Furness, **June 12**
Some 100,000 printing workers go on strike; most newspapers outside London halt publication, **June 20**
Printers strike ends, **Aug. 7**
Announces continued suspension of nuclear weapons tests, **Aug. 27**
Parliament is dissolved by Queen Elizabeth II, prior to elections, **Sept. 18**
Conservative Party wins overwhelming victory in elections, **Oct. 8**
Macmillan cabinet revisions announced: new appointments include Duncan Sandys as head of new Ministry of Aviation; Harold Watkinson as minister of defense; Viscount Hailsham as lord privy seal; Ian Macleod as colonial secretary; Edward Heath as minister of labor, **Oct. 14**
Re-establishes diplomatic relations with UAR, **Dec. 1**
GREECE—See also CYPRUS
Col. George Grivas, Cypriote underground leader, is given hero's welcome in Athens, **Mar. 17**
Premier Constantine Karamanlis confers with Turkish Premier Adnan Menderes in Ankara on Cyprus problem and other issues between Greece and Turkey, **May 7–9**
King Paul and Queen Frederika arrive in Rome on state visit to Italy, **May 19**
Athens welcomes President Eisenhower, **Dec. 14**
Eisenhower addresses Chamber of Deputies, **Dec. 15**
GREEN, Howard
Appointed Canadian secretary of state for external affairs, **Mar. 17**
GREEN, Theodore Francis
Resigns as chairman of Senate Foreign Relations Committee, **Jan. 30**
GROMYKO, Andrei A.—See SUMMIT CONFERENCE
GROTEWOHL, Otto—See GERMANY
GUATEMALA—See MEXICO
GUINEA—See also TOURÉ
Obtains formal recognition by France, **Jan. 15**

President Sékou Touré and Ghana Prime Minister Kwame Nkrumah sign draft agreement in Conakry for Union of Independent African States, **May 1**
Touré pays official visit to U.S., **Oct. 25–Nov. 9**
Touré confers with President Eisenhower in Washington; communiqué announces U.S.–Guinea cultural agreement, **Oct. 26–28**
Touré returns to Guinea after six-week world tour, including visits to U.S. and USSR, **Dec. 5**

HAILE SELASSIE I, Emperor—See ETHIOPIA

HAITI
Announces that rebel band of about 30 men landed near Les Irois on August 13, **Aug. 14**
Asks Council of Organization of American States to intervene in matter of invasion by rebels from Cuba, **Aug. 17**
Army announces that band of Cuban-based invaders has been wiped out, **Sept. 5**

HALLECK, Charles A.
Chosen Republican leader in House of Representatives, **Jan. 6**

HAMMARSKJÖLD, Dag—See also LAOS
On return to New York following conferences in Middle East, says he found "will to peace" among both Arab and Israeli leaders, **Jan. 16**
Confers with UAR leaders in Cairo on Suez Canal blockade of ships bearing Israeli cargo, **June 30–July 1**

HAWAII
U.S. House of Representatives completes congressional approval of bill for statehood, **Mar. 12**
President Eisenhower signs legislation for admission to Union, **Mar. 18**
Voters, by margin of over 18–1, approve statehood, **June 27**
Elections take place; William F. Quinn, Republican, elected governor, **July 28**
Proclaimed 50th state of Union by President Eisenhower in Washington; Quinn is sworn in as governor, **Aug. 21**
Senators Hiram Fong and Oren Long and Representative Daniel Inouye sworn in, in Washington, **Aug. 24**
Governor Quinn formally inaugurated, **Aug. 29**

HERTER, Christian A.—See also SUMMIT CONFERENCE
Becomes acting secretary of state because of illness of John Foster Dulles, **Feb. 10**
At opening session of North Atlantic Council in Washington, pledges full U.S. aid to defend NATO allies, **Apr. 2**
Named by President Eisenhower as secretary of state, **Apr. 18**
Sworn in as secretary of state, **Apr. 22**
Confers in Paris with foreign ministers of Britain, France, and West Germany on policy for forthcoming Big Four foreign ministers talks, **Apr. 29**
In nationwide radio-television address, warns against over-optimism on Big Four talks; says Western policy will be based on belief in necessity of German unification, desirability of arms controls, and determination to preserve freedom of West Berlin, **May 7**
In address to nation on Big Four foreign ministers talks, says USSR seeks to enslave West Berlin; holds talks made no progress, **June 23**
In visit to West Berlin, pledges continued defense by Allied troops; says West will not accept any Soviet deadline for Berlin solution, **July 25**
Attends conference in Santiago, Chile, of foreign ministers of 21 American nations, **Aug. 12–18**
In address to U.N. General Assembly, appeals for renewal of disarmament talks to prevent nuclear arms race and war, **Sept. 17**
In address to North Atlantic Council in Paris, stresses need for military integration in NATO; pledges U.S. will retain forces in Europe, **Dec. 15**

HOFFA, James
Denounced on 21 counts for abuse of union trust, in report to Senate by Select Committee on Improper Activities in the Labor or Management Field, **Aug. 4**

HONDURAS
Rebels in northwest provinces seize city of Santa Barbara, **Feb. 7**
Government forces retake Santa Barbara, **Feb. 9**
Army reports it has regained control of Tegucigalpa, after crushing attempted revolt, **July 14**

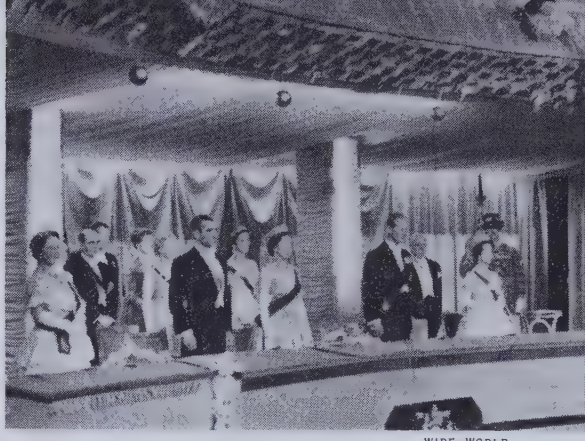
HORSE RACING—See SPORTS

HOUSING—See EISENHOWER; UNITED STATES—*Congress*

HUMPHREY, Hubert H., Jr.
Announces candidacy for Democratic presidential nomination, **Dec. 30**

HUNGARY—See also UNITED NATIONS—*General Assembly*
In note to U.S., proposes negotiations toward normalization of diplomatic relations, **Jan. 27**
Declares activities of U.S. legation in Budapest will be curbed, **Jan. 31**
At opening of Hungarian Communist Party Congress in Budapest, János Kádár, party secretary, says Soviet troops will remain in Hungary as long as international situation makes it necessary, **Nov. 30**
Communist Party approves second five-year plan (1961–65), adjourns; Kádár re-elected first secretary by new Central Committee, **Dec. 5**

HUSSEIN, King—See JORDAN



WIDE WORLD

GREAT BRITAIN—The shah of Iran, who arrived May 5 for a three-day state visit, attends a performance at the Royal Opera House, London, with the British royal family. Left to right in front row: Queen Mother Elizabeth, the shah, Queen Elizabeth, Prince Philip, Princess Margaret.

ICELAND
Olafur Thors, Independence Party leader, heads new coalition government, **Nov. 20**
U.S. to withdraw 1,200 troops from Icelandic bases in 1960, Washington reports, **Dec. 10**

INDIA—See also CHINA; CHOU EN-LAI; EISENHOWER; NEHRU; TIBET
All-India Congress Committee, meeting in Nagpur, adopts resolution calling for long-term transformation of villages into cooperatives, **Jan. 9**
Indira Ghandi elected president of Congress Party, **Feb. 2**
Announces one-year agreement with Pakistan on use of Indus River for irrigation, **Apr. 18**
Demonstrations against Communist regime in Kerala State result in 10 persons killed, **June 13–15**
Refuses to recognize Tibetan government-in-exile, headed by Dalai Lama, **June 30**
President Rajendra Prasad issues proclamation taking over state government of Kerala and ousting Communist regime, **July 31**
Prime Minister Nehru, in statement to lower house of Parliament, charges Chinese Communists with aggression in having penetrated Indian territory along Tibetan border, **Aug. 28**
Border police and Chinese Communist forces clash in Kong Ka Pass, Ladakh; 9 Indians killed and 10 captured by Chinese, **Oct. 20**
Announces jointly with Pakistan the settlement of border disputes on Indian–East Pakistani frontier, **Oct. 23**

INDIA—President Eisenhower rides with Indian President Prasad to the World Agricultural Fair in New Delhi, where Eisenhower opened the United States pavilion, December 11.

WIDE WORLD

WIDE WORLD

IRAQ—Backers of Premier Kassem demonstrate in Baghdad, March 15, after an uprising against his regime had failed.

In note to Communist China, warns that India will resist aggression "by all means available," **Nov. 4**
Chinese Communist forces in eastern Ladakh release 10 Indian border policemen captured on Oct. 20, **Nov. 14**
Nehru, in debate in Parliament, pledges Indian defense of Nepal against aggression, **Nov. 27**

INDONESIA—See also MENZIES
Signs agreement with USSR in Jakarta for large-scale Soviet credit and technical aid for industrialization, **Jan. 3**
Fighting between government troops and Darul Islam rebels reported to have ended in Atjeh Province, North Sumatra, **Jan. 4**
President Sukarno asks Constituent Assembly to institute program of socialist reconstruction and "guided democracy" to replace capitalism and liberal democracy in Indonesia, **Apr. 22**
Constituent Assembly rejects Sukarno's demand for special dictatorial powers, **June 2**
Sukarno issues decree reinstating 1945 Constitution and dissolving Constituent Assembly, **July 5**
Sukarno announces 10-man inner cabinet, with himself as premier, **July 8**
Parliament votes approval of Sukarno's decree that it function within framework of 1945 Constitution, **July 22**
Rejects Communist China's protest against "persecution" of Chinese nationals in Indonesia, **Dec. 13**
Sukarno extends existing state of emergency indefinitely, **Dec. 16**

INTER-AMERICAN AFFAIRS—See ORGANIZATION OF AMERICAN STATES; NATIONAL ADVISORY COMMITTEE ON INTER-AMERICAN AFFAIRS

INTER-AMERICAN DEVELOPMENT BANK—See EISENHOWER; ORGANIZATION OF AMERICAN STATES

JAPAN—Angry mob of students and unionists swarms onto grounds of the Diet, November 27, in protest over revision of security treaty with United States. Hundreds were injured in first invasion of Japanese parliament in history.

UPI

INTERNATIONAL ATOMIC ENERGY AGENCY—See ATOMIC ENERGY

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
In Washington, members approve creation of International Development Association, new lending agency, **Oct. 1**

INTERNATIONAL CONFERENCES—See DISARMAMENT; SUMMIT CONFERENCE

IRAN—See also EISENHOWER; RIZA PAHLAVI
Agreement for U.S. loan of $47.5 million for economic development announced by U.S., **Jan. 7**
Talks with Soviet officials in Teheran on nonaggression pact are broken off, **Feb. 11**
Foreign Ministry announces Iran no longer regards as valid the clauses in 1921 pact with USSR granting USSR right to move troops into Iran if forces threatening USSR enter Iran, **Mar. 3**
Signs defense pact with U.S. in Ankara, Turkey, providing for U.S. aid if Iran is attacked, **Mar. 5**
Accuses Iraq of moving troops into Shatt al-Arab frontier area, **Dec. 29**

IRAQ
Abdel Salam Arif, a leader of 1958 revolt, has been convicted of treason, it is announced in Baghdad, **Jan. 24**
Rebel army groups in Mosul region, led by Col. Abdul Wahab Shawaf, reported to have set up own regime in Mosul, **Mar. 7**
Air Force planes bomb rebel units in Mosul; Baghdad reports rebellion has been crushed, **Mar. 9**
Signs agreement in Moscow for long-term 550 million ruble loan to develop Iraqi economy, **Mar. 16**
Premier Abdul Karim al-Kassem announces Iraq's withdrawal from Baghdad Pact, **Mar. 24**
Large-scale anti-Communist purge is under way, with pro-Communists taking key posts in government, it is reported by three Western newsmen expelled by Baghdad regime, **Mar. 27**
Foreign Ministry, in note to U.S. embassy in Baghdad, renounces U.S. aid as conflicting with Iraqi policy of neutrality, **May 30**
Pro-Communist revolt and army mutiny break out at Kirkuk, northeastern oil center, **July 15**
Baghdad announces revolt in Kirkuk area has ended and situation has returned to normal, **July 22**
Announces execution of 13 army officers involved in revolt at Mosul in March, and of 4 civilian members of former pro-Western regime, **Sept. 20**
Premier Kassem is wounded, as his car is fired on in Baghdad, **Oct. 7**
Kassem denounces 1937 Iran-Iraq agreement on common frontier in Shatt al-Arab area; claims Iraqi sovereignty over anchorage sites used by Iran, **Dec. 2**

IRELAND
President Sean T. O'Kelly visits U.S., **Mar. 16–31**
Eamon de Valera resigns as prime minister; presidential elections take place and de Valera is elected president, **June 17**
Sean Lemass is chosen prime minister by Parliament, **June 23**
De Valera takes office as president, **June 25**

ISRAEL—See also ARAB LEAGUE; UNITED ARAB REPUBLIC
Protests to U.N. Security Council against UAR seizure in Suez Canal of vessels carrying Israeli cargoes, **Mar. 18**
Inge Toft, Danish freighter carrying Israeli cargo, is halted in Suez Canal by UAR officials, **May 21**
David Ben-Gurion and coalition cabinet resign on issue of sale of Israeli-made arms to West Germany, **July 5**
National elections result in victory for Ben-Gurion's Mapai Party, **Nov, 3**
Ben-Gurion forms new Mapai-led coalition cabinet, **Dec. 16**

ITALY—See also AUSTRIA; EISENHOWER; SEGNI
Premier Amintore Fanfani confers with UAR President Nasser in Cairo; accords reached on trade and cultural and technical cooperation, **Jan. 6–8**
Fanfani and cabinet resign, following split in coalition, **Jan. 26**
Antonio Segni heads Christian Democratic cabinet, **Feb. 16**
Rejects Soviet note protesting proposed U.S. missile bases on Italian territory, **May 11**
Regional elections in Sicily result in narrow victory for Christian Democrats, **June 7**
Foreign Minister Giuseppe Pella, in U.N. General Assembly, rejects Austrian charges of Italian discrimination against German-speaking inhabitants of South Tirol, **Sept. 23**

IVORY COAST, Republic of
Adopts constitution as autonomous republic of French Community, **Mar. 26**
Félix Houphouët-Boigny takes office as premier, **May 1**
Houphouët-Boigny confers with President Eisenhower in Washington, during visit to U.S., **Nov. 12**

JAPAN—See also ACCIDENTS AND DISASTERS—*Hurricanes*; KOREA; VIETNAM
Crown Prince Akihito and Michiko Shoda, a commoner, are married in Tokyo, **Apr. 10**

Premier Nobusuke Kishi's Liberal Democratic Party wins increased majority in House of Councilors, in elections to half of chamber's seats, **June 2**

Japanese and North Korean Red Cross groups reach agreement on repatriation of North Korean nationals, **June 24**

Some 20,000 leftist unionists and students riot in Tokyo against projected revision of U.S.–Japanese security treaty, **Nov. 27**

First group of North Korean repatriates leave Japan, amid anti-Communist demonstrations, **Dec. 14**

JOHANNSON, Ingemar—See SPORTS

JOHN XXIII, Pope

Announces he will call ecumenical council to seek unity of Roman Catholic and other Christian communities of world, **Jan. 25**

Forbids Roman Catholics to vote for candidates or parties which give aid to Communists, **Apr. 13**

Installs 7 new cardinals (including 2 Americans) in ceremonies at the Vatican, **Dec. 17**

JOHNSON, Lyndon B.

Chosen again as Democratic leader in Senate, **Jan. 7**

Johnson-for-President clubs will be organized, House Speaker Sam Rayburn announces, **Oct. 17**

JORDAN—See also UNITED ARAB REPUBLIC

King Hussein arrives in Washington, **Mar. 23**

King Hussein and Premier Samir al-Rifai end talks with U.S. leaders in Washington on U.S. aid for Jordan and other problems, **Mar. 27**

King Hussein returns to Amman after 8-week world tour, **May 2**

Hazza Majali heads new cabinet, **May 6**

KÁDÁR, János—See HUNGARY

KARAMANLIS, Constantine—See CYPRUS; GREECE

KASSEM, Abdul Karim—See IRAQ

KENYA—See BRITISH EAST AFRICA

KHRUSHCHEV, Nikita S.

In address to opening of Soviet Communist Party Congress in Moscow, says that Soviet space rocketry has gained military superiority for socialist world over West, and that economic superiority will soon follow; calls for relaxation of East-West tension and repeats Soviet proposals for disarmament and German settlement, **Jan. 27**

In address at Tula, USSR, warns that any attempt by West to maintain access to West Berlin by force would mean beginning of war, **Feb. 18**

In Moscow address, says USSR will sign peace treaty with East Germany if West refuses to accept existence of two German states; calls for summit talks, **Feb. 24**

Concludes talks with British Prime Minister Macmillan in Moscow; communiqué stresses need for further negotiations on Germany, disarmament, and other issues, **Mar. 3**

In address in East Berlin, says that West Berlin, if made a free city, might be guarded by troops of Big Four or neutral powers, **Mar. 9**

Ends talks with East German leaders in Berlin; communiqué pledges USSR and East Germany to seek German peace treaty; calls for 6-power foreign ministers meeting and summit conference, **Mar. 11**

In Moscow address, warns UAR President Nasser against trying to force Iraq to unite with UAR, **Mar. 16**

At Moscow news conference, says USSR will accept West's proposals for foreign ministers conference, but that it should deal with German peace treaty and status of West Berlin, and be followed by summit meeting, **Mar. 19**

In letter to President Eisenhower, rejects president's proposal for banning of nuclear tests at altitudes up to 50 kilometers; in letter to Prime Minister Macmillan, agrees in principle with Macmillan's proposal to set up in advance a number of international inspections of nuclear sites, **Apr. 23**

In letters to President Eisenhower and Prime Minister Macmillan, says USSR is willing to participate in technical talks on detection of nuclear explosions in outer space, **May 15**

In Moscow address, rejects West's "package proposal" offered at Geneva foreign ministers conference, but expresses agreement with certain specific proposals, **May 16**

In address at Tiranë, Albania, rejects U.S. Secretary of State Herter's 7-point program for reunification of Berlin, **May 30**

In Moscow address, on return from 12-day visit to Albania and Hungary, warns that USSR will set up rocket bases in Albania and other Warsaw Pact states if West does not agree to ban on missiles and nuclear weapons in Balkans, **June 6**

In Moscow address, says USSR will not accept agreement that makes permanent the occupation status of Germany or Berlin, **June 19**

In communiqué, following 12 days of talks in Moscow with East German Premier Otto Grotewohl and Communist leader Walter Ulbricht, repeats Soviet threat to sign separate peace treaty with East Germany unless West agrees to conclude treaties with East and West Germany, **June 20**

Cancels scheduled visit to Denmark, Norway, and Sweden, charging anti-Soviet atmosphere, **July 20**

UPI

KHRUSHCHEV—President Eisenhower (left) and Premier Khrushchev (holding hat) walk past honor guard at Andrews AFB as Soviet leader arrives on U.S. visit, September 15.

Engages in debate with U.S. Vice President Nixon at opening of U.S. Exposition in Moscow, **July 24**

Confers with U.S. Vice President Nixon outside Moscow on U.S.–Soviet relations, **July 26**

In letter to West German Chancellor Adenauer, calls for friendly relationship between USSR and West Germany, but warns against West Germany's becoming an atomic base for West, **Aug. 19**

Arrives in Washington for tour of U.S., **Sept. 15**

On arrival in New York City, says peaceful coexistence between U.S. and USSR is necessary, **Sept. 17**

In address to U.N. General Assembly, calls for complete disarmament within 4 years, **Sept. 18**

In Los Angeles, says USSR will meet challenge if U.S. continues cold war; objects to stringent security measures limiting his travels, **Sept. 19**

In San Francisco address, reaffirms Soviet desire for friendship with U.S. and expresses hope that disaster of war will never again befall mankind, **Sept. 21**

Arrives in Des Moines, Iowa; proposes summit meetings once or twice a year, **Sept. 22**

Visits Roswell Garst's farm near Coon Rapids, Iowa, **Sept. 23**

Confers with President Eisenhower at Gettysburg, Pa.; agreement reached on holding new talks on Berlin, expansion of U.S.–USSR exchange program, and other matters, **Sept. 25–27**

Leaves U.S., after 13-day visit, **Sept. 27**

Visits Peking to attend celebration of 10th anniversary of Chinese Communist regime, **Sept. 30–Oct. 4**

In address to Supreme Soviet in Moscow, calls for reciprocal concessions by Communist and non-Communist powers to achieve peaceful coexistence, **Oct. 31**

In address to Hungarian Communist Party Congress in Budapest, says USSR has enough rockets to "raze to the ground" its potential enemies, but is willing to destroy its stockpile for universal disarmament, **Dec. 1**

In letters to U.S., British, and French heads of government, accepts proposal for Big Four summit talks but asks for change of date, **Dec. 25**

Accepts Western proposal for opening of summit talks in Paris on May 16, 1960, **Dec. 30**

KISHI, Nobusuke—See also JAPAN

Reorganizes cabinet after June 2 elections, **June 18**

Visits Britain, West Germany, and 10 other countries of Europe, North and South America, **July 11–Aug. 11**

MACMILLAN—British Prime Minister Macmillan (r.), who arrived in Moscow on February 21 for a 10-day visit, looks up from box at the Bolshoi Theatre as Premier Khrushchev and Deputy Premier Mikoyan (l.) applaud ballet performance.

UPI

KOREA
North Korea signs 500-million-ruble technical assistance pact in Moscow, for Soviet aid in construction of power stations and factories, **Mar. 17**
South Korea issues orders to suspend trade with Japan, as result of dispute on Japanese repatriation of Koreans, **June 15**
South Korea renews diplomatic relations with Japan, suspended because of repatriation dispute, **Aug. 12**
KOZLOV, Frol R.
Arrives in New York for opening of Soviet exposition and tour of U.S., **June 28**
Confers with President Eisenhower in Washington on Berlin crisis and summit meeting, **July 1**
Ends 16-day visit to U.S., **July 13**

LABOR—See also EISENHOWER; HOFFA; STRIKES AND WALKOUTS; SUPREME COURT; UNITED STATES—*Congress*
U.S. Circuit Court of Appeals in Washington upholds order for cleanup of International Brotherhood of Teamsters, **June 10**
President Eisenhower signs Labor-Management Reporting and Disclosure Act of 1959; U.S. Labor Department announces creation of bureau to administer act, **Sept. 14**
LAOS—See also UNITED NATIONS—*Security Council;* VIETNAM
Renounces Geneva agreements of 1954 ending Indochinese War, **Feb. 11**
Communist guerrillas of former Pathet Lao movement reopen warfare against Royal Army posts in northern provinces of Sam Neua and Phong Saly, **July 30**
Will obtain increased U.S. shipments of military equipment and supplies, Washington announces, **Aug. 26**
Communist guerrillas renew offensive in north, **Aug. 30**
In message to U.N. Secretary General Hammarskjöld, charges "flagrant aggression" by North Vietnam, and calls for U.N. aid for defense of Laos, **Sept. 4**
U.N. investigation subcommittee arrives in Vientiane, **Sept. 15**
King Sisavang Vong dies in Luang Prabang, **Oct. 29**
Prince Regent Savang Vathana proclaimed king, **Nov. 4**
Report by U.N. investigation subcommittee says it found no evidence of direct participation by North Vietnamese in Laotian fighting, although there was evidence of weapons and supplies support to Communist guerrillas, **Nov. 6**
U.N. Secretary General Hammarskjöld visits Laos and establishes a U.N. "presence" there, **Nov. 17**
Premier Phoui Sananikone resigns, **Dec. 30**
LATIN AMERICA—See ORGANIZATION OF AMERICAN STATES and individual Latin American countries
LAW—See SUPREME COURT; UNITED STATES—*Congress*
LEBANON—See NASSER
LEGISLATION—See EISENHOWER; UNITED STATES—*Congress*
LEMNITZER, Gen. Lyman L.
Takes office as chief of staff of Army, **July 1**
LIBERIA—See also AFRICA; TUBMAN
Defense agreement signed with U.S., **July 8**
LLOYD, Selwyn—See DISARMAMENT; SUMMIT CONFERENCE
LONG, Earl K.—See LOUISIANA
LÓPEZ MATEOS, Adolfo—See also MEXICO
Arrives in Washington on state visit to U.S., **Oct. 9**
Joint communiqué on talks with President Eisenhower stresses U.S.–Mexican friendship ties and economic cooperation, **Oct. 12**
LOUISIANA
Gov. Earl K. Long is committed to mental hospital, **June 18**
Long gains freedom from mental hospital, after appointing friend as superintendent, **June 26**
Defeated as candidate for lieutenant governor in state Democratic gubernatorial primary, **Dec. 5**
LUCE, Clare Boothe
Named ambassador to Brazil, **Feb. 26**
Resigns as ambassador to Brazil, following dispute with Sen. Wayne Morse over her confirmation by Senate, **May 1**
LUEBKE, Heinrich—See GERMANY
LUNIK SPACE ROCKETS—See SPACE FLIGHT

McELROY, Neil H.
Presents to Senate Armed Services Committee new plans for defense against surprise attack by shifting from manned bombers to antimissile weapons, making reduced expenditure possible, **June 12**
Resigns as secretary of defense, **Dec. 1**
MACMILLAN, Harold—See also GREAT BRITAIN
Confers with U.S. Secretary of State Dulles in London on Germany and other world issues, **Feb. 4**
Arrives in Moscow on visit to USSR; calls for peaceful collaboration of East and West for well-being of mankind, **Feb. 21**
In Moscow statement, rejects Soviet Premier Khrushchev's offer of Soviet-British nonaggression pact which would liquidate U.S. airbases in Britain, but suggests 3-point Soviet-British declaration of intentions; appears on Moscow television, presenting British view on international issues, **Mar. 2**
Concludes talks with Khrushchev in Moscow; communiqué stresses need for further negotiations on Germany and other world issues; returns to London, **Mar. 3**
Confers with French President de Gaulle in Paris (**Mar. 9–10**) and West German Chancellor Adenauer in Bonn on Berlin crisis, **Mar. 12–13**
Arrives in Ottawa and confers with Canadian Prime Minister Diefenbaker on world issues, **Mar. 18**
Arrives in Washington; calls for Allied policy of "firmness and reasonableness" toward USSR, **Mar. 19**
Ends talks with President Eisenhower at Camp David, Md., and in Washington on West's policy regarding West Berlin and Germany, and on summit talks, **Mar. 23**
Confers with French Premier Debré in London on Anglo-French policy in Europe, Africa, and Middle East, **Apr. 13–14**
Confers with Eisenhower outside London on policy and tactics toward Communists, **Aug. 29**
Appears with Eisenhower on London radio-television broadcast, emphasizing Anglo–U.S. unity, **Aug. 31**
Confers with Eisenhower, de Gaulle, and Adenauer in Paris and Rambouillet, France, on conditions for Big Four summit conference in 1960, **Dec. 19–21**
MADAGASCAR—See MALGACHE REPUBLIC
MAKARIOS III, Archbishop—See also CYPRUS
Signs agreement in London (with heads of British, Greek, and Turkish governments, and leader of Turkish Cypriotes) to constitute Cyprus an independent republic in 1960, **Feb. 19**
Arrives in Nicosia after 3-year exile, **Mar. 1**
Elected first president of new republic, **Dec. 13**
MALAYA, Federation of
Pro-Western Alliance Party, led by Tengku Abdul Rahman, is victorious in elections to House of Representatives, **Aug. 19**
Tengku Abdul Rahman takes office as prime minister, **Aug. 21**
MALGACHE REPUBLIC
Adopts constitution as autonomous republic of French Community, **Apr. 29**
Philibert Tsiranana elected president, **May 1**
Tsiranana states in Paris that French President de Gaulle has promised independence for Malgache Republic, **Dec. 20**

MEXICO—(*Left*) Mexican President López Mateos is honored at state dinner at the White House on October 9. Left to right are Mrs. Eisenhower, President and Señora López Mateos, President Eisenhower, and the López Mateos' daughter, Avecita. **MISSILES**—(*Right*) The Titan ICBM is successfully launched at Cape Canaveral, February 6, in its first short-range test.

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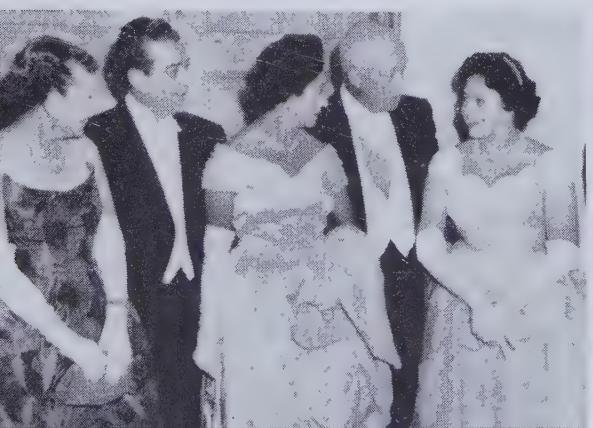
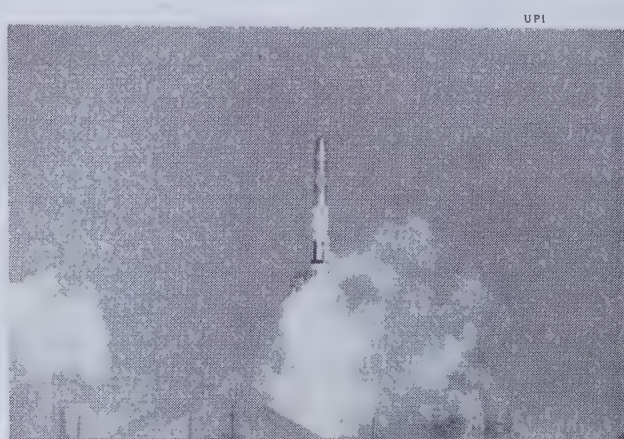




EUROPEAN; UPI

NEHRU—(*Left*) President Ayub of Pakistan (l.) meets with Indian Prime Minister Nehru in New Delhi, September 1. Both men acted in 1959 to ease the strained relations between the two nations. NEW YORK—(*Right*) Mayor Robert Wagner points out the sights of New York City to Princess Beatrix of the Netherlands, who arrived September 11. At right is Mrs. Wagner.

MALI FEDERATION
- Delegates of 4 autonomous republics of French Community (Dahomey, Upper Volta, Senegal, and Soudan), meeting in Dakar, Senegal, vote to form federation, **Jan. 17**
- Federation of Senegal and Soudan comes into being (Dahomey and Upper Volta having withdrawn); Modibo Keita of Soudan is chosen premier, **Apr. 4**
- Premiers of Senegal and Soudan have asked French President de Gaulle for independence, it is reported in Paris, **Sept. 14**
- De Gaulle, in address at Saint-Louis, Senegal, says Mali Federation will accede to full sovereignty with aid and accord of France, **Dec. 12**

MALTA
- Interim constitution vests authority in appointed Executive Council, headed by governor, **Apr. 16**
- Adm. Sir Guy Grantham becomes governor, **June 8**

MAO TSE-TUNG
- Retires as chairman of Chinese People's Republic but retains chairmanship of Chinese Communist Party Politburo, it is announced, **Apr. 27**
- Confers with Soviet Premier Khrushchev in Peking, **Oct. 2**

MARSHALL, Gen. George C.
- Dies in Washington, D.C., aged 78, **Oct. 16**

MASSEY, Vincent—See CANADA

MAURITANIA, Islamic Republic of
- Adopts constitution as autonomous republic of French Community, **Mar. 22**
- Mocktar Ould Daddah re-elected premier, **June 24**

MECHTA SPACE ROCKET—See SPACE FLIGHT

MENDERES, Adnan—See CYPRUS; TURKEY

MENZIES, Robert G.
- Confers with President Eisenhower in Washington, **May 27–28**
- Arrives in Djakarta, Indonesia, for week-long talks with President Sukarno, **Dec. 1**
- Arrives in Kuala Lumpur, Malaya, for 5-day visit, **Dec. 7**

MERCURY, Project—See SPACE FLIGHT

MEXICO—See also LÓPEZ MATEOS
- Severs diplomatic relations with Guatemala, **Jan. 23**
- President López Mateos and U.S. President Eisenhower confer at Acapulco; agree on construction of Diablo Dam and on U.S.–Mexican economic collaboration, **Feb. 19–20**
- Resumes diplomatic relations with Guatemala, **Sept. 15**

MIDDLE EAST TREATY ORGANIZATION—See CENTRAL TREATY ORGANIZATION

MIKOYAN, Anastas I.
- Arrives in Washington on visit to U.S., **Jan. 4**
- Leaves Washington for tour of U.S., after conferring with Secretary of States Dulles (Jan. 5) and Vice President Nixon (Jan. 6), **Jan. 7**
- Confers with President Eisenhower in Washington on Germany, disarmament, and other problems, **Jan. 17**
- Leaves U.S. for Moscow, **Jan. 20**
- Confers with British Prime Minister Macmillan in Leningrad, **Mar. 1**
- Visits Mexico, **Nov. 18–28**

MISS AMERICA
- Lynda Lee Mead of Natchez, Miss., is crowned Miss America 1960 at Atlantic City, N.J., **Sept. 12**

MISSILES AND ROCKETS—See also SPACE FLIGHT
- Titan intercontinental ballistic missile is successfully fired, in short-range test, **Feb. 6**
- Nose cone of Thor-Able rocket is recovered by Air Force in South Atlantic, after flight of over 5,000 miles from Cape Canaveral, Fla., **Apr. 8**
- Polaris missile is fired for first time at sea, off coast at Cape Canaveral, Fla., **Aug. 27**
- Ballistic missile is fired from B-47 bomber into space near Explorer VI satellite, **Oct. 13**

MISSISSIPPI—See NEGROES

MITCHELL, James P.
- Releases statistical report on wages, prices, and profits in steel industry; urges further bargaining to settle strike, **Aug. 19**
- Recommends three alternatives for ending steel dispute, including binding arbitration, **Dec. 8**

MOHAMED V—See MOROCCO

MONACO
- Prince Rainier III assumes personal rule and suspends constitution, **Jan. 29**

MOROCCO
- Royal Army goes into action against rebel Rif tribesmen in north, **Jan. 6**
- Premier Abdallah Ibrahim visits U.S.; confers with U.S. leaders in Washington on problem of U.S. bases in Morocco, **Oct. 11–Nov. 1**
- King Mohamed V confers with President Eisenhower in Casablanca; communiqué announces U.S. will evacuate military bases in Morocco by end of 1963, **Dec. 22**

MORTON, Thruston B.—See REPUBLICAN PARTY

MOTION PICTURES
- Academy awards announced for 1958: best film, *Gigi*; best male performance, David Niven (*Separate Tables*); best female performance, Susan Hayward (*I Want to Live*), **Apr. 6**

MUELLER, Frederick H.
- Named secretary of commerce, **July 21**

MUSCAT AND OMAN—See GREAT BRITAIN

NASSER, Gamal Abdel—See also SAUD
- In address at Damascus, charges Iraqi Premier Gen. Abdul Karim al-Kassem and Communist agents are seeking to split UAR, **Mar. 11**
- At meeting with Lebanese President Fouad Chehab at Lebanese–UAR border, promises to respect independence of Lebanon, **Mar. 25**
- In address near Alexandria, expresses hopes for "decisive battle with Israel," **July 28**

NATIONAL ADVISORY COMMITTEE ON INTER-AMERICAN AFFAIRS
- President Eisenhower announces establishment of 6-member committee under chairmanship of Secretary of State Herter, **Nov. 14**

NAVY, U.S.—See SPACE FLIGHT; UNITED STATES—*Armed Forces*

NEGROES, American—See also ARKANSAS; CIVIL RIGHTS COMMISSION; SUPREME COURT; VIRGINIA
- Federal district court in Atlanta bars Georgia State College from excluding Negro applicants because of race, **Jan. 10**
- Federal judge in Montgomery, Ala., dismisses U.S. Justice Department suit against Alabama; rules that Civil Rights Act of 1957 does not authorize federal government to sue states on charges of violating Negro voting rights, **Mar. 6**
- Federal district court in Macon, Ga., holds unconstitutional the section of Civil Rights Act of 1957 which permits federal government to seek injunctions to uphold Negro voting rights, **Apr. 16**
- Mack C. Parker, Negro suspected of rape, is found dead near Bogalusa, La., after having been abducted (April 25) by lynch mob from jail at Poplarville, Miss., **May 4**
- County grand jury adjourns in Poplarville, Miss., without hearing testimony or returning indictments in Mack C. Parker lynching case, **Nov. 5**
- Federal judge announces in Jackson, Miss., that a federal grand jury will convene at Biloxi on Jan. 4, 1960, to consider Parker lynching case, **Nov. 23**

NEHRU, Jawaharlal—See also AFGHANISTAN; INDIA
- Confers with Yugoslav President Marshal Tito in New Delhi, **Jan. 14–15**
- In statement to Indian Parliament, says Tibetan revolt resulted from Communist China's violation of pledges of Tibetan autonomy, **Mar. 30**

UPI

NICARAGUA—Rebel troops move on patrol in the mountains near Santo Tomás in southern Nicaragua, June 3. Their attempt to oust the Somoza regime was crushed by June 14.

Meets with Pakistani President Ayub Khan in New Delhi; joint statement calls for conducting of Indian-Pakistani relations on "rational and planned basis," **Sept. 1**

In letter to Chinese Premier Chou En-lai, says India will not discuss border questions until Chinese have evacuated troops from areas in question, **Oct. 4**

In address at Meerut, accuses China of "new territorial aggression" in Ladakh; says India will not bow down before force, **Oct. 24**

In reply to Chinese Communist Premier Chou En-lai, calls for Chinese withdrawal north of McMahon Line and neutralization of Longju, prior to holding of talks, **Nov. 20**

NEPAL

King Mahendra Bir Bikram promulgates constitution providing for constitutional monarchy, **Feb. 12**

Country's first general elections are held, **Feb. 18–Apr. 3**

B. P. Koirala, Nepali Congress leader, takes office as head of Nepal's first elected regime, **May 27**

First elected Parliament is inaugurated in Katmandu, **July 24**

NETHERLANDS—See also BEATRIX

Premier Louis J. M. Beel and caretaker cabinet resign; general elections result in narrow victory for Catholic Peoples Party, **Mar. 12**

Jan Eduard de Quay of Catholic Peoples Party takes office as premier of new coalition cabinet, **May 19**

NEW YORK CITY—See also STRIKES AND WALKOUTS

President Eisenhower breaks ground in ceremony beginning construction of Lincoln Center for the Performing Arts, **May 14**

Soviet exhibition is opened officially by First Deputy Premier Frol R. Kozlov at Coliseum, **June 29**

Eisenhower approves recommendation of special committee that New York City be site of 1964 world's fair, **Oct. 29**

NEW YORK STATE—See ST. LAWRENCE SEAWAY AND POWER PROJECT

NICARAGUA

Two planeloads of troops land in Nicaragua from Costa Rica; Nicaraguan exiles in Costa Rica say revolution has broken out against Nicaraguan President Luis A. Somoza Debayle, **June 1**

Calls for Organization of American States to meet in special session on alleged invasion, **June 2**

Anti-Somoza revolt collapses; 61 rebels taken prisoner, **June 14**

Somoza approves law prohibiting a president from succeeding himself, **Aug. 14**

NIGER, Republic of

Adopts constitution as autonomous republic of French Community, **Feb. 25**

NIGERIA—See BRITISH WEST AFRICA

NIXON, Richard M.—See also ST. LAWRENCE SEAWAY AND POWER PROJECT

Confers with Soviet First Deputy Premier Mikoyan in Washington, **Jan. 6** and **Jan. 16**

In New York address, proposes that disputes arising from future East-West agreements be arbitrated by International Court of Justice, **Apr. 13**

Arrives in Moscow, on visit to USSR, **July 23**

Formally opens American National Exhibition in Moscow, **July 24**

Confers with Khrushchev outside Moscow on U.S.–Soviet relations, **July 26**

In radio-television address to Russian people from Moscow, defends U.S. foreign policy and way of life; says end of international tension will depend on whether Khrushchev will work for development of USSR, instead of seeking to expand communism abroad, **Aug. 1**

Confers with Polish Communist leader Władysław Gomułka in Warsaw (Aug. 3), during visit to Poland, **Aug. 2–4**

Returns to Washington, after tour of USSR and Poland, **Aug. 5**

In address to opening of CENTO Council meeting in Washington, calls upon USSR to halt subversion and compete peacefully with West, **Oct. 7**

NKRUMAH, Kwame—See AFRICA; GHANA

NOBEL PRIZES

Dr. Severo Ochoa, of New York University, and Dr. Arthur Kornberg, of Stanford University, named co-winners of prize in medicine, **Oct. 15**

Salvatore Quasimodo, Italian poet, named winner of prize in literature, **Oct. 22**

Professors Owen Chamberlain and Emilio Segré, of U.S., named co-winners of prize in physics; Prof. Jaroslav Heyrovský, of Czechoslovakia, named winner of prize in chemistry, **Oct. 26**

Philip J. Noel-Baker, of Great Britain, named winner of peace prize, **Nov. 5**

NORTH ATLANTIC TREATY ORGANIZATION—See also EISENHOWER; FRANCE; HERTER

North Atlantic Council meets in Washington; restates determination to uphold freedom of West Berlin and West's rights and duties there, **Apr. 2–4**

Some 650 nongovernmental delegates of 14 NATO members confer in London on ways to strengthen NATO; call for increased consultation, greater military strength, and expanded economic aid to underdeveloped countries of world, **June 5–10**

At conference in Washington of members of parliaments of NATO nations, Secretary General Paul-Henri Spaak calls for large-scale Western aid to underdeveloped nations of world, **Nov. 19**

North Atlantic Council meets in Paris; communiqué stresses 10-year strategic planning in military and other fields, **Dec. 15–17**

North Atlantic Council, meeting in Paris, declares full support of Western Big Three in 1960 summit talks with USSR, **Dec. 22**

NORWAY—See SWEDEN

NUCLEAR TESTS—See DISARMAMENT

O'KELLY, Sean T.—See IRELAND

OMAN—See GREAT BRITAIN

ORGANIZATION OF AMERICAN STATES—See also PANAMA

Representatives of 21 American republics initial charter in Washington for $1 billion inter-American bank to spur economic development, **Apr. 8**

Delegates in Washington unanimously vote for measures to help Panama prevent Cuban-based rebel attack, **Apr. 28**

Council votes to establish fact-finding commission to inquire into Nicaraguan invasion, **June 4**

Foreign ministers of 21 American nations open conference in Santiago, Chile, **Aug. 12**

At Santiago conference, compromise plan is adopted, setting forth functions of Inter-American Peace Commission to ease Caribbean tension, **Aug. 16**

Foreign ministers sign Declaration of Santiago, censuring antidemocratic regimes but condemning efforts by other governments to assist rebels in overthrowing such regimes; conference adjourns, **Aug. 18**

OUTER SEVEN—See EUROPEAN FREE TRADE ASSOCIATION

PAKISTAN—See also INDIA; NEHRU

President Mohammed Ayub Khan announces land reform program to break up large holdings and curb political power of landlords, **Jan. 24**

Signs defense pact with U.S. in Ankara, Turkey, providing for U.S. aid in event of aggression, **Mar. 5**

Transfer of capital to new site at Rawalpindi begins as some government employees leave Karachi, **Oct. 20**

President Eisenhower visits Karachi, **Dec. 7–8**

PANAMA

Invasion force of about 87 (mostly Cubans), which landed on April 24, surrenders to committee of Organization of American States, **May 1**

Anti-U.S. mobs riot in Panama City, following attempts to invade Panama Canal Zone, **Nov. 3**

Rejects U.S. protest note regarding mob attack on U.S. embassy; in counter-protest, charges provocations by U.S. authorities, **Nov. 4**

Rioters trying to enter Canal Zone are repulsed by U.S. troops; 30 persons injured, **Nov. 28**

PARAGUAY

President Alfredo Stroessner dissolves Chamber of Deputies and restores state of siege, **May 30**

Government reports invasion attempt by Argentina-based exiles, **Dec. 12**

PHILIPPINES

U.S. rejects war damage and other claims totaling $950 million; recognizes some claims, **Aug. 4**

Signs memorandum of agreement with U.S. in Manila on revision of treaty on military bases, **Oct. 12**

PIONEER SPACE ROCKETS—See SPACE FLIGHT

POLAND—See also KHRUSHCHEV; NIXON

Communist Party Central Committee reorganized to exclude opponents of Władysław Gomułka, at conclusion of Communist Party's third national congress, **Mar. 19**

Signs agreement with U.S. to buy surplus farm products valued at $44 million and to obtain $6 million credit, **June 10**

Edward Ochab is ousted as minister of agriculture, in cabinet revision, **Oct. 27**

POLARIS MISSILE—See UNITED STATES—*Armed Forces*

PORTUGAL
Gen. Humberto Delgado leaves for political asylum in Brazil, **Apr. 20**
National Assembly approves bill abolishing direct presidential elections and providing for election of president by electoral college, **June 18**

PULITZER PRIZES
Awards announced for 1958: drama, Archibald MacLeish's *J.B.;* fiction, Robert L. Taylor's *The Travels of Jaimie McPheeters;* biography, Arthur Walworth's *Woodrow Wilson, American Prophet;* history, Leonard D. White's *The Republican Era: 1869–1901;* poetry, Stanley Kunitz's *Selected Poems, 1928–1958;* music, John La Montaine's *Concerto for Piano and Orchestra,* **May 4**

QUEBEC—See CANADA; ST. LAWRENCE SEAWAY AND POWER PROJECT

QUINN, WILLIAM F.—See HAWAII

RAAB, Julius—See AUSTRIA

RADIATION—See ATOMIC ENERGY

RADIO AND TELEVISION—See also EISENHOWER; VAN DOREN
Columbia Broadcasting System announces ban on certain audience-participation programs, following public disclosures of rigged quiz shows, **Oct. 16**
House Subcommittee on Legislative Oversight ends hearings on rigged quiz programs; Chairman Oren Harris says legislation is needed to prevent deceptions, **Nov. 6**
Attorney General William P. Rogers, in report to President Eisenhower following disclosures by House investigating subcommittee, recommends stricter government control of broadcasting industry to end "spectacle of corruption," **Dec. 31**

REPUBLICAN PARTY—See also ROCKEFELLER
Meade Alcorn resigns as national chairman, **Apr. 1**
Sen. Thruston B. Morton of Kentucky is elected chairman of National Committee; committee choses Chicago as site for 1960 convention, **Apr. 11**

RHODESIA AND NYASALAND, Federation of
Prime Minister Sir Edgar Whitehead proclaims state of emergency in Southern Rhodesia and outlaws African nationalist groups, following outbreaks of rioting, **Feb. 26**
Nationalists riot throughout Nyasaland, following outlawing of African National Congress and arrest of Hastings Banda, congress president; 32 Africans killed by security forces, **Mar. 2–3**
Northern Rhodesian legislative elections result in victory for United Federal Party, led by Sir Roy Welensky, **Mar. 20**

RIZA PAHLAVI, Shah Mohammed
Returns to Iran, after 32-day tour of Britain, Denmark, and Netherlands, **June 3**
Weds Farah Diba in Teheran, **Dec. 21**

ROCKEFELLER, Nelson A.
Takes office as governor of New York, **Jan. 1**
Announces withdrawal from race for Republican presidential candidacy, **Dec. 26**

ROCKETS—See MISSILES AND ROCKETS; SPACE FLIGHT

ROGERS, William P.—See RADIO AND TELEVISION

ROMAN CATHOLIC CHURCH—See JOHN XXIII

RUANDA-URUNDI
Troops from Belgian Congo are rushed to Ruanda to quell outbreaks by Bahutu tribes against Batutsi, **Nov. 8**

SAAR
United economically with West Germany, **July 5**

ST. LAWRENCE SEAWAY AND POWER PROJECT
First ships pass through locks, as seaway opens for business, **Apr. 25**
Seaway dedicated by Queen Elizabeth II and President Eisenhower at St. Lambert, Quebec, **June 26**
Hydroelectric power project dedicated by Queen Elizabeth II and Vice President Nixon at Massena, N.Y., **June 27**

SATELLITES, Earth—See SPACE FLIGHT

SAUD, King
Confers with UAR President Nasser in Cairo on measures to halt Communist gains in Iraq, and on continuance of anti-Israeli blockade, **Sept. 1–4**

SAVANNAH—See ATOMIC ENERGY

SEABORG, Glenn T.
Receives Enrico Fermi Award for role in development of nuclear chemistry and atomic energy, **Dec. 2**

SEGNI, Antonio
Heads Christian Democratic cabinet of Italy, **Feb. 16**
Meets with French leaders at Paris to discuss East-West talks on Germany, **Mar. 18–19**
Confers with President Eisenhower in Washington, **Sept. 30**
In Washington address, warns against disarmament without proper guarantees, **Oct. 1**
Confers with British Prime Minister Macmillan in London on European cooperation, **Dec. 1**

SEGREGATION—See ARKANSAS; NEGROES; VIRGINIA

UPI

SPACE FLIGHT—Able, a rhesus monkey, is released from capsule after flight in nose cone of Jupiter missile, May 28. She and a squirrel monkey, Baker, were sent up from Cape Canaveral and recovered by a Navy ship near Antigua.

SENEGAL—See also MALI FEDERATION
Adopts constitution as autonomous republic of French Community, **Jan. 24**
Mamadou Dia is re-elected premier, **Apr. 5**

SINGAPORE
In elections to Legislative Assembly, leftist People's Action Party is victorious, **May 30**
New constitution, providing for self-government, comes into effect, **June 3**
Lee Kuan Yew takes office as premier of leftist government, **June 5**
Inche Yusof bin Ishak becomes first Malayan-born ceremonial head of state, **Dec. 3**

SMITH, Sidney E.
Dies in Ottawa, **Mar. 17**

SOMALILAND
Legislative elections result in victory of Somali Youth League, led by Seyyid Abdullah Issa, **Mar. 4–8**
Date of independence moved forward to July 1, 1960, by vote of U.N. General Assembly, **Dec. 5**

SOUDAN—See also MALI FEDERATION
Adopts constitution as autonomous republic of French Community, **Jan. 23**
Modibo Keita elected premier, **Apr. 17**

SOUTH AFRICA
House of Assembly adopts Bantu self-government bill, furthering racial apartheid, **June 3**
Widespread rioting in Durban follows new law forbidding Africans to brew their own beer, **June 18**
Charles R. Swart named governor general, **Dec. 6**

SOUTHEAST ASIA TREATY ORGANIZATION
Council meets at Wellington, New Zealand; communiqué stresses need for economic improvement of Southeast Asia, as well as continuing military vigilance against Communist expansion, **Apr. 8–10**
Leaders of member nations, meeting in Washington, pledge aid to Laos, if needed, **Sept. 28**

SWEDEN—King Olav V of Norway (l.), arriving in Stockholm on April 23 for a three-day visit, rides with King Gustav VI Adolf of Sweden en route to the royal palace.

EUROPEAN

UPI

TIBET—The Dalai Lama, who arrived in India on March 31 after fleeing the Chinese Communists, conducts a prayer ritual for his followers at his residence in Mussoorie.

SOVIET EXHIBITION OF SCIENCE, TECHNOLOGY, AND CULTURE
- Opened officially in New York by Soviet First Deputy Premier Kozlov, **June 29**
- Viewed by 1.1 million persons, **June 30–Aug. 10**

SPACE FLIGHT—See also ATOMIC ENERGY
- USSR launches 3,238-pound Lunik I (or Mechta) rocket with 797-pound payload toward moon, **Jan. 2**
- Lunik I reported to have soared past moon, headed for orbit around sun, **Jan. 4**
- Navy puts into orbit 20.7-pound Vanguard II satellite equipped to provide meteorological data, **Feb. 17**
- Air Force launches Discoverer I satellite, the first in polar orbit, **Feb. 28**
- Army launches Juno II rocket carrying 13.4-pound Pioneer IV satellite toward moon, **Mar. 3**
- Pioneer IV is reported to have passed moon, heading for orbit around sun, **Mar. 4**
- Seven military pilots, to be known as Mercury astronauts, named by National Aeronautics and Space Administration to undergo training for first manned space flights (Project Mercury), **Apr. 9**
- Discoverer II is placed in orbit around North and South poles by modified Thor missile (aim is to recover capsule ejected from satellite), **Apr. 13**
- Two monkeys (Able and Baker) are recovered in Atlantic from nose cone of Jupiter rocket which reached height of about 300 miles and speed of up to 10,000 mph., **May 28**
- Russians fire 4,400-pound payload, containing 2 dogs and rabbit, into upper atmosphere; animals are recovered safely, **June 2**
- Discoverer III, containing 4 mice, is launched by Air Force but fails to attain orbit, **June 3**
- USSR reports having launched (June 10) 4,840-pound rocket carrying 2 dogs, **July 13**
- Explorer VI, 142-pound satellite packed with scientific instruments, is launched by 3-stage Thor-Able rocket into orbit with apogee 26,383 miles in space, **Aug. 7**

USSR—Vice President Nixon cuts tape to open American National Exhibition in Sokolniki Park, Moscow, July 24. Men in front (l. to r.) are Soviet Deputy Premier Kozlov; Premier Khrushchev; Nixon; and U.S. Ambassador Thompson.

WIDE WORLD

- Discoverer V satellite is launched into polar orbit by Air Force, **Aug. 13**
- Discoverer VI satellite is launched into orbit by Air Force, **Aug. 19**
- Soviet Lunik II rocket (launched Sept. 12) hits moon, after flight of 36 hours, at 9:02 P.M. (Greenwich Civil Time), **Sept. 13**
- Rocket-propelled X-15, first U.S. craft for manned space flight, is tested in powered flight at Edwards Air Force Base, Calif., **Sept. 17**
- Fifty-pound Vanguard III satellite is launched into orbit, **Sept. 18**
- USSR launches "interplanetary station" (Lunik III) carrying scientific and radio equipment, **Oct. 4**
- Lunik III, at point about 40,000 miles from moon, processes and transmits to earth first photographs of far side of moon, **Oct. 7**
- Ballistic missile is fired from B-47 bomber into space near Explorer VI satellite, **Oct. 13**
- Army Juno II rocket launches Explorer VII, 91½-pound satellite to measure radiation from sun and study earth's weather, **Oct. 13**
- President Eisenhower moves to transfer Army Ballistic Missile Agency to National Aeronautics and Space Administration, **Oct. 21**
- USSR reveals first photograph (obtained from Lunik III) of hidden side of moon, **Oct. 27**
- Discoverer VII is launched into polar orbit, **Nov. 7**
- Air Force launches Discover VIII into polar orbit, **Nov. 20**
- U.S. effort to probe moon fails, as 4-stage Atlas-powered vehicle falls into Atlantic, **Nov. 26**
- Seven-pound rhesus monkey (Sam) is sent 55 miles into space in rocket, and recovered safely in Atlantic, **Dec. 4**

SPAIN
- Agrees to devaluate peseta and undertake program of economic stabilization, as condition for obtaining international credits, **June 26**
- Becomes full member of Organization for European Economic Cooperation, **July 20**
- Generalissimo Francisco Franco receives President Eisenhower in Madrid for consultations, **Dec. 21**

SPORTS
- Art Wall, Jr., wins Masters golf tournament, **Apr. 5**
- Tomy Lee, ridden by Willie Shoemaker, wins Kentucky Derby at Louisville, Ky., **May 2**
- Rodger Ward wins Indianapolis 500-mile auto race, setting new record of 135.857 mph., **May 30**
- Bill Casper, Jr., wins U.S. Open Golf championship at Mamaroneck, N.Y., **June 14**
- Ingemar Johansson of Sweden wins heavyweight boxing title by 3d-round technical knockout of Floyd Patterson in New York, **June 26**
- U.S.–USSR track and field meet at Philadelphia results in victory for U.S. men, 127–108, and for Soviet women, 67–40, **July 18–19**
- Third major league in baseball, Continental League, is formed at meeting in New York, **July 25**
- Meeting to complete plans for organization of new professional American Football League starts at Dallas, Texas, **Aug. 22**
- Australia defeats U.S., 3–2, for Davis Cup international tennis title, at New York, **Aug. 28–31**
- Los Angeles Dodgers defeat Chicago White Sox, 4 games to 2, to win world series, **Oct. 1–8**
- Syracuse, nation's top college football eleven, defeats host Penn State team, 20–18, **Nov. 7**
- Baltimore Colts defeat New York Giants, 31–16, at Baltimore, Md., to gain National Football League championship, **Dec. 27**

STRAUSS, Lewis L.
- Nomination as secretary of commerce (Oct. 24, 1958) is rejected by Senate, 49–46, **June 19**
- Resigns as secretary of commerce, **June 30**

STRIKES AND WALKOUTS
- Some 4,000 New York harbor workers go on strike, halting movement of tugs and oil vessels, **Feb. 1–7**
- Some 47,000 workers of major U.S. rubber companies go on strike, **Apr. 10–16**
- U.S. Rubber Co. employees end strike, **May 1**
- Workers of B.F. Goodrich and Firestone Tire and Rubber companies end strikes, **June 9–12**
- Strike of over 1,000 hospital workers in New York City ends after 46 days, **June 22**
- Some 500,000 steel workers go on strike, halting most of nation's steel output, **July 15**
- About 17,000 workers of Swift & Co. go on strike, **Sept. 3–Oct. 26**
- Some 70,000 longshoremen on Atlantic and Gulf coasts end strike after 8 days, following injunction order by federal court, **Oct. 9**
- Federal district court in Pittsburgh signs 80-day no-strike injunction under Taft-Hartley Act, ordering end to steel strike, **Oct. 21**
- Kaiser Steel Corp. signs contract with union, providing for package pay rise equivalent to 22.5 cents per hour in next 20 months; some 7,500 Kaiser workers return to work, **Oct. 26**
- Steel workers begin return to work, as Supreme Court upholds 80-day injunction, **Nov. 7**

SUBMARINES—See UNITED STATES—*Armed Forces*

SUDAN—See also UNITED ARAB REPUBLIC
Gen. Ibrahim Abboud assumes full governmental powers; dismisses Supreme Council for Armed Forces, **Mar. 4**
Government suppresses attempted military coup, **May 22**
SUEZ CANAL—See ISRAEL; UNITED ARAB REPUBLIC
SUKARNO—See also INDONESIA; MENZIES
Returns to Jakarta after 68-day world tour, **June 29**
SUMMIT CONFERENCE—See also EISENHOWER; KHRUSHCHEV
U.S., Britain, and France, in notes to USSR, call for Big Four foreign ministers conference at Geneva, beginning May 11, to discuss German problem and prepare for summit meeting, **Mar. 26**
USSR accepts proposal for foreign ministers conference at Geneva, **Mar. 30**
Foreign ministers of U.S., Britain, France, and West Germany end 2-day talks in Washington; state desire to negotiate constructively with USSR, but will stand firm with NATO allies against Soviet pressure, **Apr. 1**
Foreign ministers of U.S., Britain, France, and West Germany confer in Paris on strategy for foreign ministers conference; communiqué announces agreement on Western package proposal on Germany and determination of West to preserve freedom of West Berlin, **Apr. 29–30**
Big Four conference of foreign ministers opens at Geneva, attended by U.S. Secretary of State Herter, Soviet Foreign Minister Gromyko, British Foreign Minister Lloyd, and French Foreign Minister Couve de Murville; representatives of West and East Germany present as advisers, **May 11**
Herter presents West's plan for European peace settlement, involving German reunification, settlement of Berlin issue, and attainment of European security in 4 stages, **May 14**
Gromyko calls for postponement of German reunification, asks West to negotiate separate peace treaties with East and West Germany, and proposes establishment of West Berlin as demilitarized free city, **May 15**
Herter rejects Soviet proposal for signing separate peace treaties with East and West Germany; Gromyko reject's West's package proposal, but says USSR is willing to discuss certain specific points, **May 18**
Gromyko, in private talks with Lloyd, offers 3 alternatives to West's plan for Berlin: withdrawal of Western garrisons, addition of token Soviet forces to garrisons, or substitution of neutral U.N. forces for Western garrisons; Lloyd rejects all 3, **May 19**
Herter presents West's plan for reunification of Berlin by free elections, **May 26**
Western powers present general statement of terms for West Berlin settlement, including proviso that Western powers retain all rights granted in Occupation Statue of 1945, **June 8**
Gromyko rejects Western terms for West Berlin settlement; demands that West end its occupation regime there, **June 9**
Gromyko proposes to extend certain Western rights in West Berlin for year if West accepts Soviet conditions; Herter rejects proposal, **June 10**
West presents final draft for Berlin settlement, providing for certain modifications of existing status but retaining Western garrisons, **June 16**
Gromyko rejects West's proposals; repeats offer of temporary Berlin settlement with deadline extended to 18 months, **June 19**
Foreign ministers conference recesses, **June 20**
Foreign ministers' talks in Geneva reopen, **July 13**
Western foreign ministers propose that conference constitute itself a permament body to seek solution of German problem, **July 20**
Western foreign ministers propose 5-year agreement on Berlin, including role for U.N. as supervisor of propaganda activities, **July 28**
Geneva talks are adjourned indefinitely, **Aug. 5**
President Eisenhower, Prime Minister Macmillan, President de Gaulle, and Chancellor Adenauer confer in Paris and Rambouillet; communiqué announces invitation to Soviet Premier Khrushchev to meet in summit conference in Paris, beginning April 27, 1960; reaffirms West's intentions to maintain its rights in Berlin, **Dec. 19–21**
Khrushchev accepts West's invitation for summit conference but asks for change of date, **Dec. 25**
Khrushchev accepts West's proposals (of Dec. 29) for summit talks in Paris, in May 1960, **Dec. 30**
SUPREME COURT—See also NEGROES; STRIKES AND WALKOUTS
In two decisions, upholds rights of states to levy certain taxes on businesses engaged in interstate commerce, **Feb. 24**
Rules, 5–4, that state courts may not, under Taft-Hartley law, award damages against a union for peaceful picketing, even if picketing was in violation of Taft-Hartley law, **Apr. 20**
In Barenblatt and Uphaus decisions, upholds contempt convictions for refusals to yield information in congressional and state subversive inquiries, **June 8**
Rules, 8–1, that security-risk program does not authorize government to deny clearance to a defense worker without confronting him with accusers, **June 29**

WIDE WORLD

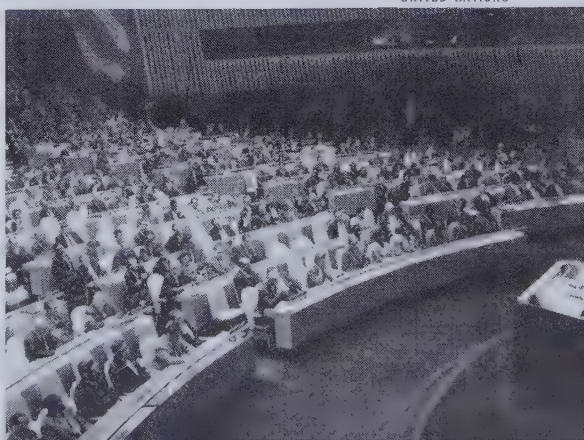
USSR—Among nine U.S. governors who arrived June 24 for a tour of the Soviet Union, Luther Hodges of North Carolina (left) and Robert B. Meyner of New Jersey inspect a large photomural of a session of the Supreme Soviet.

SWEDEN
King Olav of Norway arrives for 3-day visit, **Apr. 23**
SWITZERLAND
Voters reject proposed constitutional amendment to give women right to vote in national elections, **Feb. 1**
SYRIA—See UNITED ARAB REPUBLIC

TAIWAN—See CHINA
TANGANYIKA—See BRITISH EAST AFRICA
TAYLOR, Gen. Maxwell D.
Retires as chief of staff of Army, **June 30**
TELEVISION—See RADIO AND TELEVISION; VAN DOREN
TENNESSEE VALLEY AUTHORITY
Bill authorizing Authority to sell $750 million in bonds to finance construction of power projects is signed by President Eisenhower, **Aug. 6**
TENNIS—See SPORTS
THAILAND
King Phumiphon Adundet appoints Constituent Assembly dominated by military officers, **Feb. 4**
Field Marshal Sarit Thanarat is named premier, **Feb. 9**
TIBET—See also CHINA; DALAI LAMA
Clashes between Tibetans and Chinese Communist troops break out in Lhasa, **Mar. 13**
Dalai Lama flees Lhasa toward southern border, **Mar. 17**
Populace in Lhasa has joined rebel Khamba tribes in open warfare against Chinese Communists, it is reported in New Delhi, India, **Mar. 20**
Tibetan Kashag (cabinet) has denounced 1951 treaty with Peking and proclaimed Tibet independent, it is reported in Kalimpong, India, **Mar. 25**
Chinese forces have crushed revolt in Lhasa, it is reported in Kalimpong, **Mar. 27**
Chinese Communist Premier Chou En-lai dissolves Tibetan regime headed by Dalai Lama; orders exercise of rule by committee headed by Panchen Lama, **Mar. 28**
Dalai Lama crosses border into India and obtains asylum, **Mar. 31**
Panchen Lama arrives in Lhasa and assumes chairmanship of Preparatory Committee for the Tibetan Autonomous Region, **Apr. 5**
Dalai Lama, in statement at Tezpur, India, says Chinese Communists violated pledges of Tibetan autonomy contained in Sino-Tibetan agreement of 1951; states he left Tibet of his own accord, **Apr. 18**

UNITED NATIONS—President Sékou Touré of Guinea (r.) addresses a special General Assembly meeting, November 5.

UNITED NATIONS



Chinese forces have dispersed rebels in southeastern Tibet, killed or captured some 2,000, and sealed border to India, Peking radio reports, **Apr. 23**

TIROL—See AUSTRIA; ITALY

TITO, Marshal—See also NEHRU; YUGOSLAVIA
Returns to Belgrade, after 3-month tour of Asia and Africa, **Mar. 6**

TOURÉ, Sékou—See AFRICA; GUINEA

TRACK AND FIELD—See SPORTS

TRIESTE
Bathyscaphe *Trieste* makes record-breaking descent to 18,600 feet in Pacific off Guam, **Nov. 14**

TUBMAN, William V. S.—See also AFRICA
Re-elected president of Liberia, **May 5**

TUNISIA—See also EISENHOWER
New constitution goes into effect, establishing presidential-type government, **June 1**
Signs 1-year monetary and trade agreements with France, **Sept. 5**
President Habib Bourguiba is victorious in unopposed presidential election, **Nov. 8**

TURKEY—See also CYPRUS; EISENHOWER
Signs defense pact with U.S. in Ankara, providing for U.S. aid in event of agression, **Mar. 5**
Premier Adnan Menderes confers with Greek Premier Constantine Karamanlis in Ankara on Cyprus problem and other Greek-Turkish issues, **May 7–9**
Agreement has been reached on establishment of NATO intermediate-range ballistic missiles base in Turkey, it is announced in Washington, **Oct. 10**

UNION OF SOVIET SOCIALIST REPUBLICS—See also DISARMAMENT; GERMANY; KHRUSHCHEV; SPACE FLIGHT; SUMMIT CONFERENCE
Signs agreement in Jakarta for long-term credit and technical aid to Indonesia, **Jan. 3**
In notes to 27 nations, calls for 28-nation conference (including Communist China) to conclude peace treaty with West and East German governments, **Jan. 10**
In note to Iran, warns against signing military pact with U.S., **Jan. 16**
Twenty-first Congress of Soviet Communist Party takes place in Moscow, attended by Soviet Communist delegates and Communist leaders from 70 other countries; adopts Premier Khrushchev's 7-year economic plan, **Jan. 27–Feb. 5**
Khrushchev and Chinese Communist Premier Chou En-lai sign agreement in Moscow for Soviet financial and technical aid totaling 5 billion rubles over next 8 years, **Feb. 7**
In notes to U.S., Britain, and France, agrees to foreign ministers conference, but demands that ministers of Czechoslovakia and Poland be included, **Mar. 2**
In note to U.S., denounces U.S. search of Soviet fishing trawler off Newfoundland (Feb. 26) as "provocative," **Mar. 5**
Signs agreement with Iraq for 550-million ruble loan to develop Iraqi economy, **Mar. 16**
Signs 500-million ruble technical aid pact with North Korea for construction of Korean power stations and factories, **Mar. 17**
In notes to U.S., Britain, and France, accepts proposal for foreign ministers conference at Geneva, **Mar. 30**

UNITED STATES—The U.S.S. *Patrick Henry*, second of the Navy's nuclear submarines equipped to fire the Polaris missile, is launched at Groton, Conn., on September 22.

U.S. NAVY

In note to U.S., charges U.S. imperils forthcoming foreign ministers meeting by arming West Germany and other NATO nations with missiles and nuclear weapons, **Apr. 21**
In note to Italy, protests against establishment of U.S. missile bases there, **Apr. 28**
In note to Japan, warns against acceptance of U.S. missile bases; proposes Pacific collective security pact, **May 4**
In note to U.S., charges U.S. arming of West Germany and other NATO states with nuclear weapons and missiles endangers peace, **May 23**
In Foreign Ministry statement, charges Laos violates Geneva agreement of 1954 by permitting U.S. to set up military base, **Aug. 17**
States it will not hold nuclear weapons tests as long as Western powers continue suspension, **Aug. 28**
Calls upon Communist China and India to resolve border dispute "in spirit of friendship," **Sept. 9**
Calls for immediate international conference on Laos, **Sept. 14**
Ceases jamming Voice of America broadcasts for first time in 10 years, as Khrushchev leaves USSR for visit to U.S., **Sept. 15**
Budget for 1960 presented to Supreme Soviet calls for expenditure of 744.8 billion rubles, with revenue estimated at 772.1 billion, **Oct. 27**
Signs accord with U.S. in Moscow for 2-year extension of scientific, cultural, and sports exchanges, **Nov. 21**

UNITED ARAB REPUBLIC—See also NASSER
Begins roundup of suspected Communists in Egypt, **Jan. 1**
Agrees to establish consular relations with East Germany, **Jan. 7**
Concludes trade, cultural, and other agreements with Italy in Cairo, **Jan. 8**
Signs financial agreement with Britain in Cairo, ending dispute arising from 1956 nationalization of Suez Canal, **Feb. 28**
Damascus radio charges Iraqi fighter planes strafed villages inside Syrian border, **Mar. 14**
Detains *Inge Toft*, Danish freighter, in Suez Canal, and orders unloading of Israeli cargo, **May 21**
Resumes diplomatic relations with Jordan, **Aug. 16**
Foreign Minister Mahmoud Fawzi tells U.N. General Assembly that restrictions on Israel's use of Suez Canal will be lifted when problem of Palestine Arab refugees is settled, **Oct. 5**
Signs agreement with Sudan in Cairo on division of Nile River waters, **Nov. 8**
Resumes diplomatic relations with Britain, **Dec. 1**
Suez Canal Authority obtains $56.5 million loan from World Bank for improving canal, **Dec. 22**

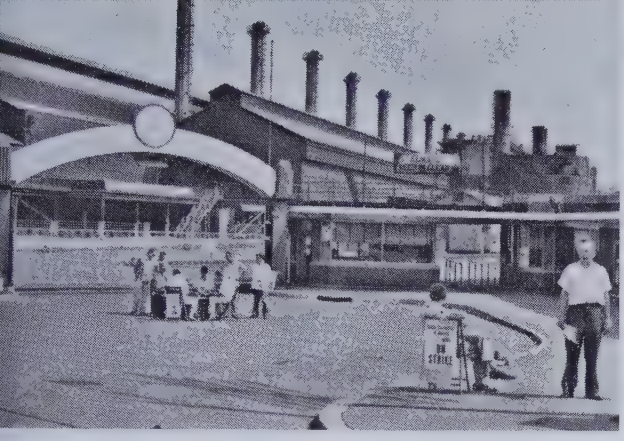
UNITED NATIONS

General Assembly

Votes to end trusteeship for French Cameroons on Jan. 1, 1960, without further elections; votes for holding of plebiscite in British Cameroons on possible ending of trusteeship status; special session on Cameroons (begun on Feb. 20) ends, **Mar. 13**
Regular 1959 session convenes; Dr. Victor A. Beláunde of Peru is elected president, **Sept. 15**
Votes, 44–29 (with 9 abstentions), against U.N. seating for Chinese Communist government, **Sept. 22**
Votes resolution deploring Chinese Communist actions in Tibet, **Oct. 21**
Unanimously adopts Declaration of the Rights of the Child, **Nov. 20**
Passes resolution expressing "grave concern" over France's proposed nuclear tests in Sahara; passes resolution recommending "general and complete disarmament," **Nov. 20**
Passes 2 resolutions calling on all nations to refrain from nuclear weapons tests pending efforts of atomic powers to attain agreement on halting tests, **Nov. 21**
Passes resolution calling on USSR and Hungary to honor previous U.N. resolutions for withdrawal of Soviet troops and admission of U.N. representative, **Dec. 9**
Votes to continue aid to Palestine Arab refugees for 3 years, **Dec. 9**
Resolution requesting settlement of Algerian rebellion on basis of political self-determination fails of adoption, **Dec. 12**
Elects Poland to Security Council, in compromise whereby Poland will resign after one year in favor of Turkey; passes resolution establishing permanent U.N. Committee on Peaceful Uses of Outer Space; adopts disarmament resolution referring disarmament proposals to 10-nation group to meet in Geneva, **Dec. 12–13**
Fourteenth regular session adjourns, **Dec. 13**

Security Council

Votes, 10–1 (with USSR in negative), to send subcommittee to investigate Laos' charges of aggression by North Vietnam, **Sept. 8**
Laos subcommittee report is made public, declaring there is no clear evidence of participation in Laotian fighting by North Vietnamese forces, although there is evidence of aid to Laotian rebels in form of weapons and supplies, **Nov. 6**



UPI; WIDE WORLD

UNITED STATES—(*Left*) Idle steelworkers play cards at entrance to plant in Homestead, Pa., after start of nationwide steel strike on July 15. Mills remained closed for 116 days. VANIER—(*Right*) Chief Justice Patrick Kerwin prepares to install Maj. Gen. George P. Vanier (l.) as governor general of Canada, September 15. Observing ceremony is Mrs. Vanier.

UNITED STATES—For internal affairs, see also such headings as ACCIDENTS AND DISASTERS; ATOMIC ENERGY; FLAG; NEGROES; SPACE FLIGHT; SPORTS; STRIKES AND WALKOUTS; and SUPREME COURT; and names of outstanding personalities of the year. For external affairs, see also such headings as DISARMAMENT; SUMMIT CONFERENCE; and names of outstanding personalities.

Foreign Affairs

Recognizes new government of Cuba, **Jan. 7**

In note to USSR, rejects Soviet proposal for immediate resumption of talks on reducing danger of surprise attack, **Jan. 15**

Rejects Hungarian proposal for negotiations toward normalization of relations, **Jan. 31**

State Department makes public a tape recording of radio conversation by Soviet fighter pilots while allegedly engaged in shooting down U.S. Air Force transport over Soviet Armenia on Sept. 2, 1958, **Feb. 5**

In note to USSR, calls for Big Four foreign ministers conference on Germany; rejects Soviet proposal for 28-nation conference, **Feb. 16**

U.S. Navy personnel board Soviet fishing trawler 120 miles northeast of St. John's, Newfoundland, in area of transatlantic cable break, **Feb. 26**

Signs bilateral defense pacts in Ankara, Turkey, with Iran, Pakistan, and Turkey, providing for U.S. aid in event of aggression, **Mar. 5**

In note to USSR, calls for Big Four foreign ministers conference in Geneva beginning May 11 (similar notes sent by Britain and France), **Mar. 26**

Concludes agreement with Bulgaria for resumption of regular diplomatic relations, **Mar. 27**

State Department statement accuses Communist China of "barbarous intervention" in Tibet, **Mar. 28**

In note to USSR, rejects Soviet attempt to set ceiling on Western flight corridors linking West Berlin and West Germany, **Apr. 4**

State Department announces Panama is being supplied with small arms to help repel invaders, **Apr. 27**

Signs pact with Canada for defense cooperation in sphere of atomic energy, **May 22**

Signs sales and credit agreement with Poland totaling $50 million, or about half 1957–58 levels, **June 10**

U.S. Navy patrol plane is attacked by 2 MIG jets off North Korean coast in Sea of Japan; 1 U.S. airman wounded, **June 16**

In State Department statement, tells West Berlin that Western rights will be maintained, despite Soviet threats, **June 20**

Two U.S. soldiers are slain by Communist terrorists at Bienhoa, South Vietnam, **July 9**

In State Department statement, rejects Soviet proposal to bar nuclear weapons and rockets from Balkan area, **July 11**

Will provide increased quantities of military equipment for Laotian Army, State Department announces, **Aug. 26**

Suspension of nuclear weapons tests will be extended to end of 1959, State Department announces, **Aug. 26**

State Department statement charges USSR and Communist China with cooperating with North Vietnam in aggressive action in Laos, **Sept. 5**

In State Department statement, rejects Soviet proposal for international conference on Laos, **Sept. 15**

Signs memorandum of agreement with Philippines in Manila on revision of treaty involving military bases, **Oct. 12**

In note to Cuba, expresses concern that Cubans are seeking to sow distrust and hostility between U.S. and Cuba, **Oct. 27**

Signs accord with USSR in Moscow for 2-year extension of scientific, cultural and sports exchanges, **Nov. 21**

Congress

Eighty-sixth Congress convenes; party seating: Senate, 64 Democrats and 34 Republicans; House, 283 Democrats and 153 Republicans, **Jan. 7**

Senate adopts compromise antifilibuster plan, setting minor curbs on Senate debate, **Jan. 12**

Completes passage of bill for 4-year extension of Selective Service Act, **Mar. 12**

House completes congressional passage of bill for Hawaiian statehood, **Mar. 12**

Passes legislation to continue corporate income and excise taxes, **June 29**

Passes bill to finance farm programs, containing limit to benefits obtainable by farmers, **June 30**

Passes $3,556,200,000 Mutual Security Program authorization for fiscal 1960, **July 22**

Senate fails to override president's veto of $1,375 million housing bill, **Aug. 12**

Two senators and one representative from Hawaii take oath of office, **Aug. 24**

House passes Senate-approved $1,050 million omnibus housing bill, **Aug. 27**

House, by one-vote margin, sustains president's veto of $1,216 million civil works appropriation bill, **Sept. 2**

Passes bill exempting news programs from law requiring radio and television stations to give equal time to political candidates, **Sept. 3**

Passes Labor Reform Act of 1959, guaranteeing rights of individual union members, barring secondary boycotts, and imposing other curbs on power of unions; Senate sustains president's veto of second housing bill, **Sept. 4**

Senate passes House-approved bill for 1 cent rise in gasoline tax to provide funds for highway construction, **Sept. 5**

Passes $1,185 million civil works bill, **Sept. 8**

Overrides president's veto of $1,185 million civil works bill, **Sept. 10**

Passes bill for Mutual Security Program appropriation of $3,225,813,000 for fiscal 1960; extends life of Civil Rights Commission for 2 years; first session of 86th Congress adjourns, **Sept. 15**

Armed Forces

Lt. Gen. Clyde D. Eddleman named commander of U.S. Army forces in Europe, **Feb. 12**

Gen. Lyman L. Lemnitzer named as chief of staff of Army, succeeding Gen. Maxwell D. Taylor (retiring June 30), **Mar. 18**

Maj. Gen. Bernard A. Schriever named chief of Air Research and Development Command, **Apr. 2**

Gen. Lawrence S. Kuter named commander of North American Air Defense Command, **May 6**

George Washington, first atomic submarine capable of firing Polaris missile, is launched at Groton, Conn., **June 9**

Long Beach, Navy's first nuclear-powered surface ship, is launched at Quincy, Mass., **July 14**

Navy announces existence of Project Tepee, radio-monitoring system which detects missile firings and can detect most atmospheric nuclear weapons tests, **Aug. 7**

Maj. Gen. David M. Shoup named commandant of Marine Corps, **Aug. 12**

Patrick Henry, nuclear-powered submarine capable of firing ballistic missiles, launched at Groton, Conn., **Sept. 22**

Theodore Roosevelt, nuclear-powered submarine designed to fire Polaris missile while submerged, is launched at Mare Island Shipyard, Calif., **Oct. 3**

Maj. Gen. August Schomburg is named to succeed Maj. Gen. John B. Medaris as commander of Army Ordnance Missile Command, **Oct. 27**

Triton, largest atomic submarine ever built, is commissioned at Groton, Conn., **Nov. 10**

Robert E. Lee, atomic-powered submarine, is launched at Newport News, Va., **Dec. 18**
Scorpion, atomic-powered submarine, is launched at Groton, Conn., **Dec. 19**
Nuclear submarine *George Washington* is commissioned at Groton, Conn., **Dec. 30**

Appointments and Resignations

Philip W. Bonsal named ambassador to Cuba, **Jan. 21**
Thomas S. Gates, Jr., resigns as secretary of navy (effective June 1), **Feb. 3**
James W. Riddleberger named director of International Cooperation Administration succeeding James H. Smith (resigned Jan. 31), **Feb. 19**
Ogden R. Reid named ambassador to Israel, **Mar. 10**
John Foster Dulles resigns as secretary of state, **Apr. 15**
Christian A. Herter named secretary of state, **Apr. 18**
C. Douglas Dillon named under secretary of state, **Apr. 30**
Clare Boothe Luce (appointed Feb. 26) resigns as ambassador to Brazil, **May 1**
William B. Franke named secretary of Navy, **May 5**
John M. Cabot named ambassador to Brazil, **May 21**
Dr. James R. Killian, Jr., resigns as special presidential assistant for science and technology; Dr. George Bogdan Kistiakowsky named to post, **May 28**
Lewis L. Strauss resigns as secretary of commerce, **June 30**
Frederick H. Mueller named secretary of commerce, **July 21**
John D. Hickerson named ambassador to Philippines, **Oct. 13**
Neil H. McElroy resigns as secretary of defense; Thomas S. Gates, Jr., named to post, **Dec. 1**
James H. Douglas is named deputy secretary of defense; Dudley C. Sharp is named to succeed Douglas as secretary of Air Force, **Dec. 10**

UPPER VOLTA—See also MALI FEDERATION
Adopts constitution as autonomous republic of French Community, **Feb. 28**

URUGUAY
Nationalist Party regime assumes office; Martin R. Etchegoyen takes over as chief of state, **Mar. 1**

VAN DOREN, Charles
Tells House Special Committee on Legislative Oversight that his role as contestant on television quiz show in 1956 was "fixed," **Nov. 2**

VANGUARD SATELLITES—See SPACE FLIGHT

VANIER, Maj. Gen. George P.
Takes office as governor general of Canada, **Sept. 15**

VENEZUELA
Romulo Betancourt takes office as president, **Feb. 13**
Breaks off relations with Dominican Republic, **June 12**

VIETNAM—See also LAOS; UNITED NATIONS
South Vietnam concludes reparations agreement with Japan; Japan to provide $39 million over 5-year period, **May 13**
Parliamentary elections in South Vietnam result in victory for President Ngo Dinh Diem's National Revolutionary Movement, **Aug. 30**
South Vietnamese Army reports successful campaign against Communist guerrillas in Camau Peninsula, **Oct. 30**

VIRGINIA
State Supreme Court voids state's "massive resistance" laws against integration of public schools as violating state constitution; federal court in Norfolk rules that closing of certain public schools to avoid integration violates U.S. Constitution, **Jan. 19**
Public school integration begins at Arlington and Norfolk as Negro pupils attend formerly all-while secondary schools, **Feb. 2**

WADSWORTH, James J.—See DISARMAMENT

WRIGHT, Frank Lloyd
Dies at Phoenix, Ariz., aged 89, **Apr. 9**

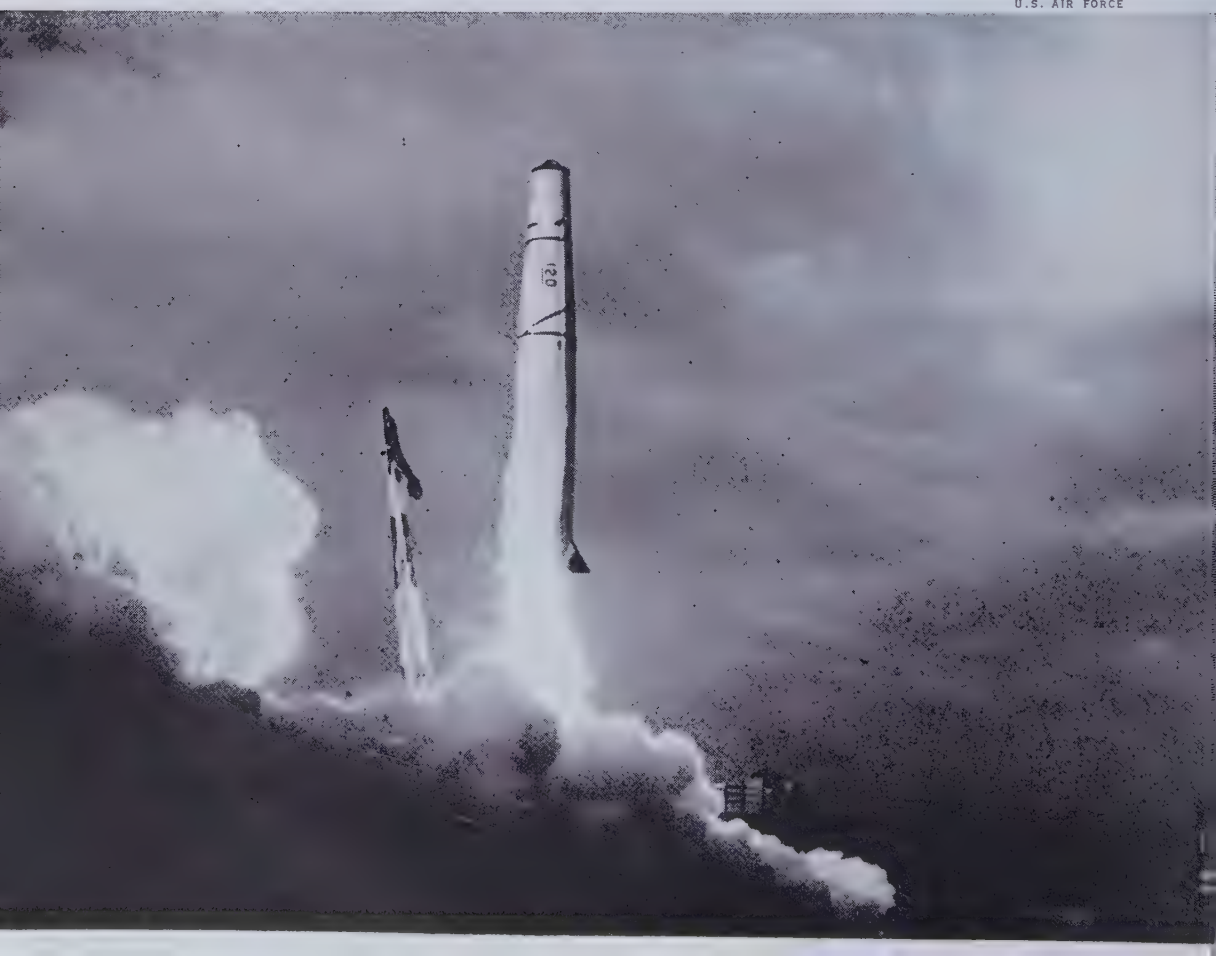
YEMEN
Reports from Aden say Yemeni Army rebels have seized port of Hodeida, **June 15**

YUGOSLAVIA—See also TITO
President Tito visits Sudan and Ethiopia and concludes economic and friendship agreements, **Feb. 3–17**

ZAHIR, Muhammad—See AFGHANISTAN

Symbolic of the growing power of United States military missiles, an Air Force Thor IRBM thunders aloft from Cape Canaveral in a test flight. The Thor, which can carry a thermonuclear warhead 1,500 miles, went into full production in 1959 and was deployed at three bases in Great Britain. Several other missiles achieved operational status during the year.

U.S. AIR FORCE



THE AMERICANA ANNUAL 1960

ABRASIVES. According to the U.S. Bureau of Mines, United States sales of abrasive materials (natural and artificial) declined sharply in quantity and value in 1958. Output of natural abrasives in 1958 was down 12% in tonnage and 18% in value. Sales of grinding wheels decreased 25% in value, and coated abrasives, more than 10%.

Data on United States production and imports of major abrasives in 1957 and 1958 are shown in the following table.

ABRASIVES IN THE UNITED STATES
(In short tons, unless otherwise indicated)

Type and category	1957	1958
Natural:		
Grinding and polishing sand	1,911,218	1,547,000
Quartz (crude, crushed, and ground)	269,178	234,516
Garnet	9,776	10,035
Emery	11,893	7,687
Tripoli	50,717	47,044
Pumice (abrasive only)	17,241	26,000
Grindstones	1,505	852
Tube-mill liners	1,440	...[1]
Grinding pebbles	2,902	1,985
Manufactured:		
Silicon carbide	124,688	110,456
Aluminum oxide	228,511	122,868
Metal abrasives	131,503	101,159
Imports:		
Industrial diamonds (carats)	12,220,000[2]	9,501,000
Corundum	4,104	4,685
Emery	1,334[2]	12
Pumice	35,182[2]	38,613
Silicon carbide	84,040	73,134
Aluminum oxide	192,778	81,214

[1] Figure withheld to avoid disclosing individual company confidential data. [2] Revised. (Source: U.S. Bureau of Mines.)

F. E. HARRIS, *Former Publications Editor, "Mineral Trade Notes," U.S. Bureau of Mines.*

ACADEMIES AND ASSOCIATIONS. See SOCIETIES AND ORGANIZATIONS.

ACCIDENTS. Accidental deaths in the United States during the first nine months of 1959 totaled 68,000, an increase of 2%—representing a loss of 1,200 lives—as compared with the corresponding months of 1958. More deaths were recorded in every accident classification except work, the figures for which did not change despite rising employment. The sharpest increase (3%) was in motor vehicle deaths, while public and home fatalities climbed 2% and 1%, respectively.

The 1958 accidental death toll in the United States was 91,000, an average of 52.5 persons killed per 100,000 population. This bettered the previous low rate of 55.8 in 1957, and was 30% lower than the average rate for the period 1928–58.

Accidents continued to be the fourth most important cause of death in the United States, exceeded only by heart disease, cancer, and cerebral hemorrhage. They were the leading cause of death among persons 1 to 36 years of age.

There were 9,655 accidental deaths in Canada in 1957 (the latest year for which complete figures are available). The population death rate was 57.7 per 100,000 population. As in the United States, accidents in Canada ranked fourth among all causes of death. Motor vehicle accidents were the most important type in Canada in 1957, resulting

Photo above: **Diamond Head forms the backdrop for this romantic setting at Waikiki Beach on the island of Oahu, Hawaii, 50th state of the Union. President Eisenhower proclaimed statehood for the former territory on Aug. 21, 1959.**

EWING GALLOWAY

in 3,694 deaths. The next most important types in terms of deaths were falls (1,569), drowning (1,230), burns (627), railroad (338), and poison gases (149).

The distribution was similar in the United States, except that the proportion of falls was higher and drowning lower. In the United States the 1958 death totals by classes were: motor vehicle (37,000), home (27,000), public (16,500), and work (13,300). In addition to the 91,000 deaths, accidental injuries totaled 9,100,000, including about 335,000 which brought some degree of permanent impairment.

ACCIDENTAL DEATHS IN THE U.S., 1950–59

Year	Total[1]	Motor vehicle	Public non-motor vehicle	Home	Work
1950	91,249	34,763	15,000	29,000	15,500
1951	95,871	36,996	16,000	30,000	16,000
1952	96,172	37,794	16,000	30,500	15,000
1953	95,032	37,955	16,500	29,000	15,500
1954	90,032	35,586	15,500	28,000	14,000
1955	93,443	38,426	15,500	28,500	14,200
1956	94,780	39,628	16,000	28,000	14,300
1957	95,307	38,702	17,500	28,000	14,200
1958	91,000	37,000	16,500	27,000	13,300
1958 (Jan.–Sept.)	66,700	26,270	12,900	19,600	10,000
1959 (Jan.–Sept.)	68,000	27,140	13,200	19,700	10,000

[1] Duplications between motor vehicle, work, and home accidents are eliminated in the "Total" column. Deaths of military personnel are assigned to motor vehicle, public non-motor vehicle, and home accidents, according to the type of accident.

Source: Total deaths and motor vehicle deaths, 1950 to 1957, are National Office of Vital Statistics totals. All other figures are National Safety Council estimates based on data from the National Office of Vital Statistics, state and city health departments and traffic authorities, and other sources.

Accidental deaths and injuries are estimated to have cost the United States $12.1 billion in 1958. These costs include wage losses, medical fees and hospital expense, overhead costs of insurance, property damage in motor vehicle accidents and fires, and property destroyed or production lost due to work accidents.

The most critical part of the accident scene—the highway—grew worse in 1959. After almost two years of steady improvement, the death trend turned upward as the nation emerged from the 1958 economic recession and travel boomed. The National Safety Council, noting a pattern apparent from previous economic cycles, warned of a record toll in prospect for the year. However, by late summer the trend was halted and the curve actually turned downward again. With travel continuing to increase, the mileage death rate fell to the lowest point on record.

(See also HIGHWAYS; INDUSTRIAL HEALTH AND SAFETY; MINING; and the Index entry, *Accidents.*)

M. E. HORNER,
National Safety Council.

ADEN. A British colony and two British protectorates in the southern Arabian Peninsula. The Colony of Aden consists of two rocky peninsulas on the south coast of Arabia about 100 miles east of Bab el Mandeb. The island of Perim in Bab el Mandeb (5 square miles) is also included. Aden Colony has an area of 75 square miles and a population (est. 1957) of about 152,000. The Kuria Muria Islands (30 square miles) and Kamaran Island (22 square miles) constitute dependencies.

Political Divisions.—Western Aden Protectorate and Eastern Aden Protectorate are bounded by Aden Colony, the sultanate of Muscat and Oman, the imamate of Yemen, and the "empty quarter" claimed by Saudi Arabia. The Eastern Protectorate (67,000 square miles; estimated population, 350,000) consists of seven states: the Qu'aiti state of Shihr and Mukalla; the Kathiri state of Sai'un; the Mahri sultanate of Qishn and Socotra; the Wahidi sultanates of Balhaf and of Bir 'Ali; and the sheikdoms of Irqa and Haura. The first two states comprise the district known as the Hadhramaut and are the best organized. The sultan of Shihr and Mukalla is the recognized chief of the protectorate. All rulers have protective treaties with Great Britain, which advises the rulers through a British agent residing at Mukalla.

Western Aden Protectorate (45,000 square miles; estimated population, 400,000) consists of 18 states which have protective treaty arrangements with Great Britain. The most progressive state is the sultanate of Lahej, which possesses a constitution vesting legislative power in the sultan and a 21-member Legislative Council. Six of the states—the amirates of Baihan and Dhala, the sheikdom of Upper Aulaqi, and the sultanates of Audhali, Fadhli, and Lower Yafa—formed the Federation of the Arab Amirates of the South on Feb. 11, 1959. The federation was governed by a 6-member Supreme Council elected by a Federal Council composed of 6 members from each state. A seventh member, the sultanate of Lahej, joined the federation on Oct. 5, 1959.

Government.—The British governor of Aden Colony (Sir William Henry Tucker Luce, appointed in 1956) also serves as commander-in-chief. He is aided by a 10-member Executive Council, composed of 3 ex-officio, 4 elected, and 1 nominated members; and a 23-member Legislative Council, which includes 12 elected and 6 nominated members. Four elected members and one nominated member of the Legislative Council are members of the Executive Council and have responsibilities for certain departments of the government. Justice in the colony is administered by a Court of Small Causes for civil suits, by magistrates for criminal procedures, and by a Supreme Court with unlimited jurisdiction.

Education.—In 1959 there were 35 primary schools and 16 intermediate schools with a combined enrollment of 10,416 pupils in the colony. Other schools include a technical institute, 4 boys' and 3 girls' secondary schools, and 2 teacher-training centers. The protectorates had 60 primary and 8 intermediate schools in 1959. In addition, 57 students attended higher educational institutions outside the state at government expense.

Economy.—Aden is one of the principal ports of the Commonwealth of Nations and is important as an entrepôt serving the entire Arabian area. In 1958 over 5 million tons of bunker fuel oil valued at over $72 million were supplied by British Petroleum Refinery (Aden), Ltd., and by Caltex Oil (Aden), Ltd., and Standard Vacuum (East Africa), Ltd. At Aden and Little Aden there are 30 berths for ships and 4 floating docks. In 1958, 6,286 ships with a total tonnage of 27,594,328 called at Aden. Exports in 1958 were valued at £63,497,937, and imports at £71,771,662. Traditional trade was mainly in cotton piece goods, grains, coffee, hides, tea, gums and resins, and cheap consumer goods. In recent years improved communications throughout the region have had a deleterious effect on Aden's entrepôt trade, since many smaller ports now trade directly with the outside world.

Revenues for Aden Colony in 1958–59 were estimated at £4,690,550; expenditures, at £4,452,750. The colony is served by Aden Airways (an associate of British Overseas Airways Corporation), which operates scheduled services to Aden protectorates, Arabia, and Africa, and by nine other international airlines. In 1958, 8,048 flights were recorded and a total of 85,014 passengers were carried. A cable and wireless network connects Aden by telephone with most countries of the world.

Principal Events, 1959.—On January 4, 12 moderate candidates were elected to the Aden Legislative Council in an election participated in by about 6,000 persons, or only 27% of the electorate. The election was boycotted by ardent Arab nationalists, particularly by the South Arabian League, which advocates the union of Aden with other Arab states. In April the weekly newspaper of the league was banned in Aden.

The signing of the constitution of the Federation of the Arab Amirates of the South took place on February 11 (see above, *Political Divisions*). British Colonial Secretary Alan Lennox-Boyd was present for the inaugural ceremonies, and in a speech on the occasion he promised eventual independence for the federation. In the face of Yemenite opposition, Britain promised to continue military and financial aid. Yemen refused to recognize the new federation.

Improved relations between Great Britain and the United Arab Republic during the year helped materially to reduce political tensions in Aden.

SYDNEY N. FISHER,
Professor of History,
The Ohio State University.

ADENAUER, Konrad, chancellor of the Federal Republic of Germany: b. Cologne, Germany, Jan.

5, 1876. After a period of enforced political retirement under the Nazis, from 1933 through World War II, he emerged as leader of the pro-Western Christian Democratic Party. He was elected chancellor of the republic in 1949, 1953, and 1957.

In 1959, an active year for the 83-year-old statesman, Adenauer caused excitement by proposing to relinquish the chancellorship. On April 7 he announced that he would accept his party's nomination in the July elections for the lesser position of president. On June 5, citing the worsened world situation as the reason for his change of heart, he withdrew from this candidacy and, over some party protest, announced that he would stay on as chancellor.

The Berlin question continued in 1959 to be the major problem facing Adenauer. On January 5 the Federal Republic rejected, as had other Western powers, Soviet proposals of "free city" status for West Berlin, with Moscow's control powers to be transferred to the Communist East German government by May 27. Throughout the year Adenauer remained adamant in opposing any concession on the city. He said on November 30: "The present four-power status of Berlin is still the best means of protecting the freedom of West Berlin." Originally opposed to admitting any discussion of the issue at the East-West summit meeting projected for early 1960, he agreed in mid-November, after talks in London with British Prime Minister Macmillan, to its inclusion as part of the overall questions of Germany's future and European security. The Berlin question was high on the agenda of the December 19–21 meeting in Paris of Adenauer, de Gaulle, Macmillan, and President Eisenhower, following the latter's tour of 11 countries in Europe, Asia, and Africa.

Although international problems affecting Germany remained unresolved, the domestic situation in 1959 gave Adenauer reason for satisfaction. A study prepared by the Institute of German Industry showed that in the ten years of his chancellorship the country's industrial production had tripled and that those unemployed had decreased from 8% of the work force in 1949 to only 1% in the fall of 1959.

(See also GERMANY.)

ADULT EDUCATION. See EDUCATION and the Index entry, *Adult Education.*

ADVANCED RESEARCH PROJECTS AGENCY. Established by directive of the secretary of defense on Feb. 7, 1958, the Advanced Reseach Projects Agency (ARPA) served the Department of Defense in 1959 as planner and manager of advanced research and development in the high-priority fields of military space technology, ballistic missile defense, solid propellant technology, and materials. In carrying out these functions, ARPA worked with the Army, Navy, and Air Force.

In accordance with long-range plans made when ARPA was created, the Department of Defense announced on Sept. 23, 1959, that it was relieving ARPA of most of its military space projects and restoring them to the individual services, particularly to the Air Force. The announcement said that ARPA would continue as a permanent agency within the Department of Defense, and would retain its assignments in the missile defense, solid propellant, and materials programs.

Military Space Technology.—The development of a military space program was a major objective of ARPA in 1959. Two important military space projects reached flight test status. Test flights were conducted under Project Discoverer, designed to overcome such significant challenges as satellite stabilization and control in orbit, capsule ejection from outer space, and the recovery of the capsule at a predetermined time and place. The first test flight in a satellite navigation project was conducted with the launching of Transit I.[1] Subsequent launches are designed to provide an all-weather system through which submarines, surface craft, and aircraft can employ a navigation satellite to determine their positions accurately.

During 1959 work was initiated or continued on other military satellite programs to have far-reaching impact on national security. Nearing space flight test status were Projects Courier, for satellite communications, and Midas, for satellite early warning against ballistic missile attack.[2]

In support of these military space applications, ARPA sponsored varied research and development for advanced systems of propulsion, guidance and control, space communications, and tracking. The Saturn clustered booster, which consists of eight ballistic missile-type engines, approached test status. This booster, having 1.5 million pounds of thrust, will, with upper stages, launch a 28,000-pound space station into a 300-mile orbit.

Beyond such directly supporting research, ARPA in 1959 initiated "blue sky" exploratory work in space-oriented areas ranging from feasibility investigation of a rocket propelled by controlled nuclear detonations to solar power research. Research efforts for space propulsion and guidance were undertaken in connection with development of a maneuverable, recoverable space vehicle.

All of the programing in military space technology was predicated upon the belief that, during the next ten years, imaginative use of the space around the earth may provide elements of national security and power heretofore unachieved by any nation. (See also SPACE FLIGHT.)

Ballistic Missile Defense.—More than 50 separate programs were undertaken in 1959 to obtain the crucial information necessary for design of an effective system for ballistic missile defense. These programs seek to define the missile threat, to find improved methods for early warning, for identification and discrimination of the incoming warhead, and for kill mechanisms and data processing. As part of this effort, ARPA explored the requirements of the 1965–80 time period, sponsoring studies leading to development of antimissile and antisatellite systems beyond our present capability. (See also MISSILES.)

Solid Propellant Technology.—Solid propellants enjoy an important position in the defense posture. An increase of 20 per cent in the useful energy of solid propellants will double the warhead-carrying potential of tomorrow's solid-engine intercontinental ballistic missile. To achieve such a breakthrough, more than 50 basic research contracts were awarded to industrial, foundational, academic, and governmental laboratories and institutions.

Materials.—A new area of responsibility was assigned in mid-1959, namely, a basic research project for the discovery of (1) superstrength materials for tanks, guns, rockets, missiles, and space vehicles; (2) structural materials resistant to vast temperature extremes; and (3) new materials for electronic and electrical circuitry operating at high temperatures. Under this project, contracts were awarded to selected American universities.

[1] Transit I was launched in September 1959 but failed to orbit.

[2] Project Samos, a reconnaissance satellite system, along with Projects Discoverer and Midas, were transferred to the Air Force on Nov. 17, 1959. The Army and Navy, respectively, were scheduled to become operational developers of Projects Courier and Transit at a later date (probably in 1960), although program management of these two projects would remain with ARPA.

Administration.—Under the director (Roy W. Johnson) and the deputy director (Maj. Gen. Don R. Ostrander), there were in 1959 an assistant director for administration (Lawrence P. Gise) and three operating division directors for policy and planning (William H. Godel), technical operations (Nicholas E. Golovin), and financial management and reports (Wilbur W. Bolton, Jr.). In addition to the management staff, the ARPA director had immediately available for scientific and technical advice a chief scientist (George P. Sutton), who also directed the Advanced Research Projects Division of the Institute for Defense Analyses, a nonprofit corporation under contract to provide scientific and technical advice to the Department of Defense.

In 1959, the total ARPA staff numbered approximately 100 persons, half of whom were scientific contractor personnel of the Advanced Research Projects Division. With the exception of a government representative in the West Coast Field Office in Santa Monica, Calif., all of the personnel were stationed in the Pentagon, Washington, D.C.

ROY W. JOHNSON,
Director, Advanced Research Projects Agency.[3]

ADVERTISING. Advertising volume in the United States, after dropping the year before, turned upward again and climbed to a record level in 1959. Spurred by a quickening economic pace, investments in national and local media soared to about $11.1 billion, a 7% increase over the $10.3 billion spent in 1958. National advertising recorded a 7% gain, up from $6.3 billion to $6.8 billion. Local advertising climbed even faster and was up 8%, from $4.0 billion in 1958 to $4.3 billion in 1959.

The return to a record-setting pace in 1959, despite the national steel strike, accented the severe impact that the recession had had on advertising in 1958. In that year, advertising volume declined about 0.1% below that of 1957. It was the first time in 15 years that advertising investments had fallen below the previous year's figure.

The impressive rise of advertising volume before and since the 1958 decline is recorded in the accompanying compilation of annual advertising investments prepared by McCann-Erickson, Inc., for the magazine *Printers' Ink* (volume is expressed in millions of dollars):

Year	Volume	Year	Volume	Year	Volume
1940	2,088	1947	4,260	1954	8,164
1941	2,236	1948	4,864	1955	9,194
1942	2,156	1949	5,202	1956	9,905
1943	2,496	1950	5,710	1957	10,311
1944	2,724	1951	6,426	1958	10,302
1945	2,875	1952	7,156	1959	11,055*
1946	3,364	1953	7,755		

* Preliminary

The volume increase in 1959, despite its significant size, was small comfort to those elements of the advertising industry besieged, as never before, by public suspicion and reproach. The television quiz scandal (see RADIO AND TELEVISION) and the subsequent investigations focused attention on the ethics of all advertising and the integrity of every advertiser's paid commercial messages, in print as well as broadcast media.

The Federal Trade Commission was particularly vigilant during 1959 in branding "fraudulent" any advertisement which it believed did not meet the standards of truthfulness and honesty. Other government and private agencies, notably Better Business Bureaus, were also active in scrutinizing advertising for the protection of consumers.

Though only a minority of the industry was responsible for any untruthfulness, almost all advertisers recognized their duty to take corrective measures or face the alternative of new restrictive government regulations. So seriously was the problem regarded that the Association of National Advertisers, the industry's leading advertiser group, called on every member "to take immediate and complete inventory" of all present and planned advertising to test its honesty in both content and presentation.

Network television, through the quiz show scandal, was the major immediate target of the public reaction against untruthfulness in advertising-carrying media. Nevertheless, television advertising continued to grow, with no decrease in the growth rate of recent years. During 1959, advertisers invested about $786 million in network television time and talent costs, an increase of 11% over the $709 million spent in 1958. National spot television billings scored a similar rate of growth, from $397 million to about $439 million.

Advertiser interest in radio, which sagged with the advent of television a decade ago but then rebounded, starting in 1957, continued on the upswing in 1959, if only slightly. National spot radio investments recorded a gain of about 5%, up from $190 million in 1958 to $199 million in 1959. Network radio, however, continued its slump. It recorded a loss of about 12% in advertiser time and talent investments, from $58 million to close to $51 million in 1959. Overall, radio gained about 1% for the year.

General and farm magazines, which suffered some of the most severe setbacks during the recession of 1958, more than made up the losses in 1959. Advertising volume, including space and production costs, jumped 11%, from $767 million in 1958 to about $850 million in 1959. The previous high, set in 1957, had been $814 million. (See also MAGAZINES.)

Business papers and trade magazines fared less well. They increased their advertising revenues about 6%, from $525 million to $555 million in 1959. Volume in 1957, however, had been almost $568 million.

Besides business papers, only outdoor advertising failed to pass a previous high in volume. National advertising investments in the outdoor medium scored a negligible gain of less than 1% from 1958 to 1959, up from $129 million to about $130 million. National billboard advertising, however, had been slipping since 1956 when a record $136 million was invested.

A 7% increase was recorded for national advertising in newspapers. Space and production investments climbed from $769 million in 1958 to about $820 million in 1959. (See also NEWSPAPERS.)

Also noting gains were advertising via direct mail, up from $1.58 billion to $1.64 billion; transportation cards, up from $23.5 million to $25 million, and point-of-purchase displays, up from about $1.0 billion to approximately $1.1 billion.

SELWYN FEINSTEIN,
Associate Editor, "Printers' Ink."

AERONAUTICS. The United States aircraft industry went through a disturbing year in 1959, and there was every indication that 1960 might be worse.

The defense budget for the fiscal year 1960 provided fewer dollars for missiles and related procurement than in fiscal 1959 ($3,624,000,000 versus $4,154,000,000) and more money for aircraft and related procurement ($6,057,000,000 versus $5,955,000,000), but these figures were deceptive. A large part of the missile money went into research and development and preproduction costs, whereas the bulk of the aircraft money was for actual hardware. There are few new aircraft coming along behind those now in production, whereas many new and highly expensive missiles and space vehicles will be coming into production in the months and years just ahead. Furthermore, by the end of the year a number of aircraft programs were being or soon would be subjected to stretchouts, cutbacks and cancellations, and the procurement picture was expected to change sharply as a result.

At the end of 1959, employment in the United States aircraft plants was down to about 740,000, compared with 840,000 at the beginning of the year, and more layoffs appeared in prospect.

Commercial Transports. *Boeing 707.*—The first United States–built jetliner, the Boeing 707, went into service at the end of 1958, and by late summer of 1959 the popular acceptance of jet travel

[3] On Oct. 17, 1959, it was announced that Johnson would resign as ARPA director as soon as a successor could be found. Dr. Charles L. Critchfield, who was named to the post in November, decided soon afterward that he would not accept the appointment.

was impressive. By the end of the year, Boeing Airplane Co. had delivered approximately 63 707's in four models (707–120, 707–220, 707–320, and 707–420 Intercontinental), and had 197 orders for the series. It showed its design for a turbofan jet swing-tail cargo version, the Model 735, and production was under way on a smaller passenger jet, the 720.

Douglas DC-8.—The second United States commercial jet, the Douglas DC-8, was awarded its Federal Aviation Agency (q.v.) certification on Sept. 2, 1959, and went into airline service later that month. Douglas has two versions of the DC-8, one (domestic) with Pratt & Whitney JT3 engines and one (intercontinental) with the more powerful Pratt & Whitney JT4 engines or the Rolls-Royce Conway bypass engine. All but 23 of the approximately 150 DC-8's sold by the end of 1959 were of the latter version. The JT4-powered DC-8 was certificated in December 1959. Meanwhile, Douglas drafted specifications for a smaller DC-9 jet transport for use on shorter airline routes, and also proposed an all-cargo version.

Convair 880.—The Convair 880 jetliner made its first flight in February 1959, and the company anticipated its certification by spring of 1960. The 880 carries 88 passengers in first-class and 110 in coach configuration in both its domestic and intercontinental versions. It cruises at 615 mph., making it the fastest commercial jet to date.

Convair 600.—Major assembly of the Convair 600 started in September 1959, and certification is expected by late 1960. American Airlines plans to introduce the turbofan transport, which is larger, faster, and more economical than the 880, early in 1961. (The company also announced plans to convert its entire fleet to turbofan engines.)

Turboprops.—In the turboprop field, the Lockheed Electra made its debut in airline service early in 1959, and by the end of the year more than 165 of the planes had been sold. The other United States–built turboprop, the Fairchild F-27, was certificated by the FAA in August 1959 for increased takeoff and landing weights. The Allison Division of General Motors brought out a turboprop adaptation of the Convair 340/440 series of twin-engine transport, which it named the Super Convair. By the end of 1959, approximately 62 jet transports and 185 turboprops had been delivered by United States manufacturers.

Other Developments.—Meanwhile, stepped-up deliveries of new turbojet and turboprop airliners were leaving airlines with numbers of piston-powered transports surplus to their needs, and the market for used aircraft fell sharply after mid-1959.

The International Civil Aviation Organization in 1959 set up a committee to study the financial, technical, and social impacts of proposed supersonic transports that would fly at 2,000 miles per hour.

Military Aircraft.—The United States ability-to-survive concept had two principal features in 1959: (1) a significant number of aircraft in the air at all times, bolstered by a ground alert and quick takeoff capability; and (2) wide dispersal of missile bases. In line with this strategy, the military services had approximately 35,000 aircraft in inventory, including six operational Mach 2 fighter and fighter/interceptor types and one operational Mach 2 bomber type.

Development continued through 1959 on a nuclear-powered bomber, but both the Pentagon and Congress showed reluctance to give this project a high enough priority and sufficient funds to have a flying aircraft available inside of four or five years.

Century Series.—In the so-called Century series (F-100, F-101, etc.) the McDonnell F-101B Voodoo became operational in late 1959. It is a two-seat, all-weather fighter/interceptor with exceptional climb performance and a speed of 1,500 mph. or better. Also becoming operational was the Convair F-106 Delta Dart. This high-altitude, all-weather supersonic interceptor is being produced in two models—the single-seat F-106A and the two-place F-106B. The Mach 2 Lockheed F-104 Starfighter not only remains a major weapon in the U.S. Air Force arsenal but will soon be in service with other nations friendly to the United States.

Republic Aviation's F-105 Thunderchief, Mach 2 successor to the F-84 Thunderstreak and the RF-84 Thunderflash, became fully operational with the Tactical Air Command in late 1959. The Air Force canceled production of the two-place F-105E and increased the number of single-place F-105D models to be built.

Northrop Aircraft's N-156F counter-air fighter made its first flight in July 1959. An outgrowth of the Air Force's T-38 jet trainer, it is designed to meet the needs of North Atlantic Treaty Organization nations for a Mach 2 supersonic fighter, with low manufacturing and operating costs, capable of operating from short runways or zero-length launchers.

North American Aviation's F-108 Rapier, a 2,000-mph. long-range interceptor, was canceled in September 1959 for budgetary reasons, reflecting the growing reliance on surface-to-air and air-to-air missiles for interceptor roles.

Navy Aircraft.—Due to become operational with the Navy in 1960 is the McDonnell F4H-1, a twin-jet, two-place, carrier-based fighter with a speed well in excess of Mach 2, which was chosen over Chance Vought's F8U-3. Also well along in development is the Lockheed P3V-1, an antisubmarine warfare patrol plane based on the civil Electra turboprop. Entering production was North American's A3J Vigilante, capable of carrying nuclear weapons; the Grumman A2F-1, a new attack plane, and the W2F-1 advanced early-warning aircraft. The Navy, after spending $400 million on the Martin P6M-2 SeaMaster jet seaplane, canceled the program in August 1959.

Bombers.—In the bomber category, with the Mach 2 Convair B-58 Hustler just becoming operational and the Mach 3 B-70 Valkyrie still far from completion, the nation's chief reliance throughout 1959 rested with the aging B-52 long-range and the B-47 medium-range bombers, together with the Douglas B-66B tactical bomber. First versions of the B-52G, which will carry the Hound Dog air-to-surface missile and later a planned ALBM (air-launched ballistic missile), were being purchased late in 1959.

The B-58, a strategic bomber-reconnaissance weapons system, reached operational status in late 1959 but fell victim to a budget cut that lopped eight planes off planned procurement and caused cancellation of a proposed B-58B with an improved engine.

Also affected by fiscal limitations was one version of the B-70, which would have been powered by a high-energy chemical (boron-based) fuel. The six-engine B-70, which uses existing jet fuel, has an uncertain future. A prototype of the 2,000-mph. bomber will be built for flight in 1963, according to present (1959) plans.

North American X-15.—The X-15 rocket-powered research plane, designed to carry a man to the fringe of space, attained an altitude of above 50,000 feet and a speed of more than 1,400 mph. during its first powered flight on Sept. 17, 1959. Tests through the remainder of the year progressed grad-

(*Left*) De Havilland Comet 4B, British jet passenger transport, made its initial flight in mid-1959.

BOAC

(*Right*) Tupolev Tu-114, the Soviet Union's new intercontinental jet transport.

SOVFOTO

ually toward the goal of taking a piloted aircraft to above 100,000 feet altitude. Built by North American Aviation for the Air Force, the X-15 is launched from beneath the wing of a B-52 "mother" plane at 38,000–40,000 feet.

Dyna-Soar.—Air Force indecision as to how best to proceed with development of the Dyna-Soar skip-glide bomber held the project almost at a standstill during most of 1959. A successor or follow-up to the X-15, Dyna-Soar is intended to boost a man into space with powerful rocket engines and return him to earth from orbital altitude in a glide. It will explore flight regimes between the Mach 6 speed of the X-15 and Mach 25. An experimental vehicle may be ready for test in the early 1960's. A manufacturing team headed by Boeing Airplane Co. was given responsibility for developing the Dyna-Soar vehicle, while another team headed by the Martin Co. was chosen to perfect propulsion equipment based on its Titan intercontinental ballistic missile.

Trainers.—United States military forces are moving steadily toward all-jet training for fledgling pilots. The Air Force's training is now done entirely with jets, and the Navy is evaluating an all-jet training program, using the Temco TT-1 primary jet trainer for its tests. The North American A2J, an all-purpose jet trainer, was in production for the Navy in 1959. Continuing in service are the Beech T-34A (Air Force) and T-34B (Navy) Mentor trainers and the Cessna T-37A intermediate trainer. The latter became the T-37B in late 1959, following installation of more powerful engines and new communications and navigation equipment.

Extensively tested in 1959 preparatory to becoming operational was the Northrop T-38 Talon, a twin-jet supersonic trainer powered by new high-thrust-to-weight engines. This plane will replace the Air Force's T-33 basic trainer. The Air Force chose the Lockheed JetStar over the McDonnell Model 119A in its competition for a small jet transport to be used as a navigation trainer. Powered by four Pratt & Whitney JT-12 lightweight turbojets, it has a cruising speed of 550 mph., range of 3,100 miles, and good short-field takeoff and landing capabilities.

STOL/VTOL Aircraft. Several STOL (short takeoff and landing) and VTOL (vertical takeoff and landing) aircraft made aviation news in 1959. The Air Force bought for evaluation purposes three Helio Super Couriers, its first VTOL aircraft. The tilt-wing Hiller X-18, largest VTOL aircraft in the Air Force development program, began flight tests in the fall; the Army had the Fairchild M-24 and several other experimental STOL aircraft under observation; and the Doak 16 ducted-fan VTOL accomplished successful in-flight transition from vertical to horizontal and back to vertical.

In the convertiplane category, Bell Helicopter Corporation's XV-3, under development for the Army, made numerous full and partial in-flight conversions, and became the first VTOL to shift gears in flight. Ryan Aeronautical's Model 92 Vertiplane, a Navy experimental vehicle, was damaged in a landing in 1959 but subsequently was repaired and returned to test flight.

Helicopters.—A highlight in the field of rotary wing aircraft in 1959 was the selection of Vertol Aircraft's twin-turbine YHC-1B Chinook helicopter to replace current obsolescent piston-powered Army transport helicopters. Developed from the commercial Model 107, but larger, the Chinook has two turbine engines, a rear loading ramp, and capacity for up to 40 troops. Production is due to begin in November 1960.

Another Vertol craft, the Model 76 VTOL/STOL helicopter, designated VZ-2 by the Army, was turned over to the National Aeronautics and Space Administration for extensive testing. The 4-place Cessna CH-1C, credited with a high degree of stability, received a type certificate from the FAA. Sikorsky Aircraft in 1959 first flew its S-61, a 25-passenger amphibious helicopter which will be delivered to airlines starting early in 1961. The company promised delivery of its turbine-powered S-62, also amphibious, early in 1960, and introduced the HSS-2 (military version of the S-61) to replace the HSS-1 antisubmarine warfare helicopter.

Kaman Aircraft Corporation's HU2K turbine-powered helicopter made its first flight in July 1959 and then underwent a full-scale flight test program. Deliveries to the Air Force of the Kaman H-43B

(*Right*) **Convair 880 is due to begin regular jet passenger service in the spring of 1960.**

GENERAL DYNAMICS

(*Left*) **Douglas DC-8, jet passenger airliner, was placed in service late in 1959.**

UNITED AIR LINES

Huskie, a six-or-more-place general utility helicopter, were begun.

Kellett Aircraft Corp. received FAA type certification for a new three-blade autogiro with freely rotating wing. Hughes Tool Company's two-place Model 269A also won FAA certification and was being tested by the Army under the designation YHO-2HU. Bell Helicopter Corp. installed a larger turbine engine in its HU-1 Iroquois, and undertook to build and test for the Navy two HUL-2's, a four-place utility helicopter said to have high performance capabilities. Three helicopter firms have made or are making studies for the Air Research and Development Command of the feasibility of a nuclear-powered helicopter with a 500,000-pound gross weight and speed of 200 mph. or more.

Utility and Light Planes.—Highlights of 1959 in the utility and light plane fields included: (1) provisional certification of the Grumman Gulfstream, a 370-mph., 10–19 passenger turboprop executive aircraft being produced at the rate of three a month; (2) receipt of the first commercial order for the Lockheed JetStar, and a decision to convert this twin-engine utility jet to a four-engine version for the corporate market in late 1960; (3) first flight of the Model 119, McDonnell Aircraft's four-engine utility jet trainer and transport; and (4) start of production of North American's twin-jet Sabreliner utility trainer, which the Air Force has ordered under the designation T-39 and which is adaptable for private and commercial flying.

New models of business and private aircraft put on the market in 1959 included the Cessna 210 high-wing, four-place, single-engine monoplane; Beech Aircraft's Super 18 executive transport and twin-engine Travel Air; the single-engine Mooney Mark 21; improved versions of the Piper Tri-Pacer and Piper Caribbean; and a new Cessna Model 407 four-place utility jet.

U.S. Commercial Air Traffic.—Passenger traffic of the domestic trunk airlines was 11% higher in the first six months of 1959 than in the like period a year earlier—13,408,880,000 revenue passenger-miles versus 12,061,167,000—and results for the second half were expected to be even better. Total revenue ton-miles flown in the first half of 1959 were 1,505,380,000, as against 1,393,649,000 in January–June 1958. Total operating revenues were up 16.1%, from $740,712,000 in the first half of 1958 to $859,968,000 in the comparable 1959 period. Operating expenses, however, rose only 12% in the 1959 period, totaling $801,060,000 as against $715,227,000 in the first six months of 1958. Net profit for the half-year was $29,549,000, a sizable advance from the $7,971,000 earned by the domestic lines in January–June 1958, and profits for the full year were expected to be close to a record for the industry.

The United States international airlines reported increases in both revenue passenger-miles (3,117,708,000 as against 2,759,652,000) and revenue ton-miles (481,110,000 as against 393,399,000) flown in the first half of 1959 as compared with the like period of 1958. Their revenues went up 10.9%, from $235,694,000 to $261,513,000, whereas operating expenses were only 7.4% higher —$260,333,000 in January–June 1959 as against $242,463,000 in the first half of 1958. Their net profit for the 1959 period was $4,238,000, compared with a net loss of $5,201,000 in the first six months of 1958.

SCHEDULED TRAFFIC OF U.S. AIRLINES

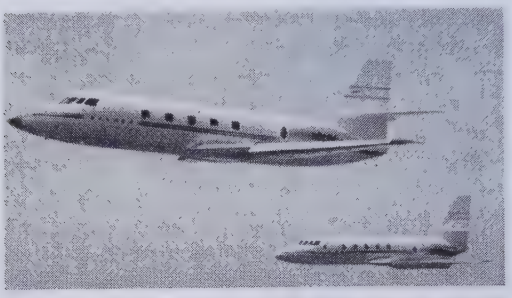
	Full year 1958	Jan.–June 1959
Domestic Trunk Airlines:		
Revenue passenger-miles	24,556,273,000	13,408,880,000
Revenue plane-miles	703,241,000	365,503,000
Freight ton-miles	241,028,000	132,220,000
Mail ton-miles	87,818,000	47,142,000
Express ton-miles	45,890,000	24,526,000
Total revenue ton-miles	2,871,360,000	1,505,380,000
U.S. Flag International Airlines:		
Revenue passenger-miles	6,523,124,000	3,117,708,000
Revenue plane-miles	173,130,000	79,357,000
Freight ton-miles*	134,380,000	70,343,000
Mail ton-miles	65,810,000	33,976,000
Foreign mail ton-miles	7,875,000	3,999,000
Total revenue ton-miles	871,185,000	481,110,000

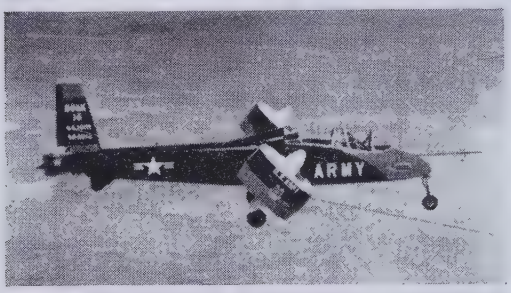
* Includes express ton-miles. (Source: Air Transport Association of America.)

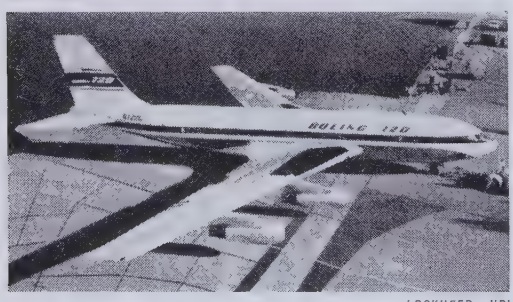
Canada.—Canada's aviation industry suffered a serious setback in early 1959, following cancellation of the Avro CF-105 supersonic interceptor, in which the government had invested $400 million. Within a few months approximately 25,000 workers were laid off at A. V. Roe Canada Ltd. and its Orenda Engines Division, and by subcontractors and suppliers.

Cancellation of the CF-105 left Canada reliant upon United States–built Bomarc and Lacrosse missiles for its air defense. Arrangements subsequently were made for Canadair Ltd. to build wings and ailerons for the Bomarc surface-to-air pilotless interceptor under subcontract from Boeing Airplane Co., Seattle, and other Canadian firms were invited to bid on production of other Bomarc components.

The CF-105 cancellation left the Royal Canadian Air Force with only the aging CF-100's with which to fulfill its NATO and NORAD (North American Air Defense Command) commitments. In July 1959 it was announced that 200 Lockheed F-104G's would be built under license in Canada for the RCAF, Canadair to build the airframes and Orenda the engines. The 1,400-mph. high-altitude interceptors will be used for strike reconnaissance missions and will be in operational service by late 1961.







LOCKHEED; UPI

(*Top*) Two Lockheed JetStars, prototypes of aircraft which will provide private executive jet travel. (*Middle*) Doak 16, experimental VTOL plane built for the Army, has rotating ducted fans which point up for vertical flight, turn ahead for forward flight. (*Bottom*) Boeing 720, designed for medium-range routes, came off assembly line in late 1959.

In the civil field, Canadair received from the Flying Tiger Line and Seaboard & Western Airlines an order for 15 CL-44 turboprop swing-tail cargo transports. The first CL-44 flew in late 1959, and airline deliveries will start in late 1960.

De Havilland Aircraft of Canada Ltd. improved the capability of its twin-engine STOL utility transport, the Caribou, and won United States certification for the plane in the fall of 1959.

The Air Transport Board of Canada in 1959 breeched for the first time its established policy of letting Trans-Canada Air Lines have sole operating rights across Canada and restricting Canadian Pacific Air Lines to international routes. CPA, which sought unrestricted operations across Canada, was granted one round trip a day between Vancouver and Montreal to connect with its international operations. TCA in late 1959 started its first jet service, using Douglas DC-8's powered by Rolls-Royce Conway bypass engines.

Great Britain.—The year 1959 will go down in the annals of the Society of British Aircraft Constructors as one of the best years—and one of the worst—it has experienced.

British industry shipped about $250 million worth of aircraft, aero engines, and other aviation products in the first half of 1959, a 14% gain over the previous six-month record achieved in the second half of 1958; and the export pace was maintained fairly well in the second half of 1959. However, most of the 1959 exports represented products long in development and orders placed one to four years earlier, and new aviation export products were not coming along in significant numbers. The result was that more than 10,000 aircraft workers were laid off in a year's time, and the industry was forced into a number of mergers and amalgamations.

In the field of commercial aviation, promising British developments include the Vickers Vanguard, the de Havilland DH-121, the Avro 748, and the Fairey Rotodyne. The Vanguard, a large turboprop transport, first flew in early 1959 and was due for certification in the spring of 1960. The Avro 748, due to fly early in 1960 and to be ready for airline delivery in the first half of 1961, is a 36–40 passenger, medium-range twin turboprop. The DH-121 is to be a short-haul jetliner, powered by three jet engines, carrying 75–97 passengers at 600 mph. Deliveries to British European Airways are expected to start in early 1964. The Rotodyne, due for delivery starting in 1964, is a 65-passenger VTOL airliner, but also has military potentialities as a flying-crane and troop transport.

Some promise was attached also to the Comet 4B jetliner, which first flew in mid-1959; the Argosy turboprop airfreighter, in which one United States operator has shown keen interest; the Britannic long-range turboprop cargo plane, due to be in production by the end of 1961; the Vickers-Armstrong VC-10 jetliner and a smaller VC-11 version; the Short S.C.1 five-jet VTOL; the Handley Page Victor bomber, and the Saunders-Roe P531 general-purpose five-seat helicopter.

The Saunders-Roe Hovercraft, a wingless craft which rides on a cushion of air, was flown across the English Channel from Calais to Dover on July 25, 1959, making the trip in 2 hours 3 minutes and hovering less than a foot above the surface of the water. Designated the S.R.N.-1, the ship is shaped like a flying saucer, in the form of an oval, 20 by 30 feet. Air is drawn in through a large funnel at its top and ejected under pressure at the bottom. Air jets at the side provide motion and steerage. Despite the Hovercraft's low speed (about 33 mph. in trials), its builders hope to develop the model for use in transport, especially over water.

Great Britain looked with some apprehension on the formation in 1959 of Air Union, a consortium of Alitalia, Air France, Lufthansa, and Sabena airlines (with other countries invited to join), formed to pool certain services and facilities and thus enable the airlines of those countries to compete more effectively with the large United States carriers and the Commonwealth group.

USSR.—The Soviet Union continued to press forward with missiles and astronautical developments in 1959, but most of its aeronautical achievements were in the field of civil rather than military aircraft.

Aeroflot, the Soviet airline, began to expand rapidly under a government policy aimed at blanketing the Soviet Union with new trunk air routes, a local airline network, and helicopter services. Under this policy, air travel is to become the primary method of passenger transport, with railroads and a river boat network devoted primarily to cargo. Another obvious aim is to provide a fast and politically secure network of communications between Moscow and the major capitals of the world. As a result, by mid-1959 Aeroflot had more civil airliners in service than any other nation in the world, and approximately 90 airports were being built or improved to take care of the fast-growing air transport volume.

It became apparent in 1959 that the Soviet Union had elected to drop further development of jetliners and concentrate largely on turboprop aircraft. Introduced in scheduled airline service in July was the AN-10 Ukrania, which carries 85 passengers and flies at more than 400 miles per hour. This aircraft is being stretched to a 100-passenger configuration in the forthcoming AN-10A, and an even larger version called the AN-16 is planned. Another airliner put into service by Aeroflot in 1959 was the Ilyushin IL-18 Moskva, powered by four turboprops. It carries 100 passengers.

Most publicized Soviet transport is the Tupolev Tu-114, also powered by four turboprops. This giant plane carries 120 passengers on intercontinental nonstop flights, 170 in normal domestic operations, and 220 on tourist-class flights. In some respects, it appears superior to the most advanced airliners operated in the free world. Meanwhile, the Soviet Union's first jetliner, the 52-passenger twin-jet Tu-104, continues in wide use, and two advanced versions, the 70-passenger Tu-104A and the 100-passenger Tu-104B, have been introduced.

If the Russians were doing much in the field of manned military aircraft in 1959, the results were not evident. Reported operational late in 1958 was a six-jet supersonic bomber (called "Bounder" by NATO), and an eight-jet version was reported in development. Work continued on development of a nuclear-powered aircraft, but the extent of progress was not known in the Western world. The T-4A, Soviet counterpart of the United States

Dyna-Soar skip-glide space research aircraft, was in flight test stage, and was reported capable of operating at a range of 12,000 miles and at an altitude of 160 miles.

France.—The French aviation industry marked its 50th anniversary in 1959 with an International Air Show in Paris which attracted 281 exhibitors from 14 countries and manifested a remarkable resurgence of French aviation.

Sud Aviation's Caravelle jet transport went into full airline service in 1959; six airlines had ordered 55 of them. The Caravelle has been officially certificated by the Federal Aviation Agency, and at least one United States airline is considering buying it. Also popular are Sud Aviation's Djinn and Alouette helicopters, with more than 500 of the latter sold through 1959. In addition, Sud is test-flying the SE 3200 Frelon, a three-turbine helicopter carrying up to 20 passengers, and is producing the SE 3160 Alouette III.

Nord Aviation has teamed with West Germany's Weser Flugzeugbau to develop a medium-range military turboprop transport to replace the obsolescent Noratlas. Nord also has joined three West German firms for the purpose of building a twin-turboprop military transport.

Breguet's principal activity for the past year has been development, in association with Piasecki Aircraft Corp. of the United States, of the 940/941, a four-turboprop STOL transport. The 940, also called the Integral, is a 7-ton transport that can land and take off in distances of 250–350 feet. The 941 will be a 20-ton version capable of carrying 40 passengers over distances of more than 600 miles at 235–250 mph. Breguet also has teamed with Sud Aviation, Britain's Rolls-Royce, the Netherlands' Fokker, and West Germany's Dornier to develop and produce a new patrol plane for the French Navy.

West Germany.—West Germany's aircraft industry, largely dormant since World War II, began a comeback in 1959. A major factor was the government's decision to order up to 400 multimission (fighter, fighter-bomber and reconnaissance) F-104 Starfighters, 300 of which are to be built in Germany under license from Lockheed Aircraft Corp.

West German firms also were to produce at least 60 Bell 47G-2 helicopters and 200 or more Fiat G-91 lightweight strike/reconnaissance fighters under license.

Convinced that Germany is to become a major arms producer for the Western defense alignment, a number of important United States manufacturers were reported to be buying into German aircraft companies in 1959, and others were reaching corporation agreements. The large influx of capital was expected to greatly revitalize the country's aviation industry.

(For further references, see the Index entry, *Aeronautics;* and for a summary of flight records, see the article FLIGHT RECORDS.)

KEITH SAUNDERS,
American Aviation Publications, Inc.

AFGHANISTAN. A landlocked Asian kingdom, bounded on the north by the USSR, in the extreme northeast by China, on the east and south by Pakistan, and on the west by Iran, Afghanistan has an area of 250,000 square miles and a population (est. mid-1958) of 13 million. About half of the people are Pushtuns (Pashtuns or Pakhtuns—the so-called true Afghans), Sunnite Moslems who speak Pushtu (Pashto); other sizable groups are the Tajiks, Hazaras, Turkomans, and Uzbeks. Persian is the most widely used language. The chief cities, with estimated populations, are Kabul (200,000), the capital, Kandahar (100,000), Herat (80,000), and Mazar-i-Sharif (50,000).

Government.—A constitutional monarchy, Afghanistan is ruled by Muhammad Zahir Shah, who ascended the throne in 1933. Executive power is shared by a Council of Ministers; the prime minister, Muhammad Da'ud, and the foreign minister, Muhammad Na'im, are brothers and first cousins of the ruler. Parliament consists of the House of Nobles or Senate, whose members are appointed by the shah for an indefinite period; and the National Assembly or National Council, whose 171 members are elected for 3-year terms. There are no political parties.

Education and Welfare.—Although most Afghans are illiterate, primary education is expanding rapidly. In 1957–58 there were 768 primary schools with 128,895 pupils, and 6,566 students were in secondary schools. Kabul University, established by law in 1946, had 1,067 students, and there were also teacher-training schools and vocational, technical, and agricultural colleges and institutes.

The government's public health programs place major emphasis on the prevention of disease. The United Nations and its specialized agencies are active in Afghanistan: in 1959 their aggregate expenditure in the country was $620,000.

Defense.—Afghanistan has an army of approximately 100,000 men and a gendarmerie of 21,000. The small air force is equipped with Soviet jet fighters and bombers.

Finance.—In the Afghan calendar year 1337 (March 21, 1958—March 20, 1959), revenue was estimated at 2,455 million afghanis; expenditure, also at 2,455 million (at the basic rate of exchange, 20.25 afghanis = U.S.$1; at the free rate, about 57 afghanis = U.S.$1). Gold and foreign exchange holdings totaled $83.2 million in 1957.

Transportation and Communications.—Afghanistan has no railways, and none of its 3,170 miles of all-weather roads are paved. Aryana Airlines, which is operated under a managerial contract by Pan American World Airways, serves the chief cities, and four international airlines serve either Kabul or Kandahar. As of 1958, there were 6,500 telephones and approximately 10,000 radio sets.

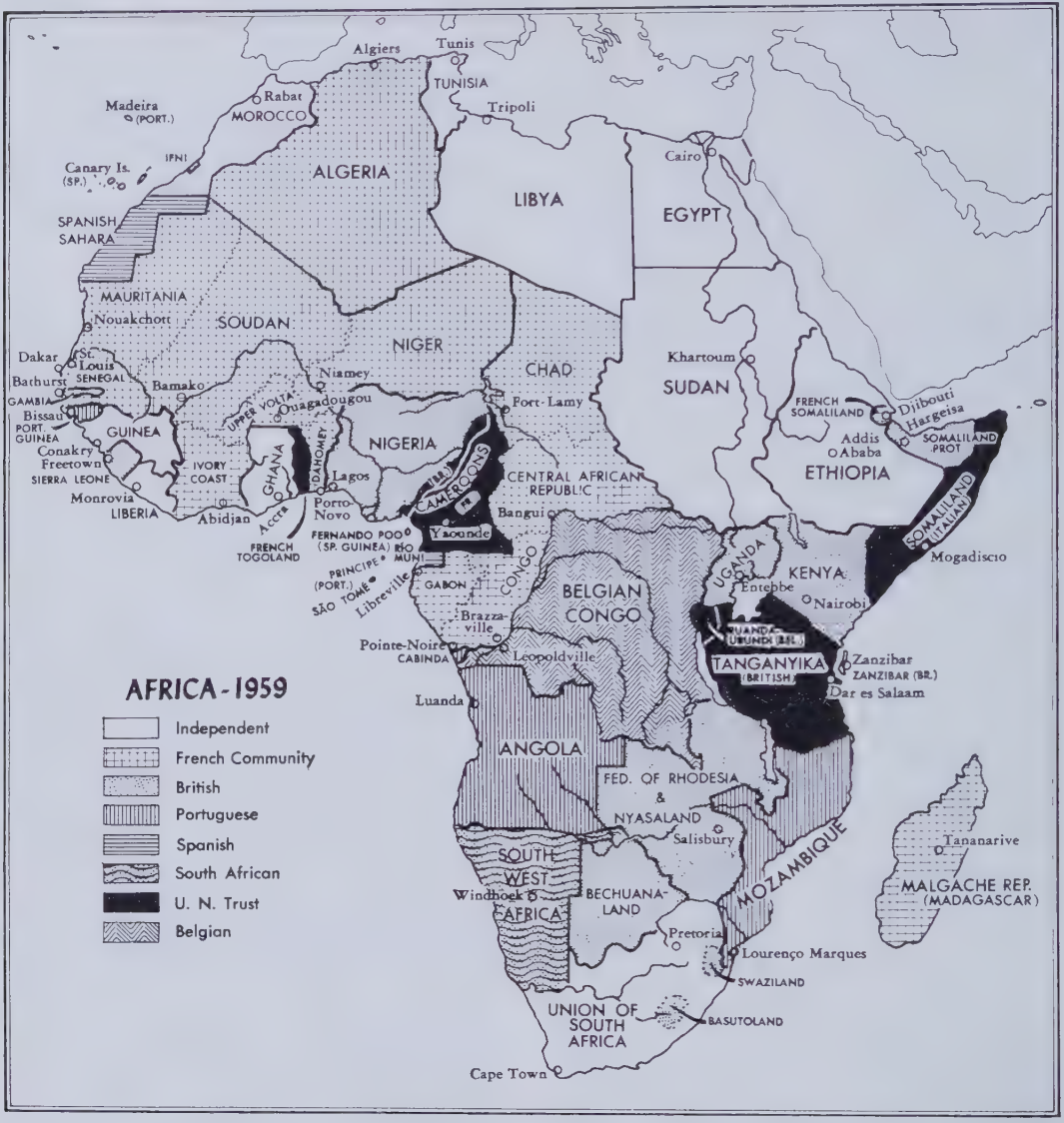
Economic Conditions.—Agriculture is the principal economic activity of Afghanistan. There are 20 million acres under cultivation, of which over half require some form of irrigation. Production of leading crops (in thousands of metric tons) was as follows in 1956–57: wheat, 2,100; corn, 654; rice, 274; fruits, 682; and barley, 280 (in 1955–56). In 1958, 65,000 bales of cotton were produced; in 1958–59, 39,000 short tons of sugar beets. Stock raising is carried on in all parts of the country, with sheep furnishing the chief source of income for much of the population. Foreign exchange is derived primarily from the export of wool (15,605,000 pounds, greasy, in 1956–57) and karakul skins (1,258,249 in 1957–58). Industrial development is limited largely to textile and sugar mills and to the output of 155 million kw.-hr. of electricity annually.

In 1957–58 exports totaled 1,984 million afghanis; imports, 1,966 million. Of the exports, 29% went to India, 22% to the USSR, 17% to the United States, 12% to Great Britain, and 5% to West Germany; of the imports, 30% was received from the USSR, 20% from Pakistan, 18% from Japan, and 10% from India. As of March 1959, Afghanistan owed $145.8 million to the USSR, $51.7 million to the United States, $12.3 million to Czechoslovakia, and $3.4 million to West Germany.

Principal Events, 1959.—A visit by Foreign Minister Muhammad Na'im to Moscow ended on January 2 with a statement that the USSR had offered to continue and extend economic development assistance. On January 14, a new American ambassador, Henry A. Byroade, was appointed to Kabul shortly after the United States announced a gift of up to 50,000 tons of wheat to relieve local shortages.

Prime Minister Muhammad Da'ud denounced the bilateral defense agreements which the United States signed with Iran, Turkey, and Pakistan on March 5, stating that his government would be compelled to examine the situation which they had created. Meanwhile, Afghanistan remained aloof from Iran and Pakistan and strengthened its ties with its other immediate neighbor, the USSR. In April a protocol covering the exchange of Afghan raw materials for Soviet manufactured goods was renewed in Moscow. Prime Minister Da'ud began a state visit to Moscow on May 18, and on May 28 the two countries signed a new agreement for economic and technical cooperation. Under its terms the USSR was to reconstruct the 470-mile road from Kushka, in the Turkmen SSR, southeast to Kandahar. This permitted Soviet activity south of the Hindu Kush, in a region closer to Pakistan and India. The USSR was also building a new road from Kyzyl-Kala on the Amu Darya to Kabul.

On September 14, Prime Minister Jawaharlal Nehru began a four-day official visit to Kabul. At the close of his meetings with Muhammad Da'ud, a joint statement was issued which stressed the decision of India and Afghanistan to continue to maintain their neutral position despite recent Chinese attacks. Later in the month, Muhammad Na'im went to the United States for medical treat-



AMERICANA MAP BY DONALD T. PITCHER

ment, and on October 12–14 he met with President Dwight D. Eisenhower and officials of the State Department. In these conversations he left the impression that Afghanistan would welcome a substantial American grant to offset the earlier Soviet grant, valued at $80 million, for road reconstruction. When asked to compare United States and Soviet aid to his country, he said that Afghan friendship did not depend on the volume of assistance.

President Eisenhower received a warm welcome from a crowd estimated at 300,000 when he stopped at Kabul for six hours on December 9. A communiqué issued after his discussions with King Muhammad Zahir Shah and Prime Minister Muhammad Da'ud stated that the president had given assurances for continued United States economic assistance to Afghanistan.

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AFRICA. Second only to Asia in size, the continent of Africa has an area of about 11,695,000 square miles and a population of 230 million (1958 est.). Throughout 1959 the tide of nationalism and anticolonialism continued to flow strongly in Africa, but despite some outbreaks of violence, the year was free of major disasters. In contrast with the great transformations that occurred in 1958, and those that are scheduled to occur in 1960, no major African territory altered its political allegiance in 1959, though many progressed toward independence.

Within the Federation of Nigeria, scheduled to attain independence from Britain on Oct. 1, 1960, the predominantly Moslem Northern Region followed the path already trodden by the Eastern and Western Regions, and in a quiet and orderly fashion became a self-governing territory on March 15, 1959. Nigeria's near neighbor, Ghana (the former Gold Coast), seemed to be moving further and further from the British patterns of government bequeathed it by its former rulers, as Prime Minister Kwame Nkrumah tried to obliterate the opposition party by electoral intimidation and by legislation giving his government extraordinary powers. His dislike of criticism was shown also in

the expulsion in June of the correspondent of the respected *Sunday Times* of London.

In the Belgian Congo, hitherto one of the quietest areas of the continent, combining a considerable degree of economic progress with an almost complete lack of political development, the year marked a change. Cautious plans for a gradual introduction of local self-government were announced, the first stage being elections to territorial and urban councils in December. Word of the impending political change appeared to stimulate outbreaks of violence; hitherto quiescent intertribal rivalries were revived, and there were riots in both central and lower Belgian Congo in September and October.

Restiveness within the former French colonies in Africa indicated that the solution achieved in September 1958 would not prove permanent. At that time 11 of France's 12 African colonies (Guinea voted for complete independence) elected to retain association with France within the framework of the French Community, which reserved for France important powers in the areas of defense, foreign policy, and higher education, while granting full local self-government to member republics. Precisely a year later, in September 1959, the Mali Federation, composed of the two West African states of Senegal and Soudan, decided at a meeting in Dakar to move onward to independence. The statements announcing the decision were moderate in tone and friendly toward France. The change was to be brought about by negotiation with France, and was expected to be achieved sometime in 1960. The Mali decision stimulated the restlessness of some other members of the French Community, particularly Dahomey and Niger, which also seemed ready to move toward independence. In the Ivory Coast, however, the strong prime minister, Félix Houphouët-Boigny, seemed content with the existing arrangements. (See also FRENCH COMMUNITY.)

The new states of Africa are subject simultaneously to unifying and to divisive influences. Their common efforts against colonial rule, together with the fact that many of them are very small, tend to bring them together in federations, such as Mali, or other unions. Once self-government has been achieved, however, independence—even independence from other African states—begins to be cherished; and not all of the new rulers are willing to surrender their newly acquired power or to merge it with that of others.

While several plans for union of Central and West African countries have been proposed, the extent to which they will be realized remains doubtful. The joint announcement on Nov. 23, 1958, by Prime Minister Nkrumah of Ghana and Chief of State Sékou Touré of Guinea of a proposal to merge their states was the most spectacular example of the trend toward union, since Ghana is a member of the Commonwealth of Nations and Guinea had recently been a member of the French Union. The year that followed saw no firm move to implement this project; nevertheless, the two leaders extended the scope of their program in an announcement from Conakry, Guinea, on May 2, proposing a Union of Independent African States, "open to all African states which have gained or are in the process of gaining their independence," and involving a common citizenship and currency. A rival project of a much looser kind, to which the name Associated States of Africa has been given, has been sponsored by President William Tubman of Liberia.

Despite practical difficulties, Africa is changing so rapidly that no political proposal which goes with the current tide can be dismissed as chimerical; advances toward a United States of Africa may well make considerable progress in the near future, particularly south of the Sahara and north of the Federation of Rhodesia and Nyasaland (Central African Federation). Even in the north, along the southern shore of the Mediterranean known as the Maghrib, there were many signs of a consciousness of common identity in Morocco, Algeria, and Tunisia.

On many occasions during the year, the newly independent African states reacted almost identically to events affecting various parts of the continent, interpreting developments uniformly in

Festive dancers in Soudan celebrate the formation of the Mali Federation, linking their country and neighboring Senegal. Flag in center is that of new federation. In December 1959, French President de Gaulle agreed to aid Mali in gaining sovereignty.

AFRICAN AMERICAN INSTITUTE INC

terms of the African nationalist struggle against white dominance. Thus, in their statements on Algeria, the African states regularly supported the rebels against the French; and, similarly, they pounced upon the Nyasaland Commission of Inquiry's report of July 24 (the Devlin Report), with its criticisms of British colonial policy. Most impressive of all in its unanimity was the African response to the French proposal to test atomic bombs in the Sahara. The Executive Council of the French Community approved the tests over the objections of the prime minister of the Mali Federation (September 11); but an all-party delegation from Nigeria, headed by the federal prime minister, went to London to protest, while Dr. Nkrumah in Ghana condemned France for choosing to "play with millions of lives," and called it an action which would "have the gravest consequences on her relations with the peoples of Africa."

European relations with the wholly African states of the center and west, however touchy, were simple as compared with the continuing complex problems of the plural societies in Algeria and in the east and south of the continent. The French government made a supreme effort to solve the Algerian question in President Charles de Gaulle's speech of September 16, offering (once peace was restored) a free choice to Algeria among secession, integration, and a measure of autonomy. It remained uncertain at the end of the year whether this offer would lead to negotiations with the National Liberation Front (FLN) and to a lasting peace. The influence of President Habib Bourguiba of Tunisia with the FLN rebels was thrown on the side of negotiation.

In the Federation of Rhodesia and Nyasaland the year was troubled. The threat of disorder in Nyasaland Protectorate, which has the federation's largest African majority, led to the imposition on March 3 of emergency regulations which continued in force throughout the year; to the banning of the Nyasaland African Congress; and to the imprisonment of its leader, Dr. Hastings Banda. These events postponed sine die the attainment of dominion status (which would free the federation's native policy from British supervision), hoped for by the ruling United Federal Party, and caused the British government to take a second look at the whole structure of the six-year-old federation. A commission, under the chairmanship of the distinguished lawyer, Lord Monckton, was appointed to advise on the review of the federation's constitution in 1960.

In the Union of South Africa, the basic question of native policy motivated the two most important developments of the year: the split in the opposition United Party, from which its more liberal members seceded; and a dispute regarding the degree of autonomy eventually to be given to the Bantu reserves. The provincial elections in October showed no change in party strengths—a disappointment to the ruling National Party, which had hoped for a strong endorsement of its native policy.

Among the plural societies of Africa, the most encouraging news was the Kenya government's announcement in October of a plan to open the White Highlands (hitherto a European preserve) to Kenya citizens of all races, the test for admission being competence in farming. In South Africa, and even more in East Africa, there is a notable ambiguity in the native African attitude toward the numerous Asian settlers. The industrious Asian shopkeeper or moneylender is a figure whose unpopularity is second only to that of the white man, and he may come to be the more unpopular. With the rise of African nationalism, many Asians are attempting to join the African independence movements in East Africa, but they are viewed suspiciously. These curious crosscurrents were clearly exhibited at the September meeting in Moshi, Kenya, of the Pan-African Freedom Movement of East and Central Africa.

In northeastern Africa, where the dark continent merges with the Middle East, the year generally went well. The cabinet reshuffle in the Sudan announced on March 9 seemed to succeed in its object of securing a more stable government; and, though union with Egypt seems to have been put on one side as a political objective, a Sudanese delegation visited Cairo in October for friendly discussions on trade and financial questions, and on the division of the Nile waters (on which agreement was reached on November 8).

The Sudan is gradually recovering from the disastrous sale of her enlarged cotton crop in 1956 and 1957. Her situation, however, points to one of the basic economic difficulties of most African territories. A higher standard of living can hardly be achieved by producing increased quantities of cash crops for sale in world markets, because the industrial countries have about as much of such products as they need, and the scope for increasing the market is small. A higher standard of living—or the same standard for more people—can come only by an enlargement of the towns and by some diversification of the economies. In the face of the natural reluctance of private investors to invest in the regions north of the Federation of Rhodesia and Nyasaland, such town-building and diversification will be difficult to achieve.

Although such long-term problems are real and cannot be shelved indefinitely, there were a number of hopeful signs in Africa in 1959, including a more moderate attitude here and there on the part of both African and white leaders. A surprising example of such moderation was the contemplated exchange of official visits between Ghana and the Union of South Africa, states at opposite ends of the African political spectrum. The invitation to visit Ghana, accepted in October by South Africa's External Affairs Minister Eric Louw, was evidence of an unlooked-for awakening to realities on both sides; its consequences can only be beneficial.

(See also separate articles on the African countries and the Index entry, *Africa;* and for a summary of President Eisenhower's visit to North Africa in December 1959, see EISENHOWER.)

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AGRICULTURAL RESEARCH SERVICE. This federal agency conducts or coordinates all of the research and carries out related regulatory responsibilities of the U.S. Department of Agriculture. Much of its work is cooperative with other agencies, institutions, and industries; some of it is done under contract. Following are highlights of recent activities, most of them accomplished during the department's fiscal year 1959.

Crops Research.—Scientists engaged in pioneering research discovered a pigment that controls all plant development. The pigment is blue, and appears in two forms—one that absorbs red light, and the other, far-red light. The discovery promises to be the key to man's complete control of plant growth from seed germination through plant flowering and fruiting.

One of the basic laws of heredity, which has been accepted for almost a century, does not always apply. Basic research with corn showed that a certain gene—the unit that controls heredity—is modified in its action by another gene. This differs

from the well-known Mendelian law that states that a gene never loses its identity, even though the characteristic it determines may be masked by a dominant partner gene. In other basic experiments with corn, cytoplasm (a constituent of plant cells) was found to alter genetic effects by affecting yield and ear height.

Planting seed corn kernels with points down and flat sides parallel to the rows conserves soil moisture and may reduce production costs by increasing the yield per acre, research showed. Scientists believe mechanical difficulties of "orientation planting" can be worked out.

Three plant-growth regulating compounds were found to exude from roots of treated plants into surrounding soil in quantities sufficient to be reabsorbed by nearby plants. This discovery gave hope of finding similar but pesticidal substances that would protect plants against diseases, insects, and nematodes.

A dagger nematode known to be a destructive plant parasite was found also to transmit fanleaf virus of grapevine from infected to healthy plants. This is the first evidence that nematodes may carry plant viruses.

Experiments at Beltsville, Md., showed that concentrations of ozone gas in slow-moving, polluted air may be the cause of injurious lesions (called "weather fleck") on growing tobacco leaves.

Soil and Water Conservation Research.—The "optimum-water-year," a new water-analysis system, devised and in use by Agricultural Research Service scientists, makes it possible for agriculture, industry, and municipalities to estimate more accurately than in the past the amount of water that flows from a watershed in a year's time.

Seeking the best methods of removing radioactive fallout from farm land, engineers and soil scientists found it possible to achieve 90 per cent or more decontamination by raking off straw mulch, removing sod, or scraping off surface soil.

Entomology Research.—High-flying insects, on Navy balloons, are being used to help solve the riddles of space flight. How insects react to cosmic and other radiation, as well as to the extremely low temperatures and pressures of outer space, is giving scientists a better understanding of the effects of these phenomena on human life.

Seeking better ways of controlling insect pests, entomologists have found a disease that kills citrus red mites, and certain chemicals and drugs that inhibit growth of ovaries in house flies, thus preventing egg production. Both discoveries are being explored for their practical use in pest control.

Many new and diversified uses for ethylene oxide as a potent sterilant have been found since Agricultural Research Service scientists, working in cooperation with the U.S. Army Chemical Corps, demonstrated that this highly flammable chemical could be used safely as an aerosol-dispensed product. Present and potential uses are to kill viruses or bacteria in hospitals, laboratories, hotels, holds of ships, rental shoe skates and swim suits, beehives, and in the manufacture of drugs. (See also BACTERIOLOGY.)

Crops Regulatory Programs.—The ceaseless campaign against plant pests and diseases ranged from round-the-clock interception of foreign pests at United States ports and borders to intensive, hard-fought battles against more than 20 specific pests and diseases of crops.

Increased public cooperation was sought by the Agricultural Research Service in keeping foreign pests out of the United States and in early detection of those that might have slipped into the country or spread to new areas. Travelers abroad were urged to not bring back prohibited plant and animal products in luggage. Farmers and gardeners were asked to watch for and report unexplained crop damage. Despite these regulatory efforts, some crop pests spread into new areas. These included the soybean cyst nematode; the rice disease, hoja blanca; the khapra beetle; and the Japanese beetle. Control or eradication measures against these pests are being continued.

Grasshopper populations in 1959 were at a generally low ebb in the western United States following extensive insecticidal spraying in 1958.

A large wooden dry dock in the ship channel at Houston, Texas, was fumigated to prevent spread of an extremely destructive species of termite not previously found in the United States.

Livestock Research.—Gains were made against three major livestock diseases by developing a killed-virus vaccine for Newcastle disease of poultry; finding the cause and a means of controlling rhinotracheitis in cattle; and discovering a virus that is one of the causative agents of shipping fever, a costly and prevalent respiratory disease of cattle.

"Monkey-faced" lambs, so called because of their deformed appearance, are not the result of any simple inherited character, research showed. Rather, this condition may be the result of some unknown substance eaten by ewes in early pregnancy.

Agricultural Research Service scientists pioneered in use of high-frequency sound waves to measure fat and lean in live animals as an aid in selecting, finishing, and marketing superior meat animals.

Research on most efficient feeds for dairy animals showed that dairy heifers fed alfalfa hay gain more weight, gain faster, and consume more dry matter than heifers fed unsupplemented alfalfa silage or corn-alfalfa silage. Though most diets fed growing calves contain enough magnesium, basic research on how calves utilize this element nutritionally show that prolonged deficit of magnesium in the diet causes deposits of calcium in the large arteries, muscles, and hearts of growing dairy calves. Other research showed that the major advantage of feeding Aureomycin to dairy calves is the reduced incidence of scours (diarrhea), and not the temporary increase in growth rate.

The first turkey poults ever sired by a male turkey of known parthenogenetic origin hatched and grew normally at the Agricultural Research Center in Beltsville, Md. The young poults are unique because they have no paternal grandfather. Their sire developed parthenogenetically in a non-fertilized egg.

Fruit may be harvested from 30 to 50 plum or prune trees per hour by means of this newly developed catcher-conveyer.

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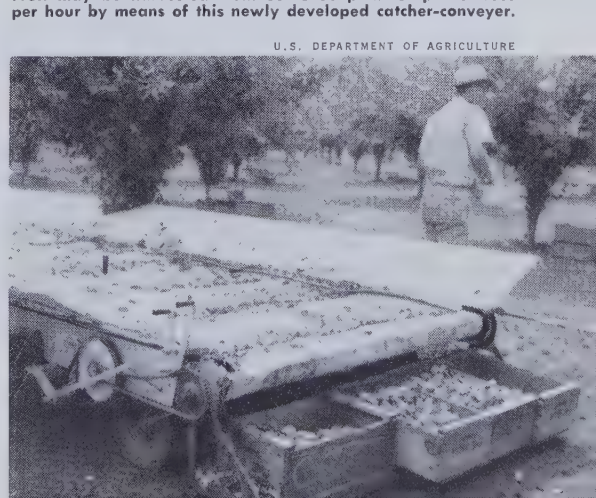

Livestock Regulatory Programs.—Animal quarantine inspectors made sure that more than a million animals entering the United States in the fiscal year 1959 were healthy. Almost 22,000 animals were refused entry. A shipment of 264 partridges from India was destroyed when found infected with a highly lethal type of Newcastle disease. Prompt and efficient action at the Animal Quarantine Station at Clifton, N.J., prevented spread of the disease to other quarantined poultry. To protect domestic livestock from foreign pests and diseases, inspectors seized and disposed of more than 26,000 pounds of prohibited or restricted meats arriving in the United States from other countries.

Plans for 772 new or remodeled slaughtering and meat-processing structures costing about $71 million met U.S. Department of Agriculture meat-inspection sanitary requirements. For the flood of meats and meat food products being offered the public, almost 38,000 labels and sketches were approved as giving the consumer a true word-and-picture story of the products carrying them. The production of meat from 100 million animals, mostly for American tables, was inspected for wholesomeness.

Three methods of handling and slaughtering livestock—chemical, mechanical, and electrical—were designated as humane by the U.S. Department of Agriculture in accordance with provisions of the Humane Slaughter Law of 1958.

In the all-out campaign to rid cattle of brucellosis, more than half of the counties in the United States, including all counties in 22 states, plus Puerto Rico and the Virgin Islands, had been certified by November. This meant that these areas each have less than 1 per cent of all their cattle and 5 per cent of all their herds infected with the costly livestock disease. Use of an inexpensive, convenient method for screening range cattle for brucellosis, based on blood-testing of dry and cull cows at slaughter time, was begun during the summer in Western cattle states.

Coordinated field studies of the screwworm, a serious livestock pest, were organized by Mexico and the United States. They sought to determine whether screwworms could be biologically controlled in Mexico and southwestern United States as they were in the eradication campaign in southeastern United States.

Utilization Research.—Many new ways to use farm products resulted from utilization research. Crystals of dry, whole milk that mix readily with water to produce a product comparable in flavor to fresh milk were produced experimentally. A newly discovered milk protein fraction called alpha z-casein offers a clue as to why evaporated and condensed milks often gel during storage.

Cheesemakers were given more assurance of a normal growth of the bacterial starter cultures they use in converting milk into cheese because of a new method of controlling culture-attacking viruses. Cheddar cheese was made experimentally with only about half the costly hand labor required with conventional methods.

Progress was made on a new, quick method of removing hair from animal hides. Scientists answered the question, "Why does leather shrink in water?" It melts, they found; heat and liquid break down molecular structure.

Woolen slacks, skirts, and socks treated with a modified epoxy resin—the best of many tested chemicals that impart minimum-care properties to wool fabrics—stood up well under severe practical testing. An improved method of scouring raw wool removed virtually all wool grease, as compared with conventional methods that remove only 60 per cent.

Research uncovered an improved wash-wear finish for cotton—an organic phosphorus compound called APO—that resists damage from chlorine bleaches, gives durable crease retention and wrinkle resistance, and increases flame resistance. A practical resin-forming chemical treatment for producing cotton fabric with outstanding rot resistance and improved weather resistance promises to open up new markets for cotton in awnings, tents, tarpaulins, and other outdoor fabric items.

Research also advanced cotton manufacturing methods. A cotton opener-cleaner developed by ARS utilization scientists has demonstrated savings of up to $100 a day per machine and is gaining wide commercial acceptance. A device that cuts cotton carding waste by more than half promises to save the textile industry millions of dollars a year. An accurate new device, developed for determining how much cotton yarn contracts (crimps) when woven into cloth, is proving useful to both scientists and manufacturers.

High-amylose starch—a new starch from a new corn—is a research-developed raw material for the corn-refining industry. Amylose starch forms tough, durable films with many potential industrial packaging, wrapping, and coating uses. An improved process for making another starch—dialdehyde starch—from cereal crops appears commercially usable.

Agricultural Engineering Research.—An "artificial chick," a temperature control device that simulates the heat-sensing ability of a baby chick, was developed and used by federal-state scientists to provide nearly ideal conditions for chicks under infrared brooder lamps. It consists of a 4-inch black globe that loses heat by radiation, conduction, and convection in much the same way that chicks lose body heat. As the chicks get older, more internal heat is supplied to the globe by adjustment.

Machines were developed to cut manual labor and increase efficiency in crop production. An automatic pilot for farm tractors, with lightweight "feelers" that sense the position of the crop row in relation to the tractor's front tires, was designed to make possible precision cultivation of row crops. Harvesting of prunes, plums, and some other small tree fruits from 30 to 50 trees in an hour was made possible with the development of a self-propelled catcher-conveyor. A versatile row-crop sprayer-duster, designed for controlling aphids on potato plants, holds promise for use on several other low-growing row crops. An experimental seed-potato cutter slices tubers of assorted sizes into 6 pieces of uniform size and shape at the rate of 15,000 pieces an hour.

A newly engineered electrical dairy system each day removes enough heat from cooling 200 gallons of milk fresh from the cows to help heat the milkroom or preheat 50 gallons of milkroom washwater.

Farm Economics Research.—Sales of farmland financed by land contract, a device which bypasses credit institutions as a party to the sale, approximately doubled between 1946 and 1958. By early 1958, sellers were financing 43 per cent of all farmland sales. Land contract has attractions for both buyer and seller in a period of rising prices.

Zoning, a legal device by which conflicting land uses and activities are separated, was being used increasingly to protect agriculture, with many counties putting fertile areas in farm zoning districts.

Changes in the traditional 50–50 livestock-share leasing arrangements can expand economic opportunities for both landlords and tenants, studies showed. Agreements in which tenants furnish a smaller, and landlords a larger, amount of the re-

sources for operating a farm enterprise seemed to offer some help in overcoming current money shortages of individual farmers.

Home Economics Research.—New leads toward determining the factors that affect the manner in which the body uses fat were developed in laboratory studies which used rats as test animals. The research showed that the amount of fat in the diet had less effect on the proportion of caloric intake stored as fat by rats than did the type of carbohydrate in the diet. Use of cornstarch instead of sugar in the rats' diet resulted in less weight gain, less enlargement and damage to kidneys and liver, and lowered cholesterol deposits in the liver. These highly preliminary research results remain to be validated for application to human nutrition.

U.S. Department of Agriculture national food supply figures, dating back to 1909, showed dietary trends over the 50-year period toward more milk, meat, poultry, eggs, fats, and sugars. People in 1959 also were eating more green and yellow vegetables, citrus, and tomatoes, but less of many other kinds of vegetables and fruits, especially potatoes. Use of grain products had steadily dropped.

Research showed that the optimum level for linoleic acid, an essential fatty acid, in infant diets seems to be about 4 per cent of the calories—the level found in human milk. Human milk contains more linoleic acid than does cow's milk.

E. G. Moore,
Director, Information Division.

U.S. DEPARTMENT OF AGRICULTURE

Sensitive "feelers" mounted on front of tractor permit precision cultivation of row crops and better weed control.

AGRICULTURE. United States farm output set another record in 1959. After the tremendous increase of 8% in total output achieved in 1958, it seemed hardly likely that 1959 would equal, much less surpass, this level of production. As 1959 neared its end, however, it was estimated that total farm output was about 1% above 1958, 25% more than the 1947–49 average and two thirds higher than in 1935–39.

Crop production in 1959 was at least equal to the 1958 record and was about 18% more than in 1947–49. Livestock production, a good 2% higher than in 1958, was at an all-time high.

Crop yields per acre were the second largest in United States history, exceeded only in 1958. Larger acreage compensated for the smaller yields.

Farm prices averaged about 4% lower than in 1958. In November 1959, prices received by farmers for their products were 8% lower than in the same month a year earlier. The cost of goods farmers buy, on the other hand, was about 2% higher both for the comparative months and for the year as a whole.

Food consumption per person in the United States during 1959 was estimated to be 13% above the 1935–39 average and 2% above 1958. Supplies of most foods were expected to remain very large in 1960. The retail price of food declined about 2% in 1959, due entirely to lower farm prices. A further slight decline was expected in 1960.

Farm Production.—A corn crop of more than 4.4 billion bushels, by far the largest in United States history, highlighted the 1959 crop picture. Corn production was one sixth higher than in 1958, previously the record year. The sugar beet crop also set a record. Production of soybeans and grain sorghums was second highest in the history of the two crops.

The wheat crop was down sharply from the mammoth production of 1958 but was still above the 1948–57 average. Yields of cotton, sugarcane, sugar beets, and dry peas were all-time highs, and those of barley, rice, hay, dry beans, potatoes, apples, peaches, pears, grapes, apricots, and cranberries were above the 10-year average. Output of tobacco, peanuts, flaxseed, rye, sweet potatoes, cherries, and pecans was relatively small.

Acreage.—Cotton acreage was about 26% larger than in 1958 and corn acreage was about 15% greater. Acreage of wheat was about the same as in 1958, but acreages of oats, soybeans, and sorghums were down. Major crops were planted on about 340 million acres in 1959, compared with 330 million a year earlier. Harvested acres were about 325 million and 321 million in 1959 and 1958, respectively.

Food and Feed Grains.—Production of feed grains reached 167 million tons, 10 million more than the previous high of 1958. The huge corn crop was primarily responsible. Sorghum and barley production was also large, but the oats crop was below average. The record production added to large carryovers resulted in the biggest supplies of grain, for the 1959–60 marketing year, ever accumulated in United States history.

Wheat production in 1959 was estimated at 1,117 million bushels, compared with the remarkable 1958 crop of 1,462 million bushels. For the 10-year period 1948–57, wheat production had averaged 1,075 million bushels.

Wheat supplies for the 1959–60 marketing year were estimated at a record 2,404 million bushels. These supplies included the 1959 crop, expected imports of 8 million bushels of feeding-quality wheat, and carryover stocks of 1,279 million bushels. The sharp increase in carryover stocks, due to the amazing 1958 crop, more than offset the drop in production in 1959 and carried total supplies to a new high.

Domestic wheat requirements in 1959–60 were expected to approximate 629 million bushels and exports, to total about 410 million. The result would be a carryover, on July 1, 1960, of some 1,365 million bushels, another new high.

Because of the heavy supplies, acreage allotments and marketing quotas were proclaimed by Secretary of Agriculture Ezra Taft Benson and approved by wheat producers in a July 1959 referendum. The wheat allotment for 1960 was set at 55 million acres, the same as in 1958, and the lowest acreage allotment permitted by law. With average yields, this acreage could produce a crop of 1.2

billion bushels, which would result in a further increase in carryover in July 1961.

The national administration tried repeatedly during 1959 to secure new wheat legislation providing for lower price support and elimination of acreage restrictions. Congress, however, favored higher price support tied to a 25% reduction in acreage. A bill containing these provisions was vetoed by President Eisenhower. The result was that no wheat price support legislation was enacted.

The 1960 wheat crop will be supported at not less than $1.77 per bushel, which is 75% of the parity price. This compares with support at $1.81 on 1959 wheat.

Corn production for 1959 was estimated in November at 4,402 million bushels, 16% more than the 3,800 million of 1958 and 35% above the 1948–57 average of 3,251 million bushels. The yield of 52.2 bushels per harvested acre was one fourth above the 10-year average. The 1959 crop matured in good time, but rains and damp weather made harvesting relatively slow. The price support level for 1959 corn was $1.12 per bushel. This support level was part of a new program for corn enacted in 1958 and chosen by corn producers in a referendum of the same year in preference to the former program.

The new program eliminates acreage allotments and offers price support to all producers regardless of how much they produce. The support level is based on 90% of the average price that prevailed in the three preceding years. Thus the support of $1.12 per bushel on 1959 corn was 90% of the average price received for corn in the calendar years 1956–58.

Corn supply for 1959–60 was estimated at 5,959 million bushels, 13% larger than a year earlier and 37% above the 1953–57 average.

Cotton.—A cotton crop of 14.8 million bales was forecast on the basis of information as of Nov. 1, 1959. This total was 3.3 million bales more than the small 1958 crop of 11.5 million and a little larger than the 1948–57 average of 14 million bales. Cotton supplies for the marketing year ending July 1, 1960, were estimated at 23.7 million bales, an increase of 3.4 million over the preceding year but less than in the mid-1950's. Requirements for the marketing year were expected to approximate 14.5 million bales: 9 million for domestic use and 5.5 million for export. The acreage allotment for 1960 cotton was about 16.3 million acres.

A new program was also in effect for cotton in 1959. Producers who chose to do so could exceed their acreage allotments by up to 40% and accept price support 15% of parity lower than that provided to producers who stayed within their allotments. This program was also to be in effect in 1960.

Cotton acreage in 1959 was considerably larger than a year earlier, due both to the new program and to elimination of the acreage reserve program under which about 5 million cotton acres had been retired from production in 1958. (See also COTTON.)

Other Crops.—The soybean crop of 528 million bushels was the second biggest on record. It was 8% below 1958 but 62% above average. The rice crop of 53 million 100-pound bags was 13% above 1958 and 11% above average. Sorghum grains reached a new record of 589 million bushels, down 4% from 1958 but 2¾ times the 1948–57 average. (See also GRAINS.)

Supplies of commercial fresh vegetables were somewhat below 1958, with yields of fall vegetables for the fresh market 12% less than a year earlier. Potato production of 242 million bushels was 9% below 1958 but 9% above average. Production of deciduous fruits was about 3% larger than in 1958 and 8% above average. (See also FRUITS; VEGETABLES.)

Tobacco production was estimated at 1,800 million pounds, compared with 1,736 million in 1958 and the 10-year average of 2,090 million pounds. (See also TOBACCO.)

Livestock.—Production of livestock and livestock products reached a new high in 1959, about 2.5% above 1958. Aggregate production of beef, veal, lamb, mutton, and pork was about 27.2 billion pounds. This total was 6% larger than in 1958 and was exceeded only by the 1956 output.

More than 5 million head of cattle and calves were added to the nation's stock during 1959, and the number on farms as of January 1, 1960, was estimated to be about 102 million, exceeding 100 million for the first time.

Hog production in 1959 was estimated at 103.6 million head, about 10% more than in 1958.

The 1959 lamb crop, about 21.1 million head, was 2% larger than in 1958. Sheep and lamb numbers have remained relatively stable during the past decade. They were estimated to total about 32.6 million at the beginning of 1959.

The poultry industry continued to set new records. Broiler production increased for the 13th consecutive year. Output of about 1.7 billion birds in 1959 was more than triple the production of 10 years earlier. About 80% of all chicken meat consumed in the United States in 1959 was from broilers. Egg production was about 4% above 1958 and at a new high. The average price of eggs on farms was 31.6 cents per dozen, the lowest since 1942.

Milk production for 1959 was about 124.7 billion pounds, compared with 125.2 billion in 1958 and the record of 125.9 billion in 1957. Milk production per cow continued to rise, averaging 6,430 pounds for the year, about 100 pounds more than in 1958. Milk production and demand were in closer balance in 1959 than in any year since 1952. (See also DAIRY PRODUCTS.)

Agricultural Income and Prices.—Farm net income, after rising sharply in 1958, fell abruptly in 1959. Gross income (cash receipts, the value of home-consumed farm products, rental value of farm dwellings, and government payments) totaled about $37 billion, compared with $38.3 billion the year before. Farm production expenses amounted to $25.8 billion, as against $25.2 billion in 1958.

Thus, total net income derived by farm operators from farming was about $11.2 billion, nearly $2 billion less than in 1958 and only slightly higher than the $11 billion of 1957. It should be noted, however, that the income of farm people from off-the-farm sources was somewhat higher in 1959 than a year earlier.

Farm prices, after rising somewhat in 1957 and 1958, declined again in 1959. The index of prices received by farmers in November 1959 stood at 230% of the 1910–14 average. This level contrasted with 247% for the corresponding month of 1958 and the high of 313% in February 1951. Prices paid by farmers on Nov. 15, 1959, were about triple the 1910–14 average.

In terms of the parity ratio (parity being the price at which farm products would have the same buying power as in 1910–14), farm prices in November 1959 were down to 77%, compared with 85% a year earlier and the record high of 123% in October 1946.

Consumption of Food.—Domestic food utilization in 1959 was slightly larger than in 1958 and

57% more than in 1935–39. Per capita civilian consumption of food in 1959 was 2% larger than in 1958 and 13% above 1935–39. Americans consumed record per capita quantities of broiler and turkey meat and slightly more milk and ice cream than in 1958. Pork consumption per capita was about 67 pounds, 6 pounds more than in 1958.

Civilian consumption of beef, at 81 pounds per person, was about the same as in 1958. Per capita consumption of beef, veal, lamb, mutton, and pork totaled 158.5 pounds. Though this was 6.5 pounds more than in 1958, it was considerably short of the 1956 record of 167 pounds.

With heavy production in 1959, the large numbers of cattle and pigs on farms, and big feed supplies, prospects for 1960 indicated continued large consumption of meat, dairy products, fats, and other foods.

Farmers' Share of the Food Dollar.—Farmers received about 38 cents out of each dollar spent for food in the family "market basket" during 1959. This amount was 2 cents less than a year earlier, 7 cents less than in 1953, and 15 cents less than in 1946. The declining share of the consumers' food dollar going to farmers continued to be one of the foremost problems confronting American agriculture.

Agricultural Assets.—The physical assets of United States agriculture increased 2.5% in dollar value in 1959. Total assets as of Jan. 1, 1960, were estimated at $208.2 billion, compared with $203.1 billion a year earlier. Proprietors' equities were $184.2 billion, an increase of $4.4 billion for the year. Debts owed by farmers rose from $23.3 billion on Jan. 1, 1959, to $24 billion on Jan. 1, 1960.

Land Values.—A steep rise in farm real estate values, which added nearly a third to market values of land in a five-year period, showed signs of leveling off in 1959. Although the index of land values as of July 1, 1959, was an all-time high—6% above a year earlier and 69% above the 1947–49 average—the rise in 1959 itself was slight.

Agricultural Exports.—Farm exports were valued at $3.7 billion in 1958-59, compared with $4 billion in 1957–58 and an all-time high of $4.7 billion in 1956–57. Lower world prices for agricultural commodities plus a severe drop of 51% in cotton exports were responsible for the 1958–59 decline in value, although the actual volume of farm goods shipped abroad was the third highest in United States history. For the 1959–60 marketing year a substantial increase in exports was expected. About one third of all farm exports in 1958–59 were financed under various government programs.

There was in 1959 a growing economic offensive in agricultural trade on the part of the Soviet Union. To combat this offensive in part, the United States stepped up its participation in trade fairs throughout the world (see FAIRS AND EXHIBITIONS). In the past four years, United States farm products have been displayed at more than 40 such fairs in 16 countries.

In September–October 1959, Secretary Benson and members of his staff visited 7 European nations to study and stimulate agricultural trade. He reported that prospects for increased trade were good.

Price-Support Operations.—Prices of agricultural products averaged nearly 20% below parity in 1959, a drop of about 4.5% below the 1958 parity ratio level. Support extended on 1958 crops during the fiscal year 1959 totaled $4,004 million. This sum was nearly 50% more than in the preceding year, when $2,690 million was extended on 1957 crops. Net losses on the price-support program were $821 million, compared with $1,007 million in the fiscal year 1958.

Agricultural Employment.—An estimated average of about 7.4 million persons, including full-time and part-time farm operators and hired workers, and unpaid family labor, worked on United States farms in 1959. Farm output per manhour of work was 89% more than in 1947–49. Hourly wages for hired labor, excluding room and board, averaged about 95 cents an hour. Wage rates had risen more than 40% since 1947–49.

Other Highlights of 1959.—President Eisenhower, in a special agricultural message in January, called for a more vigorous use of "food for peace." Conferences were held during April and May among agricultural officials of the United States, Canada, Argentina, Australia, and France to explore ways of using surplus wheat to improve world diets and stimulate economic development.

The most significant agricultural legislation of the year was the extension until Dec. 31, 1961, of Public Law 480, the Agricultural Trade Development and Assistance Act, with authorized expenditures of $1.5 billion per year. P.L. 480 is the heart of United States surplus disposal efforts. During the 12 months ended June 30, 1959, $2.6 billion worth of surplus farm commodities were moved into consumption channels through this and other programs.

The Rural Electrification Administration (q.v.) celebrated the 10th anniversary of the rural telephone program in October 1959. About 900,000 rural subscribers in 1959 were being served by this program, most of them with improved dial telephones. When the telephone program began, only 38% of United States farms had telephone service. In 1959 more than 60% had service, and the proportion was rapidly growing.

The Farmers Home Administration (q.v.) made and insured loans totaling $362 million in the fiscal year 1959, compared with $330 million in 1958.

The Rural Development Program, which helps farmers and rural dwellers in low-income areas acquire and take advantage of opportunities to improve levels of living, had by 1959 extended its operations into 200 counties in 30 states and Puerto Rico. More than 300 local community projects were under way in 1959.

The conservation reserve was expanded in 1959 in an effort to offset in part the discontinuance of the acreage reserve which was eliminated after the harvesting of 1958 crops. In 1958 the two programs combined had been in effect on about 28 million acres, with the acreage reserve taking about 17 million acres out of production. In 1959 the conservation reserve alone took some 23 million acres out of production, and an expansion to 28 million was anticipated for 1960.

The national forests in the fiscal year 1959 produced 8.3 billion board feet of timber, a record yield. Over 2 billion seedling trees were planted. (See also FORESTRY.)

Under the program to wipe out brucellosis in cattle, seven more states became practically free of this costly disease, bringing the total to 22 states and 55% of the counties in the United States.

In November 1959 President Eisenhower and Secretary Benson called for a farm program built around an expanded conservation reserve and rural development program, a vigorous Food for Peace Program, expanded research to develop agricultural markets and new uses for farm products, and realistic price supports.

The World Food Situation.—The world food situ-

ation has been improving for several years. In the 1958–59 season, production exceeded the previous two years by about 4%. It surpassed 1955–56 production by 9% and the 1948–53 average by 27%.

Per capita food supplies in 1958–59 were 5% above 1955–56 and 13% above the 1948–53 average. World output of food leveled off somewhat in 1959, mostly because of sharply reduced wheat output in the United States and the Soviet Union. World sugar production also declined, while output of rice, livestock, feed grains, and vegetable oils increased.

In western Europe much of the region north of the Alps suffered from drought in 1959. The drought came too late to affect wheat and feed grain crops, but crops of sugar beets, potatoes, and forage were down and fall pastures were poor. On the other hand, oil crop prospects were much better than in 1958, with both Spain and Italy expecting very large olive harvests.

Although drought also hit eastern Europe, growing conditions were generally better. An excellent harvest was gathered in the Danube Basin. Livestock production increased in most parts of eastern Europe.

Crops in the Soviet Union in 1959 were believed to be about average and well below the high 1958 level. Drought lowered crop yields in important regions. Harvests of wheat, feed grains, sugar beets, potatoes, and sunflower seed were all down from 1958. Nevertheless, wheat supplies for 1960 were undoubtedly much in excess of domestic needs. A further increase in meat and milk production seemed likely for 1959.

Crop prospects in Communist China held little promise for improvement in the food situation. Weather conditions were only fair to poor, with floods, droughts, and typhoons hitting important areas.

Food production in most Far Eastern countries was larger than in 1958. All regions except Pakistan and Ceylon had larger grain output. India harvested a record wheat crop in 1959 and also had a good rice crop. Bumper crops of rice and corn were in prospect for the Philippines, and the rice and other grain crops in South Korea were at new postwar highs.

In western Asia as a whole, the food production outlook was about average. Iran had an excellent wheat crop, but Syria, Lebanon, Jordan, Turkey, and Iraq suffered from drought or other difficulties.

In Africa production of major food crops was up in the northeast and down in the northwest. In Morocco, Algeria, and Tunisia, grain output was lower than in 1958, while Egypt, the Sudan, and Ethiopia were expected to have some grains for export.

Production of staple foods increased in the northern part of Latin America, largely because of excellent corn, sugar, and bean crops in Mexico. In Brazil, excessive rains and flooding reduced production of beans, while the crop of wheat and other small grains was expected to be only slightly better than the poor 1958 output. In the southern regions of Latin America, total crop output in Uruguay, Argentina, and Chile seemed likely to be better than a year earlier.

Food production in Canada was larger in 1959, with wheat output up 13% above 1958 and with some increase observed in the output of livestock products.

Increases in meat, milk, and wheat production were expected in New Zealand, but Australian crops suffered from unusually dry weather which cut into wheat and small grains production. (See also FOOD AND AGRICULTURE ORGANIZATION OF THE U.N.; STANDARDS OF LIVING.)

(For further references, see the Index entry, *Agriculture.*)

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AIR CONDITIONING AND REFRIGERATION. The total of industry shipments in the United States, after declining in 1957 and 1958, resumed its growth in 1959. This trend is reflected in accompanying Table 1.

Table 1—INDUSTRY SHIPMENTS INDEX, 1956–59
(1947–49 = 100)

Year	All products	Industrial products	Commercial products
1956	438	327	469
1957	392	306	416
1958	377	282	403
1959	410	300	440

Accompanying Table 2 indicates that room air conditioners represented 29% of the industry's shipments in 1958, and all packaged air conditioning products (tabulated items 6–9, inclusive), 49%. Both were below 1956 ratios. The general trend was nevertheless toward factory-assembled packaged products (to minimize field labor) and more compact designs. The favorable summer of 1959 resulted in retail sales of 1,700,000 room air conditioners and a reduction of inventories to about 250,000 by the end of September.

Shipments of commercial products in 1959, particularly heat pumps, increased substantially, and some shortages developed in packaged air conditioning products. Central residential air conditioning installations in recent years have been as follows: 1955, 125,000; 1956, 160,000; 1957, 150,000; 1958, 135,000; and 1959, 200,000. This expansion in the residential market reflects in part a greater concentration on promotion and reductions of installed costs.

The demand for industrial goods increased 5 to 10% in 1959, but unprecedented price competition reduced price levels and profits. Projects in the planning and bid stages indicated a good year in 1960. New products and refinements of industrial goods were expanding markets. The latter include smaller dimensions of equipment, higher speeds of refrigeration components, and appreciably quieter air cycle apparatus.

Automobile air conditioner sales in 1958 were about 530,000, and the forecast for 1959 was 700,000. Conversions of refrigerator railway cars to mechanical refrigeration continued steadily; the most recent single order in late 1959 was for over 1,000 cars.

Table 2—MANUFACTURERS' SHIPMENTS, 1958
(Excluding household refrigeration)

Major product group	Units	Value
Condensing units	530,419	$ 62,104,000
Compressors and compressor units	2,959,157	139,909,000
Centrifugal refrigeration systems	1,090	32,043,000
Heat exchangers, all types	...	79,409,000
Air conditioners, not self-contained	193,986	42,324,000
Room air conditioners	1,673,295	257,466,000
Air conditioners, self contained (except residential and room air conditioners)	93,978	74,585,000
Heat pumps	25,461	18,847,000
Residential air conditioners	111,102	80,787,000
Ice-making machines	31,118	17,913,000
Absorption and adsorption apparatus	2,191	12,743,000
Motor vehicle refrigeration systems	7,525	15,911,000
Packaged liquid chillers	4,549	15,769,000
Mechanical dehumidifiers, refrigerated	223,354	12,753,000
Mechanical drinking water coolers	139,276	20,390,000
Total	...	$828,953,000

(Source: U.S. Department of Commerce.)

Factors which in 1959 were expected to influence the future structure of the industry and its markets were varied. These included mergers and diversification of product lines, the increased air conditioning of schools and colleges, growing out of electric heating, gas-powered air conditioning systems, the utilization of electronic filters, the greater use of air for condensing, and thermoelectric refrigeration developments.

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AIR FORCE, U.S. Scientific advances in the past decade have had a strong impact on the Air Force. The transition from piston engines to all-jet aircraft involved widespread changes in the organization and structure of its combat force. The further conversion from the almost exclusive reliance on ordinary explosives for tactical use to a dual capability with both conventional and nuclear weapons of all sizes and yields has also left its mark. And the introduction and integration of missiles into the force added new considerations for budgetary and force-structure planners. Moreover, in 1959 the importance of space flight clearly emerged from the realm of future planning to the area of current operations.

On Dec. 11, 1959, James H. Douglas, secretary of the Air Force since May 1, 1957, and under secretary before that since March 3, 1953, was sworn in as deputy secretary of defense. Succeeding to the post of secretary of the Air Force on the same day was Dudley C. Sharp, who had been under secretary since Aug. 3, 1959, and assistant secretary (matériel) from Oct. 3, 1955, to Jan. 31, 1959.

Strength and Budget.—At the end of June 1959 the Air Force structure consisted of 105 wings, including 43 strategic, 35 tactical, and 27 air defense wings. Military personnel strength had decreased from 871,156 on July 1, 1958, to 840,435, including 131,602 officers and warrant officers, and 708,833 airmen. About 225,000 officers and airmen were stationed overseas. The number of civilians employed directly by the Air Force dropped from 315,806 to 313,466 during the fiscal year 1959.

The Air Force budget for the fiscal year 1959 amounted initially to $18.672 billion. This was nearly $2 billion above the amount originally provided by Congress for the fiscal year 1958. Two supplemental requests totaled nearly $109 million, but Congress actually appropriated a total of only $95 million. With $18.767 billion in new obligational authority, approximately $4.180 billion in unobligated funds, and anticipated reimbursements of $895 million, the Air Force had $23.842 billion available for obligation in fiscal 1959. Preliminary figures showed that actual obligations during the fiscal year totaled $20.766 billion and net expenditures, $19.090 billion.

The president's proposed Air Force budget for the fiscal year 1960 totaled $18.682 billion, including $915 million for military construction. It was estimated that expenditures would reach $18.675 billion.

Strategic Air Command.—At the present time, over 90% of this country's nuclear retaliatory effort is contained in the Air Force's Strategic Air Command (SAC) and in the Tactical Air Forces at home and abroad. Over the last ten years these forces have been procured, maintained, and trained for approximately 20% of the annual Department of Defense budget.

SAC's manned bomber force consists primarily of Boeing B-47 six-jet medium bombers and B-52 eight-jet heavy bombers. Although the total striking power of this force is almost beyond comprehension, by today's standards these planes are approaching obsolescence. Now replacing the B-47 is the B-58 Hustler, a supersonic delta-winged medium bomber powered by four turbojet engines. Its nonrefueled range exceeds that of the B-47 by 3,000 miles, and its speed is double that of the B-47. A possible replacement for the B-52 is the B-70 Valkyrie, now under development, which is powered by six high-energy turbojets and is fitted with a sophisticated, stellar-inertial bombing and navigation system. The Valkyrie will be capable of Mach 3 speed, altitudes above 70,000 feet, and a range of about 7,000 miles.

Meanwhile, the G model of the B-52 is in production. The B-52G has greater range than any of its predecessors, permitting it to make nonstop, round-trip, unrefueled flights against intercontinental targets from advanced bases in the Western Hemisphere. The B-52G is capable of carrying a full load of nuclear weapons in its bomb bay, and two GAM-77 Hound Dog air-to-surface missiles under its wings. The Hound Dog will give the B-52G the capability of standing off approximately 500 miles from an enemy target and launching its missiles at supersonic speeds to deliver nuclear warheads on important military objectives. The strategic forces also employ decoy missiles and other penetration aids, including electronic countermeasures. The air-to-surface Quail, released by B-47's and B-52's, reflects on radar screens like a bomber and thus confuses enemy defenses.

On Oct. 1, 1958, SAC completed its first year of operation under the "ground alert" concept, with a sizable percentage of its bomber and tanker aircraft loaded and ready for immediate takeoff to predetermined targets. The goal was to have one third of the strike force airborne within 15 minutes after warning of attack, and SAC was rapidly attaining this capability. Heavy bomb wings of 45 B-52's were divided into strategic squadrons of 15 bombers, plus 10 tankers for dispersal purposes. By June 30, 1959, eight of these strategic wings had been activated.

On Feb. 12, 1959, SAC became an all-jet bomber force. On that day the last of the command's B-36 reciprocal-engine bombers was flown into retirement. The event marked another milestone in strategic air operations, now geared entirely to the increased speed of jet aircraft.

SAC also has continued to increase its inventory of KC-135 jet Stratotankers. The KC-135 can fly at altitudes above 40,000 feet at speeds of more than 600 miles an hour during refueling operations.

On Jan. 1, 1959, under the Department of Defense Reorganization Act of 1958, SAC's position as a specified command of the Defense Department was reaffirmed. The line of control for command of operational activities proceeds directly from the president through the secretary of defense to the commander-in-chief of SAC, with the Joint Chiefs of Staff acting as executive agent for the defense secretary. This line of control greatly strengthens the relationship of the president, as head of the military, to the nation's primary strategic striking force. The commander-in-chief of SAC has authority to launch the alert in an emergency under "Positive Control" procedures. This concept provides that SAC bombers will fly to designated points well short of enemy territory, but must turn back at those points unless specific coded orders are received to proceed. Orders to go on to their targets and to expend their nuclear weapons must come from the president.

Tactical Air Command.—When the Korean War ended in 1953, it was apparent that the United States needed an efficient, economical means of

fighting limited wars. The Composite Air Strike Force (CASF) was developed to cope with any situation ranging from Communist-instigated internal unrest in a small uncommitted country to a full-scale local war as in Korea.

The backbone of today's fighter force is the F-100D Super Sabre, which is assisted by the F-101 Voodoo. In 1958, F-104's and F-105's entered the Air Force inventory. In the short-range missile field, the surface-to-surface Matador is being replaced by an improved version called Mace, and the Air Force has adapted to its aircraft a Navy-developed air-to-surface missile called Bullpup.

TAC's force in being includes 28 tactical fighter squadrons, 12 troop carrier squadrons, 4 tactical reconnaissance squadrons, 4 aerial refueling squadrons, and allied support and training units. Twelve bases in the United States are under TAC control, and other groups are located throughout the world.

North American Air Defense Command.—NORAD was established in 1957 to coordinate the air defenses of Canada and the United States. An integrated headquarters, commanded by a U.S. Air Force officer, was established in September 1957 at Colorado Springs, Colo., and in May 1958 the two governments announced their agreement to maintain NORAD for 10 years, or for a shorter period if both countries were agreeable.

NORAD has approximately 174,000 military personnel, including 115,000 from the U.S. Air Force, 35,000 from the U.S. Army, 10,000 from the U.S. Navy, and 14,000 from the Royal Canadian Air Force. Including National Guard, reserve, and other augmentation forces, the number is well over 200,000.

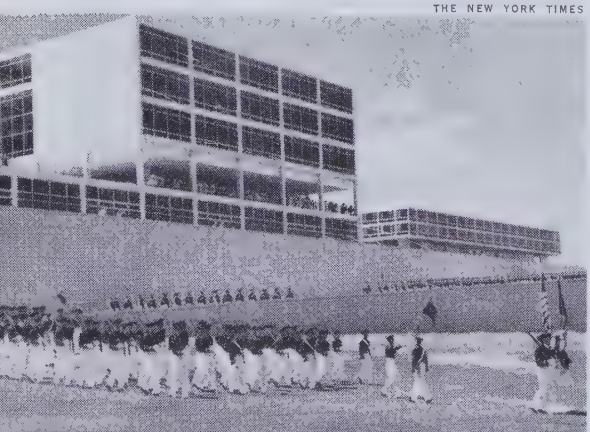
To augment the Distant Early Warning (DEW) Line, a radar network comprising more than 50 stations stretching some 3,000 miles from Alaska to the eastern coast of Canada, Congress provided funds to the Air Force in 1958 for construction of a new complex of isolated installations to provide a Ballistic Missile Early Warning System (BMEWS). At Clear, Alaska, and Thule, Greenland, two impressive radar installations are being installed—the first two units of the BMEWS—with giant radar reflectors eight stories high that can probe deep into Soviet territory to detect the launching of missiles. Complementing and providing control of the interception systems for air defense is the Semi-Automatic Ground Environment (SAGE) system, designed to track enemy intruders and guide aircraft and missiles on an interception course. Eventually, the SAGE network will encompass some 29 strategically located direction centers.

The manned interceptor force employs F-86L's, F-89J's, and the supersonic F-102's and F-104's, all of which are responsive to the SAGE control system. Air-to-air missiles available for use in air defense against manned jet bombers include the radar-controlled Falcon, the infrared Falcon, the Genie or MB-1 nuclear weapon, and the Sidewinder, all of which are in combat units.

With reliance for air defense being placed on ground-to-air missiles, particularly the Nike-Hercules and the Bomarc, no new interceptors were to be procured by the Air Force in 1960. The 200-mile-range surface-to-air Bomarc-A is designed to engage and destroy an oncoming enemy plane far from target. The first Bomarc training unit, the 4751st Air Defense Missile Wing, was activated in January 1958 at the Air Force Proving Ground Center, Eglin Air Force Base, Florida. Launching of the improved Bomarc IM-99B test missile, designed for a 400-mile range, took place on schedule in May 1959.

Dress parade is staged on grounds of Air Force Academy in Colorado. Academy graduated its first class in June 1959.

THE NEW YORK TIMES



Intercontinental Missiles.—As SAC's inventory of bombers and tankers grew to almost 3,000 aircraft in 1959, the command was taking its first steps into the missile era, aiming at a flexible, mixed force of manned aircraft and missiles. Since December 1958, when the first missile (a Thor) to be fired by an all-SAC crew went up from Vandenberg Air Force Base, California, command personnel have been supplementing their training with actual launchings and dry firings.

On Aug. 31, 1959, less than five years after the inception of the program, equipment for the first operational Atlas squadron was turned over to SAC at the Vandenberg base. From there, on September 9, the first operational Atlas was fired by a SAC crew, the flight achieving every set objective. Operational ICBM (intercontinental ballistic missile) capability was thus realized a full year earlier than originally planned.

A second ICBM, the Titan, was being developed. A two-stage liquid-propelled missile with range and speed roughly equivalent to the Atlas, the Titan will be launched from underground launching sites, affording maximum protection against enemy attack.

The Minuteman, the first solid-fuel ICBM, was still in the early development stages in 1959. This missile, considerably less expensive than the Atlas or the Titan, is expected to be operational in the early 1960's.

By the end of June 1959, 11 ICBM sites had been selected for SAC units, and construction was under way at several of these. Sites announced by late 1959 included the following Air Force bases: Offutt, Nebraska (SAC headquarters); Vandenberg, California; Francis E. Warren, Wyoming; Larson, Washington; Fairchild, Washington; Forbes, Kansas; and Lowry, Colorado. Early in 1959, SAC announced that operational missile units would be placed under the command's numbered air forces, a step designed to simplify command control and to expedite integration of the missile force.

Space Research.—On Sept. 23, 1959, the Department of Defense designated the Air Force as the nation's primary service in space. The new plan provided for the eventual assignment to the Air Force of responsibility for the development, production, and launching of military space boosters. The Air Force also would have the primary military interest in manned space travel.

In 1959 a number of space vehicles were successfully launched by the Air Force, acting under the auspices of either the National Aeronautics and Space Administration (NASA) or the Advanced Research Projects Agency (ARPA).

For Project Mercury, NASA's man-in-space effort, the Air Force is providing 10 Atlas boosters, as well as launch facilities and technical assistance. In addition, the Air Force conducted balloon tests for NASA and supplied training equipment for the astronauts who are preparing for flight into space. Thor boosters were also furnished for a deep space probe and lunar satellite project.

In December 1958, ARPA assigned the task of developing systems and techniques for operating space vehicles to the Air Research and Development Command's Ballistic Missile Division. Under Project Discoverer, initial tests of the propulsion and guidance systems of satellites were followed by attempts to recapture them. The recovery of satellites carrying live animals is an important step toward the success of the man-in-space program. The main stage of the Discoverer is a modified Thor, and the second stage, an Agena, a new vehicle with a special rocket engine. Initial versions of the Discoverer were designed to orbit for short periods at relatively low altitudes. Six out of eight Discoverer satellites achieved polar orbits in 1959.

On Aug. 7, 1959, the Air Force launched NASA's Explorer VI, known as the "Paddle Wheel" satellite. This was probably the most comprehensive space laboratory launched to that date by the United States. (See also SPACE FLIGHT.)

Installations.—At the end of June 1959 the Air Force was using 267 major bases. The following tabulation de-

NORTH AMERICAN AVIATION, INC.; USAF

(*Left*) The X-15, a rocket-propelled research craft, drops from its B-52 "mother" plane in first powered flight, September 17. (*Right*) An F-100 Super Sabre roars from a bombproof shelter in demonstration of Zero Length Launch at base in New Mexico.

picts the six main types, including foreign bases and contract flying schools in which the Air Force has no real property interest:

Classification	Total	U.S.	Overseas
Operational	162	84	78
Operational support:			
Flying	13	7	6
Nonflying	12	3	9
Training	42	42	0
Research and test	7	7	0
Logistical	18	16	2
Non-USAF (no real property interest):			
Foreign bases	8	0	8
Contract flying schools	5	5	0
Total	267	164	103

During the fiscal year 1959 the Air Force awarded construction contracts with a total value of $1,158.4 million, surpassing the contract total for the previous year by $230 million. The major construction programs conducted during the year included (1) Bomarc and ICBM facilities, (2) Ballistic Missile Early Warning System (BMEWS) sites, (3) SAGE facilities, (4) radar improvement, (5) DEW Line extension, and (6) airbase construction or expansion. The Air Force started no new major bases, most new construction involving expansion and improvements of existing facilities. New contracts, however, were let for auxiliary installations, chiefly gap fillers and aircraft control and warning facilities. New missile facilities were placed in the vicinity of established bases.

Air Force Academy.—In 1958 the Air Academy moved from its interim home at Lowry Air Force Base, Colorado, to its permanent site north of Colorado Springs, Colo., and was accredited by the North Central Association of Colleges and Secondary Schools. The curriculum was revised to include 183 credit hours, of which 135 hours are in academic subjects and 48 hours in military studies—or airmanship.

Beginning in June 1959, a new appointment system enacted by Congress in 1957 went into effect. Each member of Congress may nominate one principal candidate and 10 alternates in order of preference; or, if he prefers, he may authorize the Air Force to select the best qualified man from his 11 candidates. Other candidates are nominated in the same manner by governors of United States possessions, the District of Columbia, and the Commonwealth of Puerto Rico. Eighty-nine candidates are selected by the president of the United States from service-connected categories such as regular and reserve components of the Air Force and Army, sons of deceased veterans, and sons of members of the regular components of the armed forces. One vacancy will be filled by a vice-presidential nominee, and sons of Congressional Medal of Honor winners are admitted without regard to total vacancies, provided they pass minimum requirements.

On June 3, 1959, the academy graduated its first class (of 205 officers), and on June 26 it admitted 748 cadets—its first full-sized class. By the time three more classes of about this size have been admitted, the academy is expected to reach its authorized strength of 2,512.

Reserve Forces.—At the end of June 1959, Air Force Reserve (AFR) personnel totaled 552,768, of whom 225,819 were in the ready category. Air National Guard (ANG) personnel totaled 70,994, including 8,473 officers and 62,521 airmen.

ANG aircraft inventory at the end of June stood at 2,409, including 1,764 jet fighters, 195 jet reconnaissance planes, and 218 jet trainers. ANG aircraft were assigned to 24 tactical wings, 10 support flying squadrons, and 51 state headquarters. The 567 ANG units occupied 94 flying bases and 42 nonflying bases; 38 of the flying bases were being used jointly with other agencies.

The AFR rounded out its 15-wing troop carrier force in 1959 with the addition of its last three squadrons. At the end of the fiscal year 1959 the AFR possessed 37 flying facilities, all of which were shared with other agencies—19 with the regular Air Force, 10 with ANG, 3 with the Navy, and 5 with civil aviation.

(See also AERONAUTICS; MISSILES; NATIONAL SECURITY.)

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AIR RECORDS. See FLIGHT RECORDS.

AIRCRAFT AND AIRLINES. See AERONAUTICS.

ALABAMA. South Central state, United States; admitted to the Union, Dec. 14, 1819. The "Cotton State" ranks 29th in area and 19th in population among the 50 states.

Area and Population.—Area: 51,609 square miles (land, 51,078; inland water, 531), divided into 67 counties. Population: (1950) 3,061,743; (est., July 1, 1958) 3,164,000. Urban places with 1950 populations above 10,000 (unless otherwise indicated):

Alexander City	12,473[1]	Homewood	17,982[2]
Andalusia	10,032[3]	Huntsville	31,475[2]
Anniston	31,066	Mobile	173,849[2]
Auburn	12,939	Montgomery (*capital*)	106,525
Bessemer	28,445	Mountain Brook	10,937[1]
Birmingham	326,037	Opelika	12,295
Decatur	22,551[2]	Phenix City	26,961[4]
Dothan	28,820[2]	Prichard	27,589[3]
Enterprise	11,137[3]	Selma	27,575[2]
Fairfield	14,186[5]	Sheffield	13,324
Florence	27,465[1]	Talladega	17,670[2]
Gadsden	55,725	Tuscaloosa	46,396

[1] Special census, 1955. [2] Special census, 1956. [3] Special census, 1957. [4] Special census, 1958. [5] Special census, 1954.

Executive.—Chief state officers in 1959:
Governor: John Patterson (Democrat)
Lieutenant Governor: Albert Boutwell
Secretary of State: Mrs. Bettye Frink
Treasurer: Mrs. Agnes Baggett
Attorney General: MacDonald Gallion
Auditor: Mrs. Mary Texas Hurt Garner
Supt. of Education: Frank R. Stewart

Constitution and Judiciary.—The present constitution was adopted in 1901. The Supreme Court comprises seven justices; chief justice in 1959 was J. Ed Livingston.

Legislature.—The Alabama Legislature (Senate 35 members; House of Representatives, 106) meets in odd-numbered years. After an organizational session commencing the second Tuesday in January, the regular legislative session commences the first Tuesday in May.

The legislature was unusually active in 1959. A special session, called by Gov. John Patterson to meet between the organizational and regular sessions, authorized a $60 million bond issue for highway construction. After a $75 million general appropriation measure was adopted on June 17, the regular session was recessed for eight weeks to permit a special session on school finances. Measures were enacted at that session to produce an estimated $30 million of new revenue annually for education, by eliminating sales tax exemptions and increasing taxes on tobacco products. A record $304 million was appropriated for school operating expenses over the 1959–61 biennium. A bond issue of $100 million for new school construction was also authorized.

During the regular legislative session which resumed on August 25, taxes on liquor and beer were increased to produce an estimated $5 million of new revenue annually, half of which was allocated for expansion of hospital facilities for the mentally ill and half to increase old-age benefits. With the help of strong pressure from the governor, strict legislation was enacted to regulate the small-loan business.

Legislation to preserve racial segregation included an act authorizing the state to appropriate public funds directly to private schools when public schools have closed because of integration orders. Measures were also adopted which could make voter registration more difficult by permitting boards of registrars to spend less time registering voters. Other legislation empowered the attorney general to require persons suing the state to reveal who would pay the litigation expenses, recognized chiropractic as a legitimate phase of the healing arts, designated the camellia as the official state flower, and created special commissions to study the penal system and water resources. A resolution was also adopted petitioning the U.S. Congress to call a constitutional convention to strip the federal government of all control over public schools. Filibustering techniques underwent restriction in the Senate through changes of that body's rules.

Significant legislative proposals which failed of enactment concerned legislative reapportionment, efforts to bar the state from using ad valorem property taxes as a source of revenue, and authorization for the governor to close integration-threatened schools.

Finance.—In the 1957–58 fiscal year, state revenue of $397,372,819.10 comprised $228,079,440.59 from state tax sources, $99,291,784.17 from the federal government, and $70,001,594.34 from all other sources. Tax revenue consisted of $73,536,405.71 from a 3% general sales tax, $19,997,117.55 from individual income taxes, $7,824,464.97 from corporate income taxes, $65,633,957.96 from motor fuel taxes, $18,058,103.42 from licensing, and $43,029,390.98 from all other state tax sources. Expenditures of $365,831,218.55 comprised $122,160,420.66 for education, $97,379,165.11 for health, welfare, and safety, $77,470,396.88 for highways, and $68,821,235.90 for all other purposes. State long-term indebtedness on Sept. 30, 1958, amounted to $118,284,000.

Banking.—As of June 10, 1959, the state's 69 national banks had assets of $1,536,059,000, demand deposits of $1,020,019,000, and time deposits of $375,215,000. The 169 state banks, on June 23, 1959, had $593,788,759.35 in assets, $352,653,047.28 in demand deposits, and $182,286,239.56 in time deposits.

Education.—School attendance is compulsory between the ages of 7 and 15, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $114,998,229 ($171.76 per pupil), of which 24.1% was derived from local school districts, 71.1% from the state, and 4.8% from the federal government. Outlays for construction and improvements, including debt service, amounted to $23,508,690. Teachers' salaries averaged $3,372 (high school, $3,564; elementary, $3,225).

ALABAMA SCHOOL STATISTICS, 1958–59

Type of school	No.[1]	Teachers	Students
Public elementary (1–6)	2,222	14,469	474,777
Public junior high (7–9)	1,285	...[2]	175,278
Public senior high (10–12)	570	11,412[3]	125,926
Private and parochial elementary and secondary (1957–58)	147	1,280	18,150[4]
Public vocational (1957–58)	6	314	28,952
Colleges and universities	...	...	44,036

[1] There is some duplication among public elementary and secondary units; actual number, 2,401. [2] Included in senior high figure. [3] Includes junior high teachers. [4] Incomplete.

Social Welfare.—Public assistance expenditures from federal and state funds (excluding institutional costs) in the 1958–59 fiscal year totaled $68,098,555.18, including $54,237,053.19 for the aged, $7,559,095.03 for dependent children, and $5,029,182.63 for the permanently and totally disabled. A monthly average of 139,951 persons received public assistance. The state spent $7,718,674.92 for all mental health activities, including the operation of three hospitals for the mentally ill. Correctional and penal programs (1957–58) cost $4,198,478.41, including the operation of seven prisons (3,772 inmates on September 30) and 29 prison farms and camps (1,594).

Labor Force.—The labor force in June 1959 totaled 1,121,100 persons, of whom 155,000 were agricultural workers. Nonfarm employment reached 885,100, above the 868,800 figure for June 1958. Average employment of 870,000 for the 12 months ending June 1959 was, however, below that of 878,700 for the preceding 12-month period. Manufacturing absorbed 26.5% of nonfarm employment; government, 16.9%; and trade, 15.9%. The unemployment figure of 73,500 for June 1959 was down 25% from 100,000 a year earlier. The state paid $29,133,056 in unemployment compensation during the year ending June 30, 1959.

Manufacturing.—An estimated 4,400 manufacturing establishments in 1958 employed an average of 230,400 persons who received $906 million in salaries and wages. Value added by manufacture (1957) totaled $1,711,356,000, and expenditures for new plant and equipment amounted to $301,079,000. Production workers in manufacturing averaged $73.03 for an average workweek of 40.8 hours in August 1959.

MAJOR ALABAMA MANUFACTURERS, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1]
Primary metal industries	43,178	$232,234	$476,931
Textile mill products	42,984	119,785	190,433
Chemicals and products	8,110	36,673	132,032
Transportation equipment	17,494	83,367	126,148
Food and kindred products	18,182	56,880	112,935
Lumber and wood products	27,581	56,292	92,417
Fabricated metal products	9,875	44,595	89,014
Rubber products	5,387	31,053	84,035
Pulp, paper, and products	9,462	49,104	79,168
Apparel and related products	20,000	43,942	77,005

[1] For definition, see text footnote 1 in the article, *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—Alabama ranked first among the states in 1958 in the output of bituminous limestone. It stood second in the production of bauxite and slag; third in asphalt, china clay, iron ore, and scrap and flake mica; fourth in aluminum capacity and coke output; fifth in pig iron; and sixth in lime. It

ALABAMA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)[1]	13,588,000	$ 42,930,000
Clays[3]	1,548,000	1,787,000
Coal	11,182,000	72,360,000
Coke[2]	4,256,616	84,672,000[2]
Iron ore (long tons)	3,659,000	23,393,000
Iron, pig[2]	3,411,954	188,150,000[2]
Lime	520,000	4,660,000
Sand and gravel	4,128,000	4,210,000
Stone[4]	11,080,000	17,068,000
Other minerals	...	26,538,000
Total	...	$187,747,000[2,5]

[1] Excludes slag cement; value included in "Other minerals." [2] Values for processed materials are not included in the total. [3] Excludes certain clays, value included in "Other minerals." [4] Excludes certain stone; value included in "Other minerals." [5] Total adjusted to eliminate duplications in value of clay and limestone used in cement and lime. (Source: U.S. Bureau of Mines.)

was 21st in the total value of mineral output, with 1.14% of the national total. A salt dome discovered in the state in 1958 is the most easterly of all salt domes in the United States.

Agriculture.—Cash farm income for the first nine months of 1959 rose to $327,331,000, from $309,810,000 for the comparable period of 1958. For the full year 1958, income comprised $285,600,000 from livestock and livestock products, $191,779,000 from crops, and $43,435,000 from government payments. Principal livestock income sources were cattle, $96,882,000, and broilers, $74,140,000.

ALABAMA CROP INCOME

Crop	Cash receipts 1957	1958
Corn	$13,580,000	$19,034,000
Cotton lint	77,781,000	82,875,000
Cottonseed	8,507,000	6,572,000
Hay	941,000	1,266,000
Peaches	1,066,000	1,901,000
Peanuts	12,379,000	21,789,000
Pecans	1,032,000	6,512,000
Potatoes	4,320,000	5,240,000
Soybeans	5,241,000	3,658,000
Watermelons	2,736,000	1,870,000

(Source: U.S. Department of Agriculture.)

There were 192,000 farms in the state in 1958. Acreage (1954) totaled 20,810,000 (4,812,000 in harvested cropland). Livestock on farms (Jan. 1, 1959) included 1,816,000 cattle, 930,000 hogs, and 6,965,000 chickens (excluding commercial broilers). Family and hired workers engaged in farming numbered 288,000 during the week of Sept. 20–26, 1959.

Transportation and Communications.—An estimated $144,593,000 in state and federal funds were disbursed for roads and highways in the 1958–59 fiscal year. Approximately 1,350 miles of new highways were completed.

Highways and roads on Dec. 31, 1958, totaled 63,583 miles (23,746 paved and 26,010 soil-surfaced or graveled). Registered *motor vehicles* numbered 1,143,061 on June 30, 1959, including 907,417 passenger cars. There were (1958) 27 *railroads* operating 4,874.86 line miles; 5 regularly scheduled *airlines;* and 110 *airports and airfields* (64 commercial and municipal, 10 private, and 36 personal).

Communications media (1959) included 105 AM and 15 FM *radio stations,* 9 *television stations,* 18 daily *newspapers* (1958 circulation, 642,825) and 138 other newspapers, and (January 1) 200,200 business and 568,000 residential *telephones.*

Principal Events, 1959.—Gov. John Patterson was inaugurated on January 19, promising governmental economy, highway development, industrial expansion, maintenance of racial segregation, and promotion of public education. The governor won an early contest for control of the State Democratic Executive Committee by having the candidate of his choice elected as its chairman. The committee thereafter repealed the loyalty oath to relieve candidates and voters from any obligation to support nominees of the national Democratic Party.

Following the appointment of Law Professor Harry Haden as commissioner of revenue, the new administration mounted an ambitious campaign to equalize property tax assessments throughout the state. The campaign was subsequently abandoned when its unpopularity obstructed realization of legislative objectives sought by the administration.

The 1959 report of the federal Civil Rights Commission (see CIVIL LIBERTIES), issued on September 8, charged that Negroes in Alabama had been arbitrarily denied the right to vote. A suit by the United States in federal court to enjoin Macon County voting registrars from denying Negro voting rights failed after the registrars resigned from office. Some 1,800 Methodist laymen from Alabama and north Florida met in Birmingham on March 20 for the purpose of organizing to combat racial integration in the church.

Education had a good year in 1959, with public school teachers receiving average pay increases of 15% and with an estimated 1,500 new teachers hired in the state school systems. University of Alabama President Frank A. Rose announced the opening of a greater University of Alabama Development Program embracing plans to raise $5 million in private contributions. He subsequently announced an extended development program contemplating expenditures of $42 million over the next 10 years to expand the university's facilities.

Although Alabama's heavy concentration of iron and steel suffered from the national steel strike (see IRON AND STEEL), significant gains were reported during the year in nearly all other segments of the economy. Continued development of Alabama's inland waterways took place, with the highest lift lock in the world dedicated on November 10 at Wilson Dam (see CANALS). The city of Huntsville continued to be a boom town because of expanding activities at Redstone Arsenal, which in 1959 reached an employment level of 22,000 workers and an annual payroll of $125 million.

(See also NATIONAL PARKS AND MONUMENTS.)

Legislature and Principal Events by:
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ALAND (or AALAND) ISLANDS. An archipelago of some 6,500 islands and reefs (50 inhabited) in the Baltic Sea, forming an autonomous department of Finland. Area, 581 square miles (of which Åland comprises 285); pop. (est. 1957), 21,800, mostly Swedish-speaking. Maarianhamina (Mariehamn, pop. 3,264) is the capital and chief city. Principal industries are fishing and shipping. Rye, barley, flax, and vegetables are grown.

ALASKA. Northernmost of the states of the United States, Alaska was admitted to the Union on Jan. 3, 1959. "The Great Land" ranks first in area and last in population among the 50 states.

Area and Population.—Area: 586,400 square miles (land, 571,065; inland water, 15,335). Population: (1950 census) 128,643; (July 1, 1958, est.) 191,000, of whom 156,000 are civilians. These include approximately 16,000 Eskimos, 15,000 Indians, and 4,000 Aleuts. The state's largest cities and their estimated 1958 populations are: Anchorage, 35,000; Fairbanks, 11,000; Ketchikan, 7,500; and Juneau, *the capital,* 7,200.

Executive.—Chief state officers in 1959:
Governor: William A. Egan (Democrat)
Secretary of State: Hugh J. Wade (acting governor from January 19 to April 20, because of governor's illness)
Commissioner of Revenue: Peter Gatz
Attorney General: John Rader
Commissioner of Administration: Floyd Guertin
Supt. of Public Instruction: Theo J. Norby

Constitution and Judiciary.—The present constitution was ratified on April 24, 1956. The three members of the newly established Supreme Court, appointed by the governor, were Chief Justice Buell A. Nesbett and Associate Justices Walter J. Hodge and John Diamond.

Legislature.—The Legislature of the State of Alaska comprises a 20-member Senate (in 1959, 18 Democrats and 2 Republicans) and a 40-member House of Representatives (34 Democrats and 6 Republicans). It convenes annually for a constitutionally unlimited session, starting on the fourth Monday in January.

Alaskans elected to the first legislature included one Aleut, one Indian, and seven Eskimos. Although half of the 60 members of the two houses were without earlier legislative experience, the legislature adjourned its 81-day session (January 26–April 16) with a balanced budget and no general increase in taxation. The budget called for spending of approximately $31 million, including $27.5 million from the General Fund and $3.5 million for highways.

Other legislative accomplishments included a State

Reorganization Act creating 12 departments of government and centralizing the executive authority in the governor; a land act setting up a state Division of Lands with authority to lay out procedures to be followed in the management of the 104 million acres of uplands granted by the federal government, the submerged lands, and the tidelands along Alaska's 33,904-mile tidal shoreline; and provisions for a party column ballot for primary elections and for the moving up of the primary date from April to August and of the general election date from October to November.

In other actions the legislature authorized the state to make contracts with labor unions; prohibited the employment of B-girls in bars; established a judiciary system with a three-member Supreme Court and an eight-member Superior Court; and passed a Workmen's Compensation Act with a more realistic schedule, and an Administrative Procedures Act prescribing methods for the establishment and review of agency regulations.

The legislature established the following annual salaries: governor, $25,000; secretary of state, $18,000; chief justice of the Supreme Court, $23,500; associate justices, $22,500; Superior Court judges, $19,000; and members of the legislature, $3,000.

Finance.—In the 1958–59 fiscal year, state revenue of $52,427,148.68 comprised $23,496,834.99 from state tax sources, $16,471,480.79 from the federal government, and $12,458,832.90 from all other sources. Tax revenue consisted of $8,134,603.31 from individual income taxes, $1,397,582,78 from corporate income taxes, $3,526,414.63 from motor fuel taxes, $4,564,473.24 from licensing, and $5,873,761.03 from all other sources. Expenditures of $47,042,721.92 included $16,173,451.90 for education and $2,779,753.75 for highways. State long-term indebtedness on June 30, 1959, amounted to $3,000,000.

Banking.—As of Dec. 31, 1958, the state's 7 national banks had assets of $151,606,444.18, demand deposits of $87,099,457.94, and time deposits of $54,349,746.54. The 11 state banks had $43,676,318.16 in assets, $25,665,724.77 in demand deposits, and $14,043,198.26 in time deposits.

Education.—School attendance is compulsory between the ages of 6 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $16,340,591 ($486.17 per pupil), of which 18% was derived from local school districts, 54% from the state, and 28% from the federal government. Outlays for construction and improvements amounted to $14,794,775. Teachers' salaries averaged $6,300 for the 1958–59 school year.

The state maintained 133 public elementary and secondary schools in 1957–58 for 27,421 pupils in grades 1 through 8, 1,330 in grades 8 and 9, and 5,246 in grades 9 through 12. There were 1,233 teachers for elementary grades, 54 for grades 8 and 9, and 304 for senior high classes. The state's 25 private and parochial schools had 1,743 pupils and 100 teachers

In addition, 5,114 Eskimos, Indians, and Aleuts were enrolled in two boarding schools (1,001 enrollees), 65 day schools, and 10 instructional-aid schools maintained by the U.S. Bureau of Indian Affairs, as well as in high schools of the state public school system.

Higher education is furnished by the University of Alaska on its campus at College, near Fairbanks; through its facilities at military bases; and by community college units at Anchorage, Juneau, Ketchikan, and Palmer.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures of $2,699,398.18 comprised $1,081,990 for the aged, $1,344,603 for dependent children, $76,992 for the needy blind, and $195,813.18 for general relief, excluding medical care. Such assistance was given to an average of 6,168 persons monthly.

Transportation and Communications.—Much of the internal and external transport of passengers, mail, and freight is by air service. This fact accounts for the 19 regularly scheduled airlines which served the state in 1959 and for the availability of 610 commercial and municipal, 40 military, and 188 private airports and airfields. Most of the airlines provide facilities for trips to less frequented sections of the state, and bush pilots supplement this coverage. The annual number of flight passengers arriving at and embarking from the airports at Anchorage and Fairbanks alone exceeds the state's total population by 70,000.

An air development affecting Alaska in 1959 was the launching on June 5 of nonstop service by Northwest Orient Airlines from New York to Anchorage on its New York–Tokyo run. Alaska serves as a terminal area for several transpolar routes to various countries.

State and federal funds disbursed for roads and highways in the 1958–59 fiscal year included $16,532,000 for construction and $4,813,000 for maintenance. New construction amounted to 15.5 miles.

Highways and roads on July 1, 1959, totaled 4,235 miles (1,165 surfaced). Registered *motor vehicles* on the same date numbered 65,756, of which 47,642 were passenger cars. There were (1959) 2 *railroads* operating 509 track miles.

Communications media (1959) included 12 AM and 2 FM *radio stations;* 5 VHF *television stations;* and 6 daily *newspapers* (circulation, 47,647) and 7 others.

Economy.—On the basis of business license tax returns for 1957, the gross volume of business in Alaska was $586,486,000, not including operations of the mining and fisheries industries (see below, *Fisheries; Mining*), which are not subject to this levy.

Military construction is a significant factor in the economy, with contracts worth over $75 million placed by the U.S. Army and Air Force in the 1958 fiscal year. Tourism is the state's fastest-growing industry (see below, *Principal Events,* 1959), and the fur industry, including especially the fur seal catch from the Pribilof Islands (q.v.), is the state's most distinctive enterprise.

Labor Force.—Over 60,000 persons are employed, of whom approximately two thirds work for private industry and one third for the state, local, and federal governments. Approximately half of the total are engaged in nonagricultural employment covered by the state's unemployment insurance program. Percentage distribution of insured employment, as of March 15, 1959: wholesale and retail trade, 27%; transportation, communications, and utilities, 19%; construction, 16%; service industries, 16%; manufacturing, 12%; and other, 10%.

Insured unemployment in the nonagricultural category declined to 6,088 as of March 21, 1959, from 6,267 a year earlier. Unemployment compensation payments dropped to $6,492,335 in the year ending June 30, 1959, from $8,323,579 in the previous fiscal year.

Manufacturing.—Alaska's leading manufacture is fish processing. In 1958 there were 157 fishery and wholesaling establishments employing 7,370 persons who processed and marketed 215,301,904 pounds of products valued at $83,742,931. Other leading manufactures include sawmilling, printing and publishing, and the building and repairing of boats and ships.

Fisheries.—All fish and shellfish species landed in the 1958 calendar year were valued at $33,196,757 to fishermen, including $26,847,439 for 241,255,043 pounds of salmon, of which Alaska is the nation's chief producer. Other leading species included halibut ($3,348,500 for 23,359,000 pounds), herring, crabs, shrimp, and clams. There were 12,136 commercial fishermen as of Dec. 31, 1958.

Mining.—Mineral production was valued at $21,450,000 in 1958, down by about a fourth from the 1957 value because of a decrease in the military use of sand and gravel and a drop in the value and production of coal, gold, and mercury. The year was notable, however, for the production of oil in commercial quantities for the first time since 1933. The state continued to rank first in the primary production of platinum group metals and third in gold and mercury. Employment in the mineral industries totaled 1,925 persons in 1958.

ALASKA MINERAL PRODUCTION, 1958
(In short tons, except as indicated)

Mineral	Quantity	Value
Coal	759,000	$6,931,000
Gold (troy ounces)	186,435	6,525,000
Sand and gravel	4,255,000	3,871,000
Stone	615,000	2,065,000
Mercury (76-lb. flasks)	3,380	774,000
Silver (troy ounces)	24,000	22,000
Other minerals	...	1,262,000

Agriculture.—The total value of all farm land and buildings was $25 million in 1958, averaging $11,000 per farm. The state's approximately 2,300 farms, covering 265,000 acres (17,500 in harvested cropland) lie chiefly in the Matanuska Valley and the Anchorage area, and give employment to approximately 3,500 persons.

Cash income in 1958 comprised $2,403,000 from livestock and livestock products, $947,000

from crops (chiefly barley, oats, potatoes, and wheat), and $85,000 from government payments.

Forest Production.—The commercial timber cut is chiefly from Chugach and Tongass national forests. Approximately 200 million board feet, valued at $463,596, were harvested in the 1957–58 fiscal year, 20% under that of 1956–57.

Principal Events, 1959.—The year 1959 was appropriately welcomed in Alaska by the observance on January 3 of Admission Day, the day when Alaska officially became a state. In contrast with the hilarious celebrations on June 30, 1958, when Congress had given its approval of admission, ceremonies throughout Alaska were of a serious nature, taking cognizance of the responsibilities of statehood. On July 4, 1959, communities in Alaska combined the celebration of Independence Day with the observance of the first official raising of the 49-star national flag.

The Alaska Omnibus Act, passed by Congress in June, made the new state responsible for many of the services formerly performed by federal agencies. Besides a transitional grant of over $10 million, more than $25 million was made available for the construction of Alaska highways.

The Alaska legislature, in its first session after statehood, passed 200 bills and carried over 127 bills to the second session meeting in January 1960 (see also above, *Legislature*). In accordance with the State Reorganization Act, Gov. William A. Egan appointed heads of the 12 departments of government and other officials.

Under the statehood act, Alaska is to receive 70% of the net receipts from the sale of fur seals and sea otters on the Pribilof Islands (q.v.). Payments to the Eskimos for taking the animals constitute a major contribution to their economic well-being.

The year 1959 produced the poorest salmon pack (1,770,000 cases) since 1899. According to the federal Fish and Wildlife Service (q.v.), the reason for the low pack was the coincidence of poor cycles in all three major canning species—reds, pinks, and chums.

Fish traps were banned by action of the legislature on February 25. The three villages of Metlakatla, Kake, and Angoon refused to accept the ban and carried their appeal to the U.S. Supreme Court. Justice William Brennan, Jr., granted them the right to use traps during the summer, pending a review by the court.

Gas was being piped in 1959 into the native village of Barrow, the northernmost community in Alaska. A franchise was granted by Anchorage for the piping of gas from the Kenai Peninsula, where the state's only oil wells were producing 1,300 barrels a day by November. In the 1958 and 1959 fiscal years, Alaska's treasury was enriched by more than $11 million as a result of oil exploration activities. In September 1959 alone, the state's share of oil and gas leases amounted to $4,377,043.82. Approximately 32 million acres have been leased. Seven drilling operations were being carried on in 1959, and nine companies were reported planning geological and geophysical work on Alaska's Arctic slope.

Among other economic developments, the Sitka pulp mill began production in late 1959. This mill and another at Ketchikan, which began production five years earlier, will require 350 million board feet of logs annually. A carpenters' strike from June 27 to September 14 prevented much of the construction that had been planned for the summer period. A three-year pact, providing for pay increases, ended the halt.

Forest fires continued to plague interior Alaska, although not so seriously as in other recent years.

UPI

President Eisenhower signs proclamation making Alaska the 49th state. Witnesses to the ceremony on January 3 are (*seated*) Vice President Nixon and House Speaker Sam Rayburn; (*standing, left to right*) Ralph J. Rivers, congressman-elect; Ernest Gruening and E. L. Bartlett, senators-elect; Fred Seaton, secretary of the interior; Waino Hendrickson, acting governor; David W. Kendall, special counsel to the president; and Michael A. Stepovich, former governor.

In the 12 months ending June 1, 1959, 286 fires burned 439,000 acres of timber, compared with the 10-year average of approximately a million acres annually.

Much interest was being shown in 1959 in the possibility of using hydrogen bombs to blast a harbor at Cape Thompson on the sparsely settled northwestern shore of Alaska. A $35 million missile base was being erected at Clear.

The entertainment of tourists now ranks as the second major industry in Alaska. It is estimated that the number of tourists visiting the state in 1959 increased by 20% over that of the previous year. A number of hotels and resorts were being constructed to take care of anticipated future increases.

I. J. Montgomery,
Supervisor, Alaska Merit System.

ALBANIA. A country in the Balkan Peninsula, Albania is bounded by the Adriatic Sea on the west, Yugoslavia on the north and east, and Greece on the south. It has an area of 10,629 square miles and a population of 1,394,310 (1955 census). Tiranë (Tirana) is the capital and largest city (1955 pop., 108,183).

Government.—The Democratic Front, which was organized by the Communists during World War II, proclaimed a people's republic on Jan. 11, 1946. The Albanian Workers' Party, a Communist organization, controls the government. The People's Assembly, the 188-member legislative body through which the party operates, is elected every four years by universal suffrage. In turn, it elects the Presidium, which appoints and dismisses the Council of Ministers. Mehmet Shehu has been chairman of the council since July 20, 1954.

Education.—Elementary education is compulsory in the first stage, which lasts four years. In 1957 there were 3,200 seven-year primary schools with about 242,000 pupils. Secondary schools exist in the main cities, and have an enrollment of about 5,000. A state university was opened at Tiranë in September 1957.

Religion.—More than 70% of Albania's population are Moslems; the remainder is distributed between Roman Catholics (10% of the total) and Greek Orthodox (nearly 20%). The Catholics constitute a national church; the Greek Orthodox clergy are under the patriarchate of Moscow.

Finance.—The government budget for 1959 provided for revenues of 27.7 billion lek and expenditures of 26.9 billion. The corresponding figures for 1958 were 26.7 billion and 26.2 billion lek, respectively. The new budget includes expenditures of 16.6 billion lek for national economy, 5.7 billion for social and cultural activities, 2.1 billion for national defense, and 0.8 billion for administration (50 lek = U.S.$1).

Defense.—The USSR makes full military use of Albania, the harbor of Vlonë (Valona) and the island of Sazan (Saseno) constituting a veritable Soviet Gibraltar in the Adriatic. Kuçovë airfield has been equipped with Soviet

jet planes of the latest type. Reports reaching Greece in the summer of 1959 placed the number of Soviet specialists in the Vlonë area at more than 3,000.

Transportation and Communications.—Albania has 73 miles of railroads. Roads suitable for motor traffic aggregated about 1,370 miles in 1955. Soviet, Hungarian, and Czechoslovak airlines provide air service to Moscow, Lvov, Budapest, and Prague. There were 2,000 telephones in 1957. Broadcasting service is furnished by Radio Tiranë and five smaller stations; radio receivers totaled 20,000 in 1954.

Economy.—According to official statements, industrial production during the year 1958 was 20% higher than that of 1957. During the same period, foreign trade increased 27.1%. Capital investment, on the other hand, reached only 88% of the figure envisaged in the Second Five-Year Plan (1956–60). At the end of 1958 there were 1,935 collective farms, covering 76.2% of the cultivated land and employing 63.2% of the total number of peasant households. On Feb. 4, 1959, it was announced that 20 more collective farms had been merged into one, with an area of 2,958 hectares and employing 2,600 workers. It is estimated that because of improvement projects the land under cultivation had increased by 72% since 1938.

Following are production figures for 1958 (with percentages of increase or decrease, as compared with 1957, in parentheses): gasoline, 49,934 tons (31%); benzine, 31,229 tons (46%); crude oil, 403,197 tons (—18%); bitumen, 182,724 tons (24%); natural bitumen, 32,226 tons (—12%); coal, 255,677 tons (8%); chrome ore, 201,252 tons (20%), copper ore, 87,460 tons (56%); iron ore, 88,240 tons; electric power, 150 million kw.-hr. (20%); timber, 146,913 cubic meters (18%); bricks, 76 million units (12%); tiles, 18 million units (92%); cement, 77,552 tons (10%); cotton fabrics, 22 million meters (16%); woolen fabrics, 738,000 meters (64%); shoes and sandals, 740,000 pairs (14%); rubber sandals, 660,000 pairs (24%); olive oil, 2,813 tons (—12%); cheese, 2,819 tons (138%); butter, 407 tons (62%); and sugar, 10,275 tons (14%).

Effective as of April 28, 1959, the prices of certain consumer goods and foods were reduced by the following percentages: various types of bread and flour, 12–21%; milk and various dairy products, 3–10%; cotton garments, thread, rope, aluminum utensils, glass, and nails, 5–10%; macaroni, 12%; potatoes, 17.6%; and soap, 10%. At the same time, the government increased the prices paid to producers by 100% for wheat, 133% for rye, 117% for corn, 200% for beef and mutton, and 100% for wool. Deliveries of compulsory quotas were discontinued for beans, rice, and eggs, and in the future the government will purchase these goods on a contractual basis. The government also announced that farmers joining collectives before May 1, 1959, will be forgiven arrears in compulsory deliveries and taxes.

About 50% of Albania's foreign trade is with the Soviet Union, and 47% is with other Communist nations. At various times since 1948 the Soviet Union has advanced to Albania substantial grants and loans, as well as deliveries of consumer and capital goods.

Principal Events, 1959.—Albania's relations with neighboring Yugoslavia remained strained or cool during most of the year. On March 1, Enver Hoxha, first secretary of the Albanian Workers' Party, criticized Yugoslav President Tito for "conspiring with King Paul of Greece to dismember Albania." On several occasions Albanian spokesmen attacked Yugoslavia for mistreating the Albanian population of Kosovo-Metohija and for violating Albania's territorial waters. On March 14, Yugoslavia recalled her ambassador at Tiranë, Arso Milatović, despite the fact that on February 20 the two countries had concluded a trade agreement. Albania, too, recalled her ambassador, Piro Koci, from Belgrade; but relations improved somewhat later in the year, and in August Piro Koci returned to his post.

Relations with Greece were even worse. In March there was a frontier incident involving the death of one Albanian soldier. On March 30 the Albanian government sent Greece a note protesting the alleged violation of its territory. In the Greek press there were repeated references to the persecutions suffered by the Greek minority in North Epirus.

The most important event during the year—described by Enver Hoxha as "the greatest event in Albanian history"—was the visit of Soviet Premier Nikita S. Khrushchev on May 25–June 4. Accompanied by Soviet Defense Minister Rodion Malinovsky and other high-ranking Communist dignitaries (including Premier Otto Grotewohl of East Germany and Marshal Peng Teh-huai, defense minister of the Chinese People's Republic), the Soviet leader toured the country and was greeted by large crowds in Tiranë, Korçë, Vlonë, and Gjinokastër. The apparent purpose of the visit was to warn Italy about her decision to install NATO missile bases on her territory and to persuade Greece to avoid a similar decision. The Soviet premier said that if his warnings went unheeded, missile bases would be installed in Albania, from which both Greece and Italy would be annihilated in the event of war.

The joint Albanian-Soviet communiqué issued at Tiranë on June 1 proposed the immediate cessation of nuclear armaments production and tests, and a nonaggression pact between NATO and the Soviet bloc. On June 30, Mehmet Shehu repeated the Soviet proposals and suggested the establishment of a neutral zone in the Balkan area.

An agreement between Albania and the USSR signed on July 3 provided for a loan of 300 million rubles ($75 million) to finance the construction of Albanian hydroelectric plants, transportation facilities, and a pipeline. Payment by Albania of other Soviet loans, which totaled 522 million rubles ($130.5 million) by late 1957, had been canceled previously. On January 16, Albania agreed to contract a long-term loan from Communist China totaling 55 million rubles ($13.7 million) for the period 1961–65, and a trade agreement between the two countries was also signed.

G. G. Arnakis,
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ALBERTA. Fourth largest of the ten Canadian provinces, Alberta has an area of 255,285 square miles, of which 6,485 are water. It is bounded by Saskatchewan on the east, British Columbia on the west, Montana on the south, and the Northwest Territories on the north.

Population.—The estimated population as of Sept. 1, 1959, was 1,253,000 (1956 census, 1,123,116), and by national origin is 48% British, 17% American, 11% German, 9% Ukrainian, 7% Scandinavian, and 5% French. Principal urban centers (with 1959 estimated populations) are Edmonton, the capital (303,000); Calgary (240,000); Lethbridge (32,780); Medicine Hat (21,740); and Red Deer (17,594).

Government.—A lieutenant governor is appointed by the Canadian government to administer the province; he is aided by an elected Legislative Assembly of 65 members, 13 of whom form the Executive Council. Dr. John J. Bowlen has served as lieutenant governor since 1950, and Ernest C. Manning has served as premier since 1943. The Social Credit Party, which first came into power Aug. 22, 1935, was returned in a landslide victory in the provincial election of June 18, 1959, capturing 61 of the 65 seats. In the federal Parliament, Alberta is represented by 17 members elected to the House of Commons and by 6 appointed senators.

Education.—The provincial Department of Education supervises public education. There are 4,112 school districts, most of which are grouped in 59 school divisions (counties and consolidated units). In 1958 school enrollment totaled 247,219, and classrooms numbered 8,729. A correspondence school branch for those areas of Alberta and the Northwest Territories without organized school facilities served 9,315 pupils. A Provincial Institute of Technology and Art at Calgary and schools of agriculture at Olds and Vermilion are also maintained. Teacher training is supervised by the Faculty of Education of the University of Alberta at Edmonton; the university offers degree programs in the arts and sciences. In addition to public facilities, 55 recognized private schools provide instruction for 5,092 pupils.

Religion.—Alberta's largest religious group is the United Church of Canada, followed by the Church of England in Canada (Anglican), the Roman Catholic, and Eastern Orthodox communions. Lutherans, Baptists, Presbyterians, and Mormons are also represented.

Finance.—Estimated revenue for the fiscal year 1959–60 was $261,279,230; expenditures were estimated at $309,676,358. Funded debt of the province was $29,152,119 as of Dec. 31, 1958, compared with the peak of $167,000,000 in 1936.

Transportation and Communications.—Three railway systems serve the province—the Canadian National, the Canadian Pacific, and the Northern Alberta. There are 5,734 miles of railroad and more than 41,000 miles of graveled and hard-surfaced highway. Alberta is on air routes to northern Canada and the Orient, and is served by the Canadian Pacific, Trans-Canada, Northwest, and Western airlines. The telephone system is owned and operated by the province, except at Edmonton. Most rural telephone lines are operated by mutual companies.

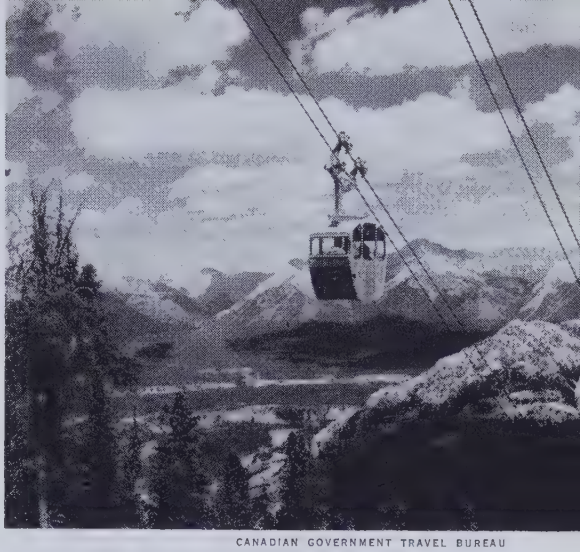
Production.—Agriculture continues as the most important activity in the economy of the province; its value increased by $75 million in 1958 to total $664,762,000. The value of field crops was $340,530,000; livestock, $235,400,000; and livestock products, $88,832,000. Largely because of the curtailment of crude oil shipments from the province, mineral production in 1958 declined by more than $71 million to $338,790,192. The value of crude oil produced during the year was $281,500,000, a decrease of $74 million. Natural gas production in 1958 was 245.5 billion cubic feet, valued at $18,412,500. Figures for the first quarter of 1959 showed increases of 13% in petroleum production and 23% in natural gas production.

Manufacturing.—The gross value of products manufactured in Alberta in 1958 was $808.5 million, an increase of $46 million over 1957 and $105 million over 1956. Major growth was shown by the foods and beverages industry, whose sales increased by $22 million to a total of $330 million. Other important groupings were petroleum and coal products, $151 million; wood products, $58 million; and iron and steel products, $57 million. Approximately 40,000 Albertans are employed in manufacturing.

Trade and Commerce.—Oil, natural gas, and petroleum products are sold locally and are exported to other provinces and the United States. Lumber products and fish are also exported. In 1958 retail trade increased by 3% to $1,248 million; wholesale trade increased by $26 million to a total of $824 million.

Principal Events, 1959.—The Social Credit Party was returned to office in the provincial general elections of June 18, electing 61 representatives to the 65-seat Legislative Assembly. The Liberal, Progressive Conservative, Coalition, and Independent Social Credit parties each elected one member. The vote for the Social Credit Party in 1959 increased to 227,835 from 175,553 in 1955, while the Progressive Conservatives jumped to 94,391 from 34,757, the Liberals fell to 56,728 from 117,741, and the Cooperative Commonwealth Federation Party vote dropped to 18,387 from 31,180.

Paving was completed on the Alberta portion of the highway which leads from the United States boundary in Alberta to Alaska. A system of 200 campsites in the province was completed to accommodate the mushrooming popularity of camping holidays. The sites feature kitchen shelters, stoves, free firewood, and sanitary facilities. The Alberta government has announced plans for a new park area to be known as Wilderness Provincial Park, near the province's western boundary and north of Jasper National Park. The 2,100-square-mile area of mountains and lakes is in a region noted for its superb scenery and abundant wildlife, and will be open for hunting and fishing. A new gondola lift at Banff National Park carries up to 460 passengers per hour, in 38 glass-enclosed gondolas, to the peak of Sulphur Mountain (7,487 feet).



CANADIAN GOVERNMENT TRAVEL BUREAU

Passengers thrill to the vistas of Banff National Park from new gondola lift installed on Sulphur Mountain, Alberta.

A new townsite has sprung up in the wilderness of northwestern Alberta in the vicinity of a new oilfield which shows promise of becoming the most important in the province. The town of Swan Hills is expected to reach a population of 1,000 within the next two years.

The Canadian Army's Western Command at Edmonton was broadened on September 1 to include the Manitoba and Saskatchewan areas which previously came under the eliminated Prairie Command.

A highlight of the year was the visit of Queen Elizabeth II and Prince Philip. The provincial government's present to the queen on the occasion of her visit was a $910,000 student scholarship fund designated as the "Queen Elizabeth Education Scholarship Fund." The program ensures that no needy student with even a moderately good scholastic average will be barred from a higher education because of lack of finances.

H. E. Martin,
Director of Publications, Department of the Provincial Secretary, Province of Alberta.

ALCOHOLIC BEVERAGES. See Brewing Industry; Distilling Industry; Wine.

ALCOHOLISM. Terminology.—Scientific research on alcoholism and related problems has long been handicapped by a vague and imprecise terminology, by a lack of accurate methods of measurement, and especially by an absence of useful theoretical models. During 1958–59 considerable effort was expended on attempts to clarify and standardize for scientific use the language in which the problems of alcohol are discussed, and in adapting and constructing potentially useful theoretical models for future research use.

Some important first steps toward language reform were achieved through the publication of a

preliminary usage dictionary of the alcohol language and a series of papers which made some useful and provocative suggestions as to how order and clarity might best be brought into this difficult area. This work is considered to be of fundamental importance, for until the state of anarchy in terminology is corrected there can be little agreement about the nature and magnitude of the problem, or what should be done about it.

Prevalence.—Information concerning the number of alcoholics and their distribution throughout the general population is not only of considerable theoretical importance but is also vital to the development of realistic treatment and prevention programs. The most widely used method for estimating the prevalence of alcoholism has been the Jellinek Estimation Formula, which is based on the relationship of alcoholism to cirrhosis of the liver. The majority of estimated rates of alcoholism for various countries and regions within countries have been derived from the Jellinek Formula. However, a series of recent studies concerned with a critical examination of the various factors which make up the formula have shown that in general it seriously underestimates prevalence.[1]

This underestimating would not be too serious if the amount of error was predictable, but unfortunately it is not. Estimated rates of alcoholism based on the formula are therefore of questionable validity and must be interpreted with caution. Suggestions have been made for revising the formula, but to implement these would require costly and difficult investigations which would have to be repeated at frequent intervals over time and space. Since such costly studies are just what the formula was designed to avoid, there is general agreement that a new, more economical, indirect method of providing estimates must be developed.

Treatment.—In the treatment of alcoholism the most dramatic development of 1959 was, perhaps, the advent of citrated calcium carbimide (Temposil), a new deterrent drug with an action similar to but much milder than that of disulfiram (Antabuse). Although Temposil was not designed to replace Antabuse, clinical studies have shown that under medical supervision it can be used safely to prevent relapses in patients for whom the older drug was unsuitable.

Those who are responsible for the treatment and rehabilitation of alcoholics have become increasingly concerned about the results of their efforts. An impressive variety of treatment procedures has been employed with widely varying claims of success. Due to an embarrassing shortage of sound evaluation studies, such claims have not been scientifically substantiated. During 1959 a very considerable amount of research effort was devoted to seeking solutions to some of the extremely complex, practical, and theoretical problems involved in assessing treatment methods.

Traffic Accidents.—Two recent studies bearing on the relationship of alcohol and alcoholism to traffic accidents suggest that traffic accidents involving drivers who had been drinking may be, to a hitherto unsuspected degree, a problem of alcoholism rather than largely a problem of the effects of alcohol on the casual drinker. This finding has a number of implications for accident prevention programs. Such programs are designed to reach the largest possible segment of the population. The underlying assumption is that most "accident precipitating" factors are ultimately in the control of the driver and can be affected by simple suggestions, such as "if you drive, don't drink." It has been amply demonstrated that simple suggestions or exhortatory appeals have been of little value in the therapy of alcoholism. On this basis it might be concluded that highway education slogans would hardly affect drivers whose very abnormality immunizes them against such appeals.

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[1] Existing estimates indicate that there are 5 million alcoholics in the United States, representing a rate of 4,360 per 100,000 population. This incidence is higher than that of any other major nation except France, where it is estimated at 5,200 per 100,000. The United States total is rising at the rate of approximately 200,000 cases annually.

ALEUTIAN ISLANDS. Extending some 1,200 miles westward from the mainland of Alaska, of which state it is politically a part, this island chain encompasses some 14 large and 55 small islands totaling 6,821 square miles. Chief component island groups are the Fox, Andreanof, Rat, and Near, and the Islands of the Four Mountains. The population of 5,600 (1950 census) includes mostly military personnel and their families, and fewer than 700 native Aleuts, an Eskimo group.

The U.S. Navy maintains a base on Adak Island and a meteorological detachment on Shemya Island. On the latter, which serves as a refuelling stop on North Pacific air routes to the Far East, the Air Force and Army also maintain facilities, and the U.S. Weather Bureau, an airport weather station.

ALGERIA. A French territory on the Mediterranean coast of Africa. Area, 919,590 square miles (including over 700,000 of desert); pop. (est. June 30, 1958), 10,265,000, chiefly Moslem Arabs and Berber groups. The Moslem population is predominantly Arabic-speaking. The European population, concentrated in the larger cities and coastal areas, totals about 1.2 million, mainly French. Native Jews number about 100,000. Chief cities and populations (1954 census): Algiers, the capital, 361,285; Oran, 299,008; Constantine, 148,725; and Bône, 114,068.

Government.—Algeria has long been governed as part of Metropolitan France. However, under the conditions of the nationalist rebellion (begun in November 1954), Algerian governmental institutions have been in a state of evolution since 1956. On Dec. 16, 1958, Paul Delouvrier was appointed delegate general of Algeria by the Paris government. He is under the minister of interior in Paris and, as head of the civil and military powers in Algeria, executes the policy of the Paris government. Gen. Maurice Challe, appointed at the same time as Delouvrier, is commander in chief of French forces in Algeria and serves as deputy delegate general. For administrative purposes, Algeria is divided into 15 departments (although only 12 had been fully organized by 1959). Two additional departments of the Sahara (Oasis and Saoura) are under the separate Ministry of Saharan Affairs.

As part of Metropolitan France, Algeria is represented in the French National Assembly and Senate. In the elections of Nov. 28–30, 1958, 67 deputies (including 46 Moslems) from Algeria proper (and 4 from the Sahara) were elected to the French National Assembly. On May 31, 1959, 32 senators (22 Moslems) were elected to the French Senate from Algeria (2 Moslems had been elected from the Sahara on May 24). Deputies had been elected by direct popular vote. Senators were chosen by councilors of the municipal and rural councils, which had been constituted by direct popular vote on April 19–26, 1959. (See also below, *Principal Events, 1959.*)

Education.—An estimated 94% of the Moslem population was illiterate in 1948. Between 1945 and 1955, however, Moslem enrollment in public schools trebled, and further gains were achieved after 1955. In 1958–59, primary schools had 612,182 pupils; normal schools, 1,021; technical schools, 18,063; and other secondary schools, 41,984. The University of Algiers had 5,454 students. On Nov. 10, 1959, French President Charles de Gaulle stated that 850,000 pupils were attending Algerian schools, representing a rise of over 50% since 1957.

Finance.—The provisional 1958–59 budget (ordinary and extraordinary) estimated revenue at 289.190 million francs, and expenditure at 289,150 million. Both revenue and expenditure were about 58,000 million francs over the 1957–58 estimates. Under the Constantine Plan (out-

lined by de Gaulle on Oct. 3, 1958), France will allocate a minimum of 100,000 million francs yearly for Algerian modernization and development. In June 1959 the French National Assembly approved a bill providing that the Algerian budget be voted by the French Parliament in Paris, and a bill making Algerian and French currencies legal tender in both areas. (The Algerian franc is equal to the metropolitan franc; a new "heavy" franc, to be called the "new franc" and to be equal to 100 French francs, became effective on Jan. 1, 1960.)

Production.—The economy of Algeria is predominantly agricultural, although the interior area is largely desert and the northern mountainous regions are of marginal value for cultivation. The fertile coastal areas are tilled mainly by Europeans, who have obtained high yields by modern techniques. Farming engages the greater part of the Moslem population as landholders (mostly small proprietors), tenant farmers, farm workers, and seasonal laborers. Moslem cultivation is still largely primitive, although some modern techniques have been spread by the French. A major part of the de Gaulle program for Algeria is land distribution, improvement of cultivation methods, and betterment of the lot of the impoverished rural population. Algeria's chief crops are grains; estimated 1958 yields (in bushels) were: wheat, 45.9 million; barley, 35.8 million; and oats, 5.5 million. Output of wine, Algeria's largest single export, totaled 15.2 million hectoliters in 1957. Other important crops are oranges (prelim. 1958, 8 million boxes), vegetables, olive oil (prelim. 1958–59, 19,000 short tons), figs, dates, esparto grass, pulses, tobacco, and cork. Stock raising (chiefly sheep) yields meat, hides, and dairy products.

Algerian industry is mostly on a small scale, the few large-scale enterprises being operated by Europeans. Principal industries are foodstuffs, textiles, footwear, chemicals, metallurgy, building materials, glass, silk spinning, and tobacco products. Traditional handicrafts (rugs, embroideries, leatherwork, and pottery) remain important for the Moslem population. Electricity consumption in 1959 approximated 1,400 million kw.-hr., or about double that of 1954. Recent discoveries of vast oil and natural gas reserves in the Sahara have rendered Algeria a potentially wealthy minerals producer. Proved reserves at the Hassi Messaoud fields were reported at over 350 million metric tons; and at the Edjelé and nearby fields, over 125 million. The area around Hassi R'Mel is said to contain one of the world's greatest concentrations of natural gas. Crude oil output from the Sahara fields in 1958 was 425,600 metric tons, but production rose considerably in 1959 and was expected to rise even further with the inauguration of the 24-inch, 415-mile pipeline from Hassi Messaoud to the Mediterranean port of Bougie on December 5. Algeria's other important minerals and 1958 output in metric tons were: iron ore, 2,301,600; phosphates, 565,000; lead ore, 14,700; zinc ore, 53,500; and coal, 153,200. (See also IRON AND STEEL.)

Foreign Trade.—Algeria is mainly an exporter of agricultural produce and minerals, and an importer of manufactured goods. Exports in 1958 totaled 205,149 million francs (up 19% over 1957); imports, 478,834 million (up 25%). Chief exports were wine (112,232 million francs), citrus fruits (13,777 million), iron ore (10,916 million), and fresh vegetables (6,727 million). Principal imports were vehicles, agricultural and other machinery, petroleum and its products, sugar, and other manufactures. France purchased 85% of Algeria's 1958 exports, and provided 84% of imports.

Transportation and Communications.—The Algerian railroad system, which had 2,700 miles of track in operation in 1957, is connected with the Moroccan and Tunisian networks. The highway system in 1957 included 5,962 miles of national roads, 8,880 of departmental, and 7,967 of other main roads, in addition to several thousand miles of byroads and desert tracks. Algeria has over 180 airports, including 3 (Algiers, Oran, and Bône) of international class. Passenger cars numbered 137,146 in 1958; telephones, 153,275; licensed radio sets, 407,000 (1957); television sets, 3,000 (July 1957); daily newspapers, 9 (1956; total circulation, 283,000).

Principal Events, 1959.—The first promising basis of a settlement of the Algerian nationalist rebellion emerged in 1959, the fifth year of costly warfare. On Sept. 16, 1959, French President Charles de Gaulle offered the Algerian people the right of self-determination, including, if they so willed, independence from France. The rebel leaders accepted the principle of the offer, but rejected the circumstances and conditions prescribed by de Gaulle for its implementation. As the year drew to a close, a common ground for cease-fire conversations had not yet been found, and the fighting continued without abatement.

De Gaulle's statement, enunciated in the form of a radio and television address to the people of France and Algeria, offered the Algerians the choice of integration with France, autonomy

WIDE WORLD

Ferhat Abbas (*center*), premier of the Algerian rebel government, meets in Tunis with two of his ministers, ben Guettar (*left*) and ben Tobal, to discuss President de Gaulle's September 16 proposal concerning future of the country.

within a form of association with France, or independence. The people of Algeria, both French and Moslem, would express their choice in the form of a referendum to be held within four years after the peace—"peace" being held to prevail when fewer than 200 persons had been killed through ambushes or other incidents in a year. The French president spoke glowingly of the advantages of integration or autonomy, describing France's ambitious plans for Algerian development and modernization. The "incredible and disastrous" choice of independence, however, would mean the loss of French aid, "appalling poverty," and "abysmal political chaos." Independence would require the protection of the French community through some form of partition, and France would retain control of Saharan oil and other resources. By his omission of any mention of the Algerian National Liberation Front or the rebel provisional regime (set up in 1958), de Gaulle indicated the Paris government's continuing refusal to accept the rebel organization as in any sense a spokesman for the Algerian people. On the other hand, the French president reiterated his proposal of 1958 for "a peace of the brave," and pledged that the leaders of the rebellion would have an equal right with all others to participate in the debate over the future of Algeria.

The leaders of the rebellion were confronted with a difficult choice. If they rejected de Gaulle's offer, they might appear to be rejecting self-determination and blocking peace. If they accepted, it could turn out that they had submitted to conditions rendering the referendum the opposite of

On his tour of Algeria, August 27–30, President de Gaulle acknowledges welcome of Moslem crowd at village of Saida.

WIDE WORLD

a freely expressed choice—for the events of the past year had shown that a Moslem majority could easily be produced for French-sponsored proposals, as long as the French Army was obtrusively present at every polling booth. On September 28 the Algerian Provisional Government gave its answer in a communiqué read by Premier Ferhat Abbas in Tunis. The rebel regime accepted the principle of Algerian self-determination and declared it was ready to discuss the "political and military" conditions of a cease-fire, as well as the "conditions and guarantees" of the application of self-determination. The rebel statement further declared that the provisional regime was the spokesman of the Algerian people until they freely expressed themselves. The rebels rejected the possibility of partition, and insisted that Saharan resources belonged to Algeria. The French government made no official response to the rebel statement. In the months that followed, the question of whether the rebels were to have a role in deciding the actual conditions of self-determination emerged as the key issue separating the two sides.

The de Gaulle offer of September 16 climaxed more than a year of bold efforts by the French leader to convince the Algerians that they had "every moral and material reason to want to be united with France." In accordance with the Paris government's program for Algerian political reform, elections for municipal and rural councils took place in most of Algeria from April 19–26, with over 60% of the registered voters going to the polls. Of the 13,995 councilors elected, 11,558 were Moslems, and Moslem majorities were elected to all but four of the councils. Indirect senatorial elections on May 31 for Algerian representatives to the French Senate marked a victory for the liberals among both French and Moslems, and a defeat for the rightist extremists among the French.

Substantial measures were taken in 1959 for the implementation of de Gaulle's Constantine Plan (announced on Oct. 3, 1958). A High Council for the Constantine Plan and a Fund for the Development of Algeria were established, and the equivalent of $365.2 million was expended during the year for the expansion and modernization of agriculture, industry, and transport, and the improvement of education and health conditions. Minimum wages were raised and social security benefits increased. The emancipation of Moslem women was furthered on February 10, when President de Gaulle signed a decree providing that Moslem women could not be married without their consent, nor divorces granted except through the divorce courts.

The de Gaulle approach to the Algerian problem also had another side, illustrated in the president's warning that if the rebels refused to accept a cease-fire, the fighting would simply come to an end for lack of combatants. Under Gen. Maurice Challe, French commander in chief in Algeria, the French forces of nearly 500,000 were shifted in increasing numbers from garrison duties to mobile thrusts against rebel mountain strongholds. In a large-scale offensive in March and April, Challe used paratroopers and other mobile units against the rebels in the Ouarsenis area of west-central Algeria, and in late July, Challe mounted the greatest offensive of the war against rebel bands in the mountainous Kabylia region east of Algiers. In September, Challe declared that the rebels had lost 4,400 men in the Kabylia region and that French units had taken over areas under rebel control for years. Smaller engagements occurred throughout the year in almost every section of the country, including the border regions, where newly trained and equipped rebel units from Tunisia and Morocco sought to penetrate French electrified barbed-wire lines and other defenses.

According to French accounts, the accumulating heavy losses had virtually sapped rebel strength. Rebel morale was said to be low, dissension rife, and surrenders increasing. In late March, French authorities reported the death of Colonel Amirouche, rebel commander of the Kabylia stronghold and one of the most capable of rebel military leaders. On November 6 the French announced the death of Major Mira, Amirouche's successor, and stated that all six rebel military zones were without commanders. As the fighting entered its sixth year in November, de Gaulle reported that total rebel dead numbered 145,000, as compared with 13,000 French soldiers; civilian deaths were given as 12,000 Moslems and 1,800 French.

French claims of rebel demoralization were denied by rebel leaders, who asserted that their forces had become more numerous and better equipped with each passing year, and that world opinion was swinging more and more behind the cause of Algerian independence. The provisional rebel government, which has its headquarters in Cairo but operates largely out of Tunis, continued to receive financial and arms support from Arab League members and other sources. A rebel mission toured Communist China in April, allegedly obtaining promises of arms aid. Premier Ferhat Abbas visited Saudi Arabia in March, India and Pakistan in April, and Yugoslavia in June, obtaining expressions of sympathy for the independence struggle. A conference of nine independent African states, meeting at Monrovia, Liberia, from August 4–8, called for world support of the rebel cause.

At the United Nations, a Pakistani-sponsored resolution calling for recognition of the right of Algerian self-determination and the holding of informal peace talks fell short of the required two-thirds majority in the General Assembly on December 12.

(See also FRANCE.)

M. J. G.

ALIENS. See Index entry.

ALLERGIES. Pollinosis.—For 50 years the basic treatment of pollinosis, when it affected the eyes and nose (hay fever) or when it caused wheezing (bronchial asthma), was the injection of a salt water extract of the causative pollen administered at intervals of one week to one month. As a result of clinical studies initiated in 1938, involving critical evaluation of every aspect of such treatment, new techniques of testing patients and of treating them were discovered. Chief among these was the injection of a new type of extract in the form of a fine emulsion. A single annual injection of emulsified pollen extract can be administered two to 16 weeks before each pollen season (*Annals of Allergy*, 16:381, May 1958; 17:358, May 1959). In nine of 30 studies, Brown reported on results following more than 5,000 such injections. The results are apparent in two weeks and the injection is not only safer than that of the salt water extract but the effect is longer lasting.

Under investigation are more purified extracts, better emulsifying agents, an improved oily vehicle, radioactive pollen for surveys, radioisotope-tagged pollen molecules for the study of hay fever patients, and enzyme studies of the allergic state.

Asthmatic Bronchitis.—Allergic and nonallergic asthmatic patients suffer more severe symptoms

when afflicted with colds. The A, B, and Asian influenza viruses can be given in emulsion form in two injections three weeks apart for protection lasting from three to five years. A slightly different emulsion has been used to protect almost 100,000 military personnel. No good bacterial vaccines have as yet been prepared, and bacterial infections must, as before, be treated by antibiotic agents, especially penicillin.

Penicillin as used today causes many types of allergic reactions in 5% to 15% of allergic patients and 2% to 5% of nonallergic patients. Currently in process of manufacture is a nonallergenic type of penicillin free of adverse effects. Also available is a penicillinase which neutralizes the untoward reactions of standard penicillin. Its injection will not reverse the damage done by penicillin but will prevent further harm.

Dermatologic Allergy.—Basic studies to discover original causes of eczematoid dermatitis are as necessary as ever, but cortisone derivatives, taken orally and applied locally, give immediate and dramatic, although temporary, relief. Available in a suspended-emulsified form, a single injection of methyl prednisolone replaces the former complex schedules with a painless injection effective for three to 20 days.

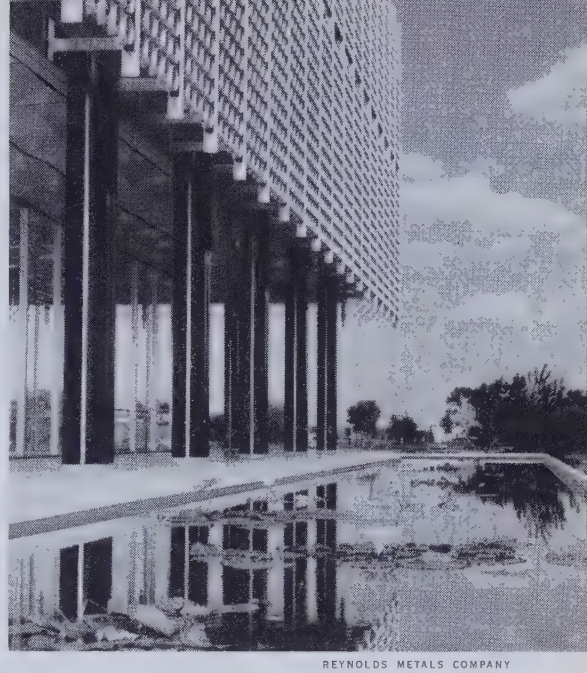
Bronchial Asthma.—In 1958 the results of certain asthma studies initiated in 1941 were published. These showed that between attacks, the lungs of asthmatic patients were not normal, although by stethoscopic examination the physician might have considered them to be free of spasm. Treatment with mild antispasmodic drugs taken prophylactically prevented insidious irreversible damage to the lungs of such bronchospastic patients (*Mississippi Valley Medical Journal,* 81:81, 1959). A new mixture, one of methyl and methoxy-phenamine-hydrochloride, has been found useful in victims of bronchial asthma, because less of the corticosteroid is then needed. Similar mixtures of corticosteroid hormones and tranquilizing agents have been used.

Psychogenic Factors.—In any disorder associated with spasm, intensification or, in conditioned patients, repetition of the symptoms can occur following tension, fatigue, emotional stress, or subconscious psychological states. In asthma, the respiratory rhythm is disturbed and remains abnormal between attacks. By means of hypnosis, the physiological respiratory rhythm can quickly and permanently be restored in such bronchospastic patients. The patients then go into and out of an attack of such bronchospasm at will and can relieve, in part or in whole by themselves, this part of their disorder. Such "synaptic ablation" is not effective in true allergically caused spasm. In eczema, itching and therefore scratching can rapidly be brought under control.

Antihistaminic Agents.—Parallel with the discovery of such new corticosteroid hormones as dexamethasone, other new antihistaminic drugs have become available for safer short-term relief of nasal allergy, urticaria, and other types of allergic responses. The latter include d-Chlorpheniramine maleate (Polaramine), dibrompheniramine maleate (Disomer), isothipendyl hydrochloride (Theruhistin), and parabromdylamine maleate (Dimetane).

ETHAN ALLAN BROWN,
Editor of "Annals of Allergy" and of "Review of Allergy and Applied Immunology"; Director, Asthma Research Foundation, Boston.

ALUMINUM. Output.—Production of primary aluminum in 1958 was 1,565,557 tons in the United States and a record 646,000 tons in Canada. Total United States production in 1959 was expected to top the previous 1956 high by at least 15%, with Canadian output in 1959 being 5–10% lower than in 1958. (See also MINERAL PRODUCTION.)



REYNOLDS METALS COMPANY

Anodized aluminum sun screen provides an airy façade for Detroit headquarters building of Reynolds Metals Company.

Industry Growth.—Additional primary smelting capacity was installed in Canada and the United States during 1959. Canadian British Aluminium Co., Ltd. completed installation of its initial production facilities at Baie Comeau, Quebec. Kaiser Aluminum & Chemical Corporation began producing aluminum from the last two lines of its smelter at Ravenswood, W.Va., and Ormet Corporation started the last potline at its Omal, Ohio, smelter. In July, Reynolds Metals Company started operations in a new smelting plant at Massena, N.Y. This plant supplies hot metal to an adjacent foundry operated by the Chevrolet Division of General Motors Corporation.

Consumption and Uses.—Aluminum consumption in the United States, as measured by shipments of products to consuming industries, established a new record during 1959, eclipsing the previous 1956 high by about 17%. The momentum of the general business recovery was accentuated in the aluminum industry during the first half of 1959, when shipments were 53% higher than in the comparable period of 1958 and 26% above those of the last half of 1958. Aluminum shipments dropped to a lower level in the latter half of 1959, reflecting the accumulation of inventories during the first seven months and the reduced industrial production caused by the steel strike.

The largest single development in the residential building industry during 1959 was the eager public acceptance of aluminum dwellings, particularly the Viking Line models of National Homes Corporation, the nation's largest builder of prefabricated houses. An estimated 20,000 aluminum-clad houses were built in 1959, compared with approximately 500 in 1958. (See also ARCHITECTURE.)

Aluminum usage in the average automobile continued to increase, reaching an estimated 51 pounds in 1959 models. The outstanding development in this field was the adoption of an aluminum engine for the Corvair, Chevrolet's entrant in the

small car field. (See also AUTOMOBILES.)

Aluminum made steady gains in the packaging field during 1959. Especially promising was increasing acceptance of aluminum by can manufacturers and its adoption by their customers for oil and beer cans. Aluminum screw-on caps for baby food jars were popular with American housewives. Greater use of aluminum household foil was enhanced by the introduction of an alloy with improved strength.

The railroad industry exhibited growing interest in aluminum during 1959. One railroad ordered 1,205 aluminum gondola and covered hopper cars. Another ordered 50 of its box cars to be equipped with aluminum linings. Other growing aluminum applications include lading bars, refrigerator car components, signs and crossbucks, and piggyback trailers and containers.

During 1959 the Aluminum Company of America paved the way for large-scale usage by oil companies of aluminum pipe with the development of a portable, high-speed, automatic pipe-welding machine capable of producing sound welds without the use of back-up rings, thereby cutting pipe-laying time. Also expected to spur the growth of this market is a new economical, seamless, tubular aluminum product that provides for efficiently welded joints by having a thicker wall at pipe ends than along the length. (See also METALLURGY.)

Foreign Competition.—In common with the steel industry, the United States aluminum industry encountered growing competition from foreign producers and fabricators in 1959. United States imports of primary aluminum from Canada declined from 1958, but the influx of base metal from European countries increased sharply. Imports of aluminum mill products also rose markedly in the first seven months of 1959, exceeding the total for the entire year 1958.

Exports.—Canada is the world's largest exporter of primary aluminum (482,927 tons in 1958), followed by the USSR (126,000 tons), Norway (121,056 tons), France (55,202 tons), and the United States (52,711 tons). The free world's leading exporters of semifabricated aluminum are the United Kingdom (39,680 tons in 1958), Belgium-Luxembourg (29,034 tons), West Germany (27,597 tons), Canada (17,560 tons), and the United States (15,815 tons).

STANLEY V. MALCUIT,
Staff Economist,
Aluminum Company of America.

AMBASSADORS AND ENVOYS. The following is a list of ambassadors and envoys from and to the United States as of January 1960 (A = ambassador extraordinary and plenipotentiary; C = consul; CA = chargé d'affaires; CE = counselor of embassy; CG = consul general; E = envoy extraordinary and minister plenipotentiary).

Country	From the United States	To the United States
Afghanistan	Henry A. Byroade (A)	Mohammed Hashim Maiwandwal (A)
Argentina	Willard L. Beaulac (A)	Dr. Emilio Donato del Carril (A)
Australia	William J. Sebald (A)	Howard Beale (A)
Austria	H. Freeman Matthews (A)	Dr. Wilfried Platzer (A)
Belgium	William A. M. Burden (A)	Louis Scheyven (A)
Bolivia	Carl W. Strom (A)	Mario A. Montenegro (CA)
Brazil	John M. Cabot (A)	Walther Moreira Salles (A)
Bulgaria	Edward Page, Jr. (E)	Peter G. Voutov (E)
Burma	William P. Snow (A)	U On Sein (A)
Cambodia	William C. Trimble (A)	Nong Kimny (A)
Canada	Richard B. Wigglesworth (A)	A. D. P. Heeney (A)
Ceylon	Bernard A. Gufler (A)	R. S. S. Gunewardene (A)
Chile	Walter Howe (A)	Walter Müller (A)
China	Everett F. Drumright (A)	Dr. George K. C. Yeh (A)
Colombia	Dempster McIntosh (A)	Ignacio Mesa (CA)
Costa Rica	Whiting Willauer (A)	Manuel G. Escalante (A)
Cuba	Philip W. Bonsal (A)	Dr. Ernesto Dihigo (A)
Czechoslovakia	John M. Allison (A)	Dr. Miloslav Růžek (A)
Denmark	Val Peterson (A)	Count Kield Gustav Knuth-Winterfeldt (A)
Dominican Republic	Joseph S. Farland (A)	Dr. Luis F. Thomen (A)
Ecuador	Christian M. Ravndal (A)	Dr. José R. Chiriboga V. (A)
El Salvador	Thorsten V. Kalijarvi (A)	Dr. Héctor David Castro (A)
Estonia	...	Johannes Kaiv (acting CG)
Ethiopia	Don C. Bliss (A)	Zaude Gabre Heywot (A)
Finland	Edson O. Sessions (A)	Richard R. Seppälä (A)
France	Amory Houghton (A)	Hervé Alphand (A)
Germany	Walter C. Dowling (A)	Wilhelm G. Grewe (A)
Ghana	Wilson C. Flake (A)	W. M. Q. Halm (A)
Great Britain	John Hay Whitney (A)	Sir Harold Caccia (A)
Greece	Ellis O. Briggs (A)	Alexis S. Liatis (A)
Guatemala	John J. Muccio (A)	Col. Arturo Ramírez P. (A)
Guinea	John Howard Morrow (A)	Telli Boubacar Diallo (A)
Haiti	Gerald A. Drew (A)	Ernest Bonhomme (A)
Honduras	Robert Newbegin (A)	Dr. Céleo Dávila (A)
Hungary	Garret G. Ackerson, Jr. (CE)	Tibor Zádor (CA)
Iceland	Tyler Thompson (A)	Thor Thors (A)
India	Ellsworth Bunker (A)	Mahomedali Currim Chagla (A)
Indonesia	Howard P. Jones (A)	Moekarto Notowidigdo (A)
Iran	Edward T. Wailes (A)	Dr. Ali Gholi Ardalan (A)
Iraq	John D. Jernegan (A)	Ali Haider Sulaiman (A)
Ireland	Scott McLeod (A)	John Joseph Hearne (A)
Israel	Ogden R. Reid (A)	Avraham Harman (A)
Italy	James David Zellerbach (A)	Manlio Brosio (A)
Japan	Douglas MacArthur II (A)	Koichiro Asakai (A)
Jordan	Sheldon T. Mills (A)	Yusuf Haikal (A)
Korea	Walter P. McConaughy (A)	Dr. You Chan Yang (A)
Kuwait	Talcott W. Seelye (C)	...
Laos	Horace H. Smith (A)	Nouphat Chounramany (A)
Latvia	...	Dr. Arnolds Spekke (CA)
Lebanon	Robert McClintock (A)	Nadim Dimechkié (A)
Liberia	Elbert G. Mathews (A)	George A. Padmore (A)
Libya	J. Wesley Jones (A)	Mohieddine Fekini (A)
Liechtenstein	David A. Thomasson (CG)	...
Lithuania	...	Joseph Kajeckas (CA)
Luxembourg	Vinton Chapin (A)	Georges Heisbourg (A)
Malaya	Homer M. Byington, Jr. (A)	Dato' Nik Ahmed Kamil (A)
Mexico	Robert C. Hill (A)	Antonio Carrillo Flores (A)
Monaco	Harold W. Moseley (C)	...
Morocco	Charles W. Yost (A)	Dr. El-Mehdi Ben Aboud (A)
Muscat and Oman	William D. Wolle (C)	...
Nepal	Henry E. Stebbins (A)	Rishikesh Shaha (A)
Netherlands	Philip Young (A)	Dr. J. H. van Roijen (A)
New Zealand	Francis H. Russell (A)	G. D. L. White (CA)
Nicaragua	Thomas E. Whelan (A)	Dr. Guillermo Sevilla-Sacasa (A)
Norway	Frances E. Willis (A)	Paul Koht (A)
Pakistan	William M. Rountree (A)	Aziz Ahmed (A)
Palestine	Albert B. Franklin (CG)	...
Panama	Julian F. Harrington (A)	Ricardo M. Arias E. (A)
Paraguay	Harry F. Stimpson, Jr. (A)	Dr. Juan Plate (A)
Peru	Theodore C. Achilles (A)	Fernando Berckemeyer (A)
Philippines	John D. Hickerson (A)	Gen. Carlos P. Romulo (A)
Poland	Jacob D. Beam (A)	Romuald Spasowski (A)
Portugal	C. Burke Elbrick (A)	Luis Esteves Fernandes (A)
Rumania	Clifton R. Wharton (E)	George Macovescu (E)
San Marino	Merritt N. Cootes (C)	...
Saudi Arabia	Donald R. Heath (A)	Sheikh Abdullah Al-Khayyal (A)
South Africa	Philip K. Crowe (A)	W. C. du Plessis (A)
Spain	John Lodge (A)	José M. de Areilza, Count of Motrico (A)
Sudan	James S. Moose, Jr. (A)	Dr. Osman El Hadari (A)
Sweden	James C. H. Bonbright (A)	Gunnar Jarring (A)
Switzerland	Henry J. Taylor (A)	Henry de Torrenté (A)
Thailand	U. Alexis Johnson (A)	Visutr Arthayukti (A)
Tunisia	Walter N. Walmsley, Jr. (A)	Mongi Slim (A)
Turkey	Fletcher Warren (A)	Ali S. H. Ürgüplü (A)
USSR	Llewellyn E. Thompson (A)	Mikhail A. Menshikov (A)
United Arab Republic	G. Frederick Reinhardt (A)	Dr. Mostafa Kamel (A)
Uruguay	Robert F. Woodward (A)	Julio A. Lacarte (A)
Venezuela	Edward J. Sparks (A)	Dr. Marcos Falcón-Briceño (A)
Vietnam	Elbridge Durbrow (A)	Tran Van Chuong (A)
Yemen	G. Frederick Reinhardt (E)	Assayed Ahmad Ali Zabarah (CA)
Yugoslavia	Karl L. Rankin (A)	Marko Nikezić (A)

AMERICAN ACADEMIES AND ASSOCIATIONS. For organizations whose titles begin with the word American (excepting American Federation of Labor and Congress of Industrial Organizations, and American Library Association, which are reviewed below) see the article SOCIETIES AND ORGANIZATIONS.

AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS. AFL-CIO membership during the biennium ending June 30, 1959,

averaged 12,671,000, a decrease of 80,000 from the previous 2-year fiscal period. The figures are based on per capita tax paid to the federation by its 135 affiliated international unions and 507 directly chartered locals.[1]

Administrative Matters.—George Meany, president, and William F. Schnitzler, secretary-treasurer, were re-elected to new 2-year terms at the AFL-CIO's San Francisco convention, Sept. 17–23, 1959. In addition, all incumbent members of the AFL-CIO Executive Council were re-elected, including Maurice A. Hutcheson, president of the United Brotherhood of Carpenters and Joiners.[2] Headquarters remains at 815 16th Street, N.W., Washington 6, D.C. Regional offices are operated in 23 cities.

Net worth of the organization on June 30, 1959, was $7,774,000, a decrease of about $150,000 since 1957. Operating expenses in the 1959 fiscal year amounted to $9,232,000, an excess of $182,700 over income.

Merger of former AFL and CIO state organizations by the end of 1959 had failed of achievement only in New Jersey and Pennsylvania. Among international affiliates, the American Wire Weavers Protective Association merged with the United Papermakers and Paperworkers (March 31), and the Insurance Agents International Union and the Insurance Workers of America united (May 25–26) under the name of the IAIU.

On matters involving ethical practices, which so plagued the AFL-CIO in 1958, the Executive Council put two directly chartered locals in Barberton, Ohio, and Elizabeth, N.J., under trusteeships. A third local, in Chicago, was continued in this status.

Conference on Unemployment.—Early in 1959 the AFL-CIO exhibited great concern over the economic situation. To dramatize its contention that greater governmental attention should be directed to shoring up the economy and accelerating its expansion, the Executive Council at its winter meeting (in San Juan, Puerto Rico, February 16–24), partly on the insistence of Walter P. Reuther, president of the United Automobile Workers, authorized sponsorship of a conference on unemployment to be held in Washington, D.C., on April 8. Although about 7,000 delegates met at the ensuing conference, an announcement a day earlier by the Labor Department of a more than seasonal decline in unemployment of nearly 400,000 dampened the current significance of the meeting.

Reform Legislation.—During 1959 the federation was fighting a strenuous if losing congressional battle against a union control law more stringent than the Kennedy-Ives bill, which it supported. But the successive exposures of union corruption by the Senate Select Committee on Improper Activities in the Labor or Management Field (even though applicable to a relatively few organizations), plus a sustained campaign by management groups, led finally to passage on September 3–4 of the Labor-Management Reporting and Disclosure Act of 1959 (also called the Labor Reform Act of 1959). The measure, patterned after the House's Landrum-Griffin bill, was signed into law by President Eisenhower on September 14, three days before the AFL-CIO opened its September 17–23 convention in San Francisco.

UPI

AFL-CIO President George Meany addresses a United Steelworkers union meeting on April 30. David McDonald (foreground) led the union in nationwide steel strike in 1959.

San Francisco Convention.—It was this bitter fruit of labor's congressional election "victory" of 1958, plus other bleak factors, which accounted for the defensive posture apparent at the San Francisco convention in September. The steel strike was already in its third month, with negotiations stalled. Secretary of Labor James P. Mitchell had told the delegates that a Taft-Hartley Act injunction was in the offing to open the struck mills. Pervading the atmosphere was a fear that a defeat in steel would encourage a general assault on labor's gains. Organizing efforts had been stalled since the last convention, and internally the AFL-CIO had been beset during the year with jurisdictional and factional strife.

It appeared, however, that these very adverse circumstances confronting the organization created a determination for more unified and vigorous action on several fronts.

The new labor law was characterized as "a severe setback" and "designed to destroy organized labor," and a resolution warning that no political party could take labor's support for granted was widely interpreted as a criticism of Democratic leadership in Congress. While pledging obedience to the new labor law and acknowledging the need for reform legislation, the AFL-CIO resolved to work on the political front for repeal of "all laws which . . . hamper the growth of the American labor movement."

Progress Toward Unity.—The AFL-CIO's attitude and actions in relation to the steel strike epitomized organized labor's declared belief that it was facing "a struggle for the survival of the entire labor movement." The convention took the unusual step of setting up a Steelworkers Defense Fund to be financed by an hour's wage a month from each member of each affiliated international union for the duration of the strike. In addition, cash donations ranging up to $1 million were announced from organizations widely representative of affiliated unions. A noteworthy pledge of support came from the Building and Construction Trades Department, bitter opponent of the Steelworkers union in still unresolved jurisdictional feuds.

President Meany's call for labor harmony led to a resolution authorizing the Executive Council to develop "a detailed plan of procedure for the settlement of [jurisdictional] disputes . . . embodying final and binding arbitration as the terminal point in the settlement. . . ." In addition, the Executive Council was directed to call a special convention (to be held in 1960) to ratify such a plan and to make the constitutional amendments necessary to its effectiveness.

Other manifestations of unity announced at the convention included merger of the Maritime Committee with the Maritime Trades Department, a result of the new work-

[1] Comparative membership figures are adjusted to allow for the expulsion in December 1957 of 3 affiliates (and 1 continued on probation) with an aggregate membership of approximately 1.5 million.

[2] Hutcheson was indicted on Oct. 20, 1959, on a charge of contempt of Congress for refusing to testify before a Senate committee concerning a highway land-purchase scandal in Indiana. He had been under indictment since Feb. 18, 1958, in that case, but had never been brought to trial. The AFL-CIO Executive Council also launched an inquiry into the matter, but Hutcheson failed to appear for questioning.

ing relationship (forced by joint opposition to "flags of convenience" ships) between Presidents Joseph Curran of the National Maritime Union and Paul Hall of the Seafarers. The Machinists, Transport Workers, Air Line Pilots, Flight Engineers, Air Line Dispatchers, and Railway Clerks formed a coordinating body dedicated to consider joint problems. The International Longshoremen's Association (ILA), expelled from the old AFL in 1953 for racketeering, was offered (and accepted) probationary affiliation for two years.

Perennial resolutions on a long list of domestic and international matters were passed, but the AFL-CIO retreated somewhat from its traditional unqualified support of the government's reciprocal trade agreement program. This action reflected persistent unemployment in industries feeling the pinch of import competition, such as shoes, clothing, textiles, and pottery.

The per capita tax for directly affiliated locals was increased from $1 to $1.50, and salaries of the president and secretary-treasurer were each raised by $10,000 a year, to $45,000 and $43,000, respectively.

(See also LABOR.)

LAWRENCE R. KLEIN,
Editor-in-Chief, "Monthly Labor Review."

AMERICAN LIBRARY ASSOCIATION. The American Library Association (ALA) is an organization of libraries, librarians, trustees, and others interested in the development and improvement of library services. It functions—through an organization involving about 1,250 of the members and a headquarters staff of more than 100—by establishing standards of various kinds, holding annual and midwinter conferences, operating a nonprofit publishing program, and administering special projects supported by foundation funds. A Washington office maintains liaison with federal agencies.

As the chief spokesman for the modern library movement in North America, ALA has grown as libraries themselves have done. In 1959 there were three noteworthy marks of this growth: (1) membership in the association passed 23,000 for the first time in its 83-year history; (2) the annual conference, held in Washington, D.C., June 21–27, was the largest of the 78 meetings that have been held since 1876, with a registered attendance of 5,346; and (3) a new headquarters building, the first to be designed specifically for ALA use, was planned to replace the present structure at 50 East Huron Street, Chicago, and was to be ready for occupancy in 1961.

Income.—The total income of ALA in 1958–59 was $1,439,098, of which $291,505 was from membership dues, and the rest from endowment income and grants for special projects. Endowment capital was about $2,750,000.

Conferences.—The theme of the Washington conference was "The World of Books." The annual midwinter meeting was held in Chicago on Jan. 27–30, 1959. A joint conference with the Canadian Library Association was scheduled for Montreal, June 19–25, 1960, and an ALA conference for Cleveland, Ohio, July 9–16, 1961.

Officers.—Officers who assumed their duties at the Washington conference were: president, Benjamin E. Powell, Duke University Library, Durham, N.C.; first vice president and president-elect, Mrs. Frances Lander Spain, New York Public Library; second vice president, John T. Eastlick, Denver (Colo.) Public Library. Richard B. Sealock, Kansas City (Mo.) Public Library, began the last year of his four-year term as treasurer.

Standards.—Notable progress in formulation and publication of standards was made in 1959 by units of the ALA. Standards for school library programs, prepared by the American Association of School Librarians, were approved for publication early in 1960; standards for college libraries, prepared by the Association of College and Research Libraries, were approved and published; and standards for undergraduate library education, prepared by the Committee on Accreditation, were approved.

Library Technology Project.—A different approach to standards was illustrated by the Library Technology Project, established in May 1959 for a two-year period under a grant of $136,395 from the Council on Library Resources, Inc. Compilation, editing, and publication of present standards for equipment widely used in libraries was the project's major task in its first phase. The project staff also worked with equipment manufacturers, librarians, and experts in standardization and testing to stimulate the development of new products useful to libraries. By the end of 1959, two supplementary grants from the Council on Library Resources, totaling $22,600, had been made for use in developing a bookmarking machine and other needed products.

National Library Week.—The second National Library Week, held April 12–18, 1959, and sponsored by ALA and the National Book Committee, was an even greater success than the first. The objective of the week is to emphasize the values of reading, and a multitude of local, state, and national activities are planned around this objective. Because of its demonstrated success, ALA decided to continue sponsorship of the week for at least three more years.

Publications.—During 1959 ALA published *Guide to Art Reference Books, Status of American College and University Librarians, College Teaching and the College Library, Cooperative Centralized Processing,* and a number of other books and pamphlets. The monthly ALA *Bulletin* is the official membership journal; *Booklist and Subscription Books Bulletin* reviews trade and subscription publications; and a number of the divisions publish quarterly or bimonthly journals.

Awards and Citations.—The Joseph W. Lippincott Award for distinguished librarianship ($500 and a medal) was presented to Essae Martha Culver, state librarian of Louisiana since 1925. The Melvil Dewey Medal for creative professional achievement of a high order went to Benjamin A. Custer, editor of the 16th edition of the *Dewey Decimal Classification,* 2 vols. (Forest Press 1958).

The 38th Newbery Medal for the most distinguished contribution to American literature for children published in 1958 was won by Elizabeth George Speare for *The Witch of Blackbird Pond* (Houghton Mifflin). Barbara Cooney won the 22d Caldecott Medal for the illustrations in *Chanticleer and the Fox* (Crowell), judged to be the outstanding picture book of 1958 for children.

The biennial Oberly Memorial Award ($100) for the best bibliography in the field of agriculture was won by J. Richard Blanchard, librarian of the University of California (Davis), and Harald Ostvold, chief of the reference department, New York Public Library, for their *Literature of Agricultural Research* (University of California Press 1958).

Justice Francis Bergan of the New York State Supreme Court, president of the board of the Albany Public Library, and Alan N. Schneider, a trustee of the Louisville (Ky.) Public Library, received the annual Trustee Citations of Merit.

The first Isadore Gilbert Mudge Citation for distinguished contributions to reference librarianship was presented to Mary N. Barton, former head of the general reference department of the Enoch Pratt Free Library, Baltimore.

Andrew D. Osborn, librarian of the University of Sydney, Australia, was awarded the Margaret Mann Citation for outstanding professional achievement in cataloging and classification.

The Grolier Society Award ($500) for stimulating the reading of children and young people was won by Evelyn Sickels, formerly coordinator of children's services at the Indianapolis (Ind.) Public Library.

Anita M. Hostetter, former secretary of the ALA Board of Education for Librarianship, won the Beta Phi Mu Award ($50) and citation for distinguished service to education for librarianship.

The Frederic G. Melcher Scholarship ($750) for study in children's librarianship was won by Thusnelda Schmidt of Pittsburgh.

Grolier-Americana Scholarships in School Librarianship, of $1,000 each, were presented to the Louisiana State University Library School (a graduate school) and the Department of Library Science, Montana State College, Bozeman (an undergraduate school) for presentation to students of their choice.

Richard L. Darling of Montana State University, Missoula, received the E. P. Dutton–John Macrae Award

of $1,000 for the advancement of library service to children and young people.

(See also LIBRARIES.)

SAMRAY SMITH,
Editor, "ALA Bulletin."

AMERICAN LITERATURE. The year 1959 saw the publication of a number of significant works by distinguished American novelists. William Faulkner's *The Mansion,* in addition to ending the saga of the Snopeses, completed the trilogy which began with *The Hamlet* (1940) and *The Town* (1957). Robert Penn Warren moved back into critical favor with *The Cave,* in which he once again, as in *All the King's Men* (1946), turned a subject of temporary or topical significance into art. *Henderson the Rain King,* a comic fantasy by Saul Bellow, was both hailed as the author's finest novel and described as his worst, by equally perceptive reviewers. John Hersey's *The War Lover,* a tale of tension and anxiety in war, sustained the critical approval created by his earlier novels. Hamilton Basso, in *The Light Infantry Ball,* gained additional admirers by his skillful handling of the illusions of the ante-bellum South.

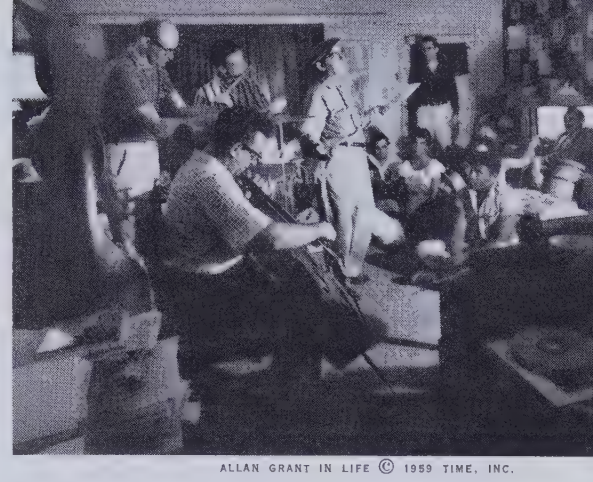
James Jones' *The Pistol* and Pearl Buck's *Command the Morning* were definitely not up to their authors' standard performances. Jack Kerouac kept "beatnik" fiction alive with *Maggie Cassidy,* which was, surprisingly, recognizable as a novel of adolescence. Old-timer Ben Hecht's first novel in 25 years, *The Sensualists,* disappointed his readers. Herbert Gold, with *The Optimist,* continued to build his reputation, as did Louis Auchincloss, with *Pursuit of the Prodigal,* and Shirley Jackson, with *The Haunting of Hill House.*

Although neither controversial nor major literary criticism appeared in 1959, Richard B. Sewall's *The Vision of Tragedy,* Harry Levin's *The Question of Hamlet,* and Marius Bewley's *The Eccentric Design: Form in the Classic American Novel* were carefully prepared, professionally written, and perceptive critical studies. Harold Rosenberg's *The Tradition of the New* and Kenneth Rexroth's *Bird in the Bush: Obvious Essays* were more individual, if less disciplined, volumes of criticism.

Poetry remained on a rather high level of quality, as in *Life Studies* by Robert Lowell, *O To Be a Dragon* by Marianne Moore, and *Summer Knowledge: New and Selected Poems, 1938–1958* by Delmore Schwartz. Hayden Carruth's *The Crow and the Heart: 1946–1959,* Hyman Sobiloff's *In the Deepest Aquarium: Poems,* Louis Coxe's *The Wilderness, and Other Poems,* Hyman Plutzik's *Apples from Shinar,* and Howard Nemerov's *Mirrors and Windows: Poems* were arrestingly imaginative and intelligent in their imagery.

The tone of *The New Yorker* was to be found in many of the volumes of short stories published, especially in John Updike's *The Same Door: Short Stories* and Philip Roth's *Goodbye, Columbus, and Five Short Stories. The Best American Short Stories, 1959* was the best of these compilations in years. Ten of the 14 pieces in *Best Short Stories from the Paris Review* were by Americans, including Philip Roth, Mac Hyman, and Jack Kerouac—an interesting miscellany.

The year was especially rich in biography. Samuel Eliot Morrison presented an authoritative portrait in *John Paul Jones: A Sailor's Biography.* Margaret Leech's *In the Days of McKinley* was characterized by one critic as a "first-rate study of a second-rate president." Popular biography was served by Frances Winwar's *The Haunted Palace: A Life of Edgar Allan Poe* and by Matthew Josephson's *Edison: A Biography.* In the genre of literary biography were Van Wyck Brooks' excellent *Howells: His Life and World,* Richard B. Hovey's scholarly *John Jay Chapman: An American Mind,* Kermit Vanderbilt's carefully detailed *Charles Eliot Norton: Apostle of Culture in a Democracy,* and John Malcolm Brinnin's gossipy *The Third Rose: Gertrude Stein and Her World.*



ALLAN GRANT IN LIFE © 1959 TIME, INC.

One phase of the American literary scene in 1959 was the "beatnik" predilection for combining poetry with jazz. Here Louis Lipton, author of *The Holy Barbarians,* reads to a group in the "beatnik" stronghold of Venice, Calif.

There were two major works of history: Allan Nevins' *The Improvised War, 1861–1862* (volume 1 of *The War for the Union*) and Arthur Schlesinger Jr.'s *The Coming of the New Deal* (volume 2 of *The Age of Roosevelt*). *The House of Intellect* by Jacques Barzun, with its crisp indictment of the shortcomings of American culture, was more analytical and witty than Thomas Griffith's *The Waist-High Culture,* a study with a similar theme.

The Novel.—Critics treated William Faulkner's *The Mansion* with respect, but voiced disappointment that it did not measure up to *The Hamlet,* the first and finest volume of the Snopes trilogy. Anthony West, writing in *The New Yorker* (Dec. 5, 1959), found that parts of *The Mansion* "come uncorrupted from the intense absorption in Faulkner's knowledge and experience of his own place and time, which is his enduring strength; the rest of it was thinly written by a lesser figure. . . ." Malcolm Cowley (*The New York Times Book Review,* Nov. 15, 1959) notes that "in its completed form the Snopes trilogy reveals both the marvelous qualities and limitations of Faulkner as an epic poet in prose."

In *The Cave,* Robert Penn Warren examines human relationships and the crises on which lives turn. Using the tragedy of Jasper Harrick (who is caught in a cave and dies) as the loom on which the skillful texture of the novel is woven, the author has turned out a book which Arthur Mizener characterized as Warren "at his best."

Books by lesser novelists included Saul Bellow's *Henderson the Rain King,* which, while exuberant and filled with excitement, received mixed critical notices. Pearl Buck's *Command the Morning,* although not of the quality of some of her earlier work, deals with a significant issue—the moral problems implicit in man's conquest of the atom. Herbert Gold's witty *The Optimist,* written in clean-cut prose, did not quite succeed in its portrayal of a man who pays the price of ambition. Fear and courage in wartime is the theme of John Hersey's best-selling *The War Lover. The Sensualists* by Ben Hecht failed to command attention in its account of abnormal love and infidelity. At times tense and absorbing, James

Jones' *The Pistol* lacked the richness of Jones' earlier *From Here to Eternity* (1951).

Shirley Jackson's *The Haunting of Hill House* delighted her special audience with its chilling account of a psychic experiment in a haunted house. Bernard Wolfe's gripping *The Great Prince Died* effectively dramatized the assassination of Léon Trotsky and was a welcome addition to the genre of the political novel. Another political novel was Allen Drury's excellent *Advise and Consent,* dealing with the appointment and senatorial approval of a secretary of state.

In the words of Robert Gorham Davis (*The New York Times Book Review,* May 24, 1959), Paul Goodman's *The Empire City* "is a witty, exasperating, thoughtful, fantastic hymn to New York City and to the destructiveness of modern life." Peter S. Feibleman's second novel, *The Daughters of Necessity,* is an account of five women in the life of a wealthy, influential Southerner. *The Daughters of Necessity,* though equally intense, is more mannered than Feibleman's earlier *A Place Without Twilight* (1958). In *Maggie Cassidy,* Jack Kerouac, the acknowledged leader of the "beat generation," turned out a simple tale of adolescent love. *Krishna Fluting* by John Berry, winner of the Macmillan Fiction Contest, takes place in India and deals with the conflicts of its chief character, Peter, who is half Hindu, half Pennsylvania Quaker. Elizabeth Janeway's *The Third Choice* is skillfully rendered "women's fiction"—the story of an active woman who is confined to her bed by an accident, and of her niece and her doctor.

In *The Light Infantry Ball,* as in *The View from Pompey's Head* (1954), Hamilton Basso takes his readers to the Southern town of Old Pompey. This time, using the Civil War as his background, he tells how the "Shinto tradition [reverence for imperial ancestors] of the American South" came into being. *The Tents of Wickedness* by Peter DeVries, although filled with typical DeVries humor (parodies of contemporary writers, outrageous puns, suburban adultery made absurd), is less readable than previous novels by this usually delightful satirist. In *Pursuit of the Prodigal,* Louis Auchincloss added another portrait to his gallery of upper-class figures struggling to maintain their integrity.

Neophyte novelists were ably represented by John Updike, whose *Poorhouse Fair* was a richly energetic and brilliant work of art. James Purdy's impressive *Malcolm* tells of a 14-year-old boy's education in worldliness, and of his corruption. Helga Sandburg's *Measure My Love,* against a rural background, relates the conflict between the realities and the idealistic romanticism of married life. Novels of substance to make the best-seller lists were Meyer Levin's *Eva* (a Jewish girl's survival in a German concentration camp and her relocation in Palestine) and Gerald Green's *The Lotus Eaters* (a satire on people and places in a resort not unlike Miami Beach).

The Short Story.—Young writers published volumes of excellent short stories during 1959. Philip Roth's *Goodbye, Columbus, and Five Short Stories,* which won a Houghton Mifflin Literary Fellowship Award, deals with the dilemma of the Jew in modern American society. *Blackberry Wilderness,* eleven carefully wrought stories by Sylvia Berkman, is, in the words of William Peden, "an admirable and impressive book" about "unhappy intellectuals who have been damaged by the tensions of day-to-day living." (*The New York Times Book Review,* Feb. 15, 1959.) In addition to being a talented novelist, John Updike is an extraordinarily effective short story writer, as witness *The Same Door: Short Stories,* which is marked by economy of prose. *The Best American Short Stories, 1959,* edited by Martha Foley and David Burnett, is a collection of distinction, containing work by such fine young writers as John Berry, Howard Nemerov, John Cheever, Bernard Malamud, John Updike, Robert M. Coates, and Philip Roth. Substantial stories were also to be found in Elizabeth Enright's *The Riddle and the Fly, and Other Stories* and in *Best Short Stories from the Paris Review.*

Poetry.—Several young poets strengthened their reputations in 1959. Hayden Carruth's *The Crow and the Heart: 1946–1959,* inspired by a variety of experiences, is, for the most part, a professionally written volume. Ramon Guthrie's *Graffite* is characterized by the poet's vivid, arresting, and seriously ironic imagination. An unusual series of mocking images is to be found in the title poem of Reed Whittemore's *The Self-Made Man, and Other Poems.*

Among the year's distinguished volumes by major poets was Robert Lowell's outstanding *Life Studies,* which deals with the heartbreak and frightening implications of contemporary life. In addition to the poetry, *Life Studies* contains an autobiographical fragment entitled *91 Revere Street.* In this and several lyric poems, Lowell is remarkably candid about himself and his Jamesian forebears.

Marianne Moore's slim volume, *O To Be a Dragon,* conveyed its author's fine imagination through precise, jewel-like images. *Summer Knowledge: New and Selected Poems, 1938–1958* established Delmore Schwartz in the front rank of contemporary poets; especially notable was Schwartz' *Kingdom of Poetry.* Langston Hughes' *Selected Poems,* while containing the power and beat of Negro speech and music, lacked the discipline necessary for full artistic expression.

Hyman Plutzik's *Apples from Shinar* was electrically alive, particularly in the long poem *The Shepherd.* Hyman Sobiloff's *In the Deepest Aquarium: Poems,* with an introduction by Allen Tate, contained unusual symbolic rhythms that often echoed an intimacy with nature. Louis Simpson's *Dream of Governors* was distinguished by a long narrative poem, *Runner,* about an American soldier who was a messenger during the Battle of the Bulge in World War II, and by shorter poems which gave a comprehensive sense of American life.

Short-story writer Howard Nemerov displayed strange daring and individual diction in *Mirrors and Windows: Poems. Coming of Age: New and Selected Poems* was the reliable work of critic Babette Deutsch. Louis O. Coxe's *The Wilderness, and Other Poems,* intellectually and morally strict, was inspired by the North Woods. Jack Kerouac's *Mexico City Blues,* containing 242 jazz poems, was a beatnik's statement on Zen, drug addiction, and childhood.

Literary History and Criticism.—A middle-aged beatnik poet, Kenneth Rexroth, published 18 impressionistic essays on literature, art, and cultural movements, in a volume entitled *Bird in the Bush: Obvious Essays.* Probably the year's most skillful criticism was to be found in R. W. B. Lewis' *The Picaresque Saint: Representative Figures in Contemporary Fiction.* However, Harry Levin's *The Question of Hamlet* was more profound, giving a new interpretation that focuses on the poetry and the drama of the play, rather than on the character. Marius Bewley's *The Eccentric Design: Form in the Classic American Novel* was an original analytical demonstration of the unique qualities constituting the essential "Americanness" of Cooper, Hawthorne, Melville, James, and Fitz-

gerald. Harold Rosenberg's *The Tradition of the New* comprised highly intelligent essays on painting, history, poetry, sociology, drama, politics, and the novel. An example of disciplined, old-fashioned scholarly criticism of high distinction was Richard B. Sewall's *The Vision of Tragedy,* which treated of the recurring elements of tragedy, from Oedipus and Job to *The Scarlet Letter, Moby Dick,* and *Absalom, Absalom.*

Nearly 600 letters were included in the three-volume *The Letters of Theodore Dreiser,* edited by Robert H. Elias. The letters, although leaving an unpleasant taste of arrogance, reveal Dreiser as a man of enormous energy. Edited by Charles Neider, *The Autobiography of Mark Twain* included nearly 40,000 words of previously unpublished material—further testimony to Twain's position as a major American literary figure. Volume one of *The Papers of Benjamin Franklin* (Jan. 6, 1706 through Dec. 31, 1734), published by the Yale University Press, marked the beginning of a monumental editorial project. *Howells: His Life and World* by Van Wyck Brooks is "a portrait and an interpretation" which brings to life the literary world of which William Dean Howells was such an important figure.

The American expatriate literary and social world of Gertrude Stein was the subject of John Malcolm Brinnin's *The Third Rose: Gertrude Stein and Her World*—equal parts biography and literary criticism. Eleanor Ruggles, in *The West-Going Heart: A Life of Vachel Lindsay,* evoked the world of the poets of the Middle West and the time when Chicago was a literary center. Kermit Vanderbilt's *Charles Eliot Norton: Apostle of Culture in a Democracy* was a carefully documented biography, which showed the influence of the genteel Boston literary circle on American letters. Richard B. Hovey, in *John Jay Chapman: An American Mind,* convincingly pleaded for recognition of his subject's literary stature.

Contemporary literary history was represented by *Advertisements for Myself,* in which Norman Mailer supplies fragments of novels, a fascinating essay on hipsters, and a frenzied appraisal of himself as an important writer. Despite Mailer's almost hysterical insistence, critics were prepared to assess him as a potential major literary figure. May Sarton's *I Knew a Phoenix: Sketches for an Autobiography* was a gentle and civilized account of the people, places, and events that shaped her personal life and her career as a poet and novelist. Sylvia Beach, in *Shakespeare and Company,* brings to life the literary figures (especially James Joyce) that frequented her American bookshop in Paris in the 1920's.

History and Biography.—*The Coming of the New Deal* by Arthur Schlesinger Jr. is the second volume of a major work in American historical literature—*The Age of Roosevelt.* In *The Coming of the New Deal,* Schlesinger examines the reaction of the American people to the dynamism of the New Deal, and the artistry of Roosevelt in shaping government and politics to serve his ends. Allan Nevins' *The Improvised War, 1861–1862* is the first volume of the projected four-volume *War for the Union,* and the fifth volume in the monumental series entitled *Ordeal of the Union.* In *Out of Our Past: The Forces That Shaped Modern America,* Carl N. Degler pursues such themes as the economic ideas of the Puritans, the changing status of the farmer, and the meaning of the American Industrial Revolution.

First-rate biography in 1959 was represented by Margaret Leech's *In the Days of McKinley,* an admirably detailed account of a good but sometimes dull man, and by Samuel Eliot Morrison's *John Paul Jones: A Sailor's Biography,* which, though excellent, was deficient in assessing the significance of Jones' career. Some biographies attempted to rectify previously held partisan estimates of their subjects. *Jefferson Davis: Confederate President,* volume two in a series by Hudson Strode, does some injustice to J. P. Benjamin, Davis' cabinet member, and to General Beauregard in its effort to establish a high place for the Confederate president. Fawn M. Brodie's *Thaddeus Stevens: Scourge of the South* demonstrates the special nature of Stevens' economic radicalism. Gerald M. Capers' *Stephen Douglas: Defender of the Union,* edited by Oscar Handlin, was warmly sympathetic toward Douglas' efforts to prevent the war between the North and the South.

Competent studies included W. A. Swanberg's *Jim Fisk: The Career of an Improbable Rascal,* Alexander Balinsky's *Albert Gallatin: Fiscal Theories and Policies,* Owen Aldridge's *Man of Reason: The Life of Thomas Paine,* John C. Miller's *Alexander Hamilton: Portrait in Paradox,* and Kenneth P. Williams' *Lincoln Finds a General: A Military Study of the Civil War* (volume 5, *Prelude to Chattanooga*). More vivid were Matthew Josephson's *Edison: A Biography,* written from previously unpublished material and documenting the uniquely American character of the self-made inventor, and Arthur Mann's *La Guardia: A Fighter Against His Time* (volume 1), a coolly related narrative of perhaps the most colorful politician of this century.

Miscellaneous Prose.—The "beat generation" was thoroughly treated in Lawrence Lipton's *The Holy Barbarians,* which included a glossary of "beat" terms. Thomas Griffith's *The Waist-High Culture,* written in standard journalistic prose, emphasized the shallowness of cultural values in America. A more devastating critique of American culture came, however, from the witty, civilized pen of Jacques Barzun, who, in *The House of Intellect,* unerringly detected the weaknesses in the American way of thinking, dealing with such things as pedantry and nonintellectualism in the schools, the vulgarity and sloppiness of book and magazine publishing, and the timidity and conformity in philanthropic foundation projects.

James Thurber's *The Years with Ross* was a delightful account of Harold Ross, the founder and long-time editor of *The New Yorker.* Phyllis McGinley collected a number of her kind and wise observations about life in *The Province of the Heart.* Leo Rosten's *The Return of H*Y*M*A*N* K*A*P*L*A*N* nostalgically reminded us of his earlier work. Moss Hart's best-selling *Act One*—poignant and funny, grim and exciting—was one of the finest books on "show business" in recent years. Joseph Wood Krutch, a civilized humanist, provided an indictment of modern mass society in *Human Nature and the Human Condition.* The lasting effects of the Reconstruction in the South were revealed in Hodding Carter's *The Angry Scar.* Richard Rovere brought understanding and a detached prose style to the case of Sen. Joseph McCarthy (*Senator Joe McCarthy*)—his rapid rise and even swifter fall, and the significance of McCarthyism. In *The Sociological Imagination,* C. Wright Mills deplored both the loss of moral values and the consciousness of history among social thinkers. John Kieran concluded a long labor of love in his beautifully written *The Natural History of New York City.*

(See also Book Publishing and Sales; Children's Literature.)

Henry Wasser,
Assistant Professor of English,
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AMERICAN SAMOA. See SAMOA.

ANDERSON, Maxwell (70), American playwright: b. Atlantic, Pa., Dec. 15, 1888; d. Stamford, Conn., Feb. 28, 1959. According to Joseph Wood Krutch, Maxwell Anderson, winner of a Pulitzer Prize (for *Both Your Houses,* 1933) and two awards from the New York Drama Critics Circle (for *Winterset,* 1935, and *High Tor,* 1937), "is to be ranked among the five or six most considerable [American] playwrights of the two decades following 1925."

Despite this preferred position in the galaxy of contemporary dramatists, he did not always fare well at the hands of the critics. If some of his efforts were praised for their "simple compassion," "poetic splendor," and "great clarity," others were criticized for their banality, sentimentality, and pretentiousness. George Jean Nathan, in assessing Anderson's talent, offers an explanation for the uneven quality of his plays: "No man writing for our theatre has greater sincerity than Anderson, and no man a higher goal. But none, also, has a mind more critically incapable of meeting the demands it imposes upon itself."

The son of a Baptist minister, Anderson spent his youth in Pennsylvania, Ohio, Iowa, and North Dakota. He was graduated from the University of North Dakota (B.A., 1911) and Stanford University (M.A., 1914). In 1918, after serving as a college instructor of English and as a journalist on several Western newspapers, he went to New York, where he joined the editorial staff of the *New Republic.* He later worked on the New York *Evening Globe* and the New York *Morning World.* His first drama, *The White Desert* (1923), written, as were many of his subsequent plays, in blank verse, was not a success. But his second venture, *What Price Glory?,* which he coauthored with Laurence Stallings, was one of the outstanding hits of the 1924–25 theater season. In 1925 he quit his newspaper post to devote himself entirely to playwriting.

With *Elizabeth the Queen,* produced in 1930, Anderson achieved his first real success as a writer of poetic tragedies. Finding verse a congenial medium of expression, he used this form for many of his most popular works, including *Night Over Taos* (1932), *Mary of Scotland* (1933), *Valley Forge* (1934), *Winterset* (1935), *Key Largo* (1939), and *The Eve of St. Mark* (1942). *Winterset,* usually regarded as his most important play, found its basis in the Sacco-Vanzetti case, the controversial American *cause célèbre* of the 1920's.

In 1938 Anderson joined Robert Sherwood, Elmer Rice, S. N. Behrman, and Sidney Howard in founding The Playwrights' Company, which produced the majority of his later plays. Among them were *Candle in the Wind* (1941), *Joan of Lorraine* (1946), *Anne of the Thousand Days* (1948), and *The Bad Seed* (1954). He also wrote the book and lyrics for *Knickerbocker Holiday* (1938) and *Lost in the Stars* (1949), for which Kurt Weill (1900–50) composed the scores. (The ever-popular *September Song* was written for the first of these musicals.) Anderson's last-produced Broadway play before his death, *The Day the Money Stopped,* written with Brendan Gill and presented in 1958, ran for only four performances. An off-Broadway production of *The Golden Six,* also in 1958, was somewhat more successful.

ANDERSON, Robert Bernerd, U.S. secretary of the treasury: b. Burleson, Texas, June 4, 1910. Secretary Anderson has directed the administration's battle to balance the budget and control inflation in its domestic economy. In the fall of 1959 he addressed himself to the problem of a growing deficit in the country's foreign trade balance by initiating major changes in its foreign economic policy.

A graduate of the University of Texas Law School (1932), Anderson served in the state legislature for two years and held state administrative posts for another two years. He became general counsel at 31, and general manager at 41, of a $300 million cattle, wheat, and oil empire. In 1952 Anderson became a Texas Democrat-for-Eisenhower (later registering as a Republican), and in 1953 Eisenhower appointed him secretary of the navy. In May 1954 he was moved up to be deputy secretary of defense. He resigned in 1955 to return to private business but was brought back to the government in the Treasury post on July 29, 1957.

Widely respected even by critics of his policies, Anderson was in 1959 considered the most powerful figure—often called the "strong man"—of the cabinet. He is convinced that a sound dollar is important not only to the country itself but to the economic health of the entire free world. In view of the estimated deficit of more than $4 billion in 1959 in the United States balance of payments picture, Anderson urged at the September meeting of the World Bank and International Monetary Fund that the now prospering countries of western Europe, as well as Great Britain and Japan, remove controls on imports of American goods and on dollar payments, and that they take a larger share of the burden of aid to underdeveloped countries.

In October he proposed that countries receiving U.S. Development Loan Fund assistance be required to spend the money on American goods and services. Emphasizing that the United States did not intend to shirk any part of its own responsibility in these areas, he called for "a reorientation of the policies of the earlier postwar period" with the aim of making aid to underdeveloped countries a cooperative free-world undertaking.

ANDORRA. An autonomous state on the south slope of the eastern Pyrenees, under the joint sovereignty of the president of France and the Spanish bishop of Urgel. Area, 175 square miles; pop. (est. 1956), 6,000. Andorra la Vieja (1,100) is the capital. Andorrans speak Catalan and are of the Roman Catholic faith. The government consists of a 24-member General Council of the Valleys elected for a 4-year term by the heads of families; and a syndic, chosen by the council as its executive. French and Spanish currency are in use, and France represents Andorra in foreign affairs. Primary schools number 25 (1954), with 875 pupils. Agriculture and sheep raising are the chief occupations, with tourism and smuggling as important supplementary sources of income. A good highway traverses Andorra from the French to the Spanish border. Radio Andorra is one of the most powerful stations in Europe.

ANGLING. See SPORTS, GAMES, AND SHOWS—*Fly and Bait Casting.*

ANGLO-EGYPTIAN SUDAN. See SUDAN.

ANGOLA. See PORTUGUESE TERRITORIES.

ANIMALS. See the Index entries *Livestock; Veterinary Science; Wildlife Conservation; Zoology.*

ANTARCTICA. Confined almost entirely within the Antarctic Circle, the frigid continent's 5,100,000 square miles are isolated from the earth's inhabited continents by the Atlantic, Pacific, and

Indian oceans. Antarctica has an average elevation of about 5,000 feet above sea level, and is covered mainly by a sheet of ice whose average thickness was estimated during the International Geophysical Year (IGY), at about 8,000 feet, thus suggesting that the continent consists of several islands submerged under heavy ice. At one point in Marie Byrd Land an ice-filled strait between such submerged islands was found to be 14,000 feet thick where the surface of the ice sheet was about 5,000 feet above sea level.

The geographical South Pole, at an elevation of 9,200 feet, was first reached on Dec. 14, 1911, by the Norwegian Roald Amundsen with four companions. A month later, Robert Scott's party of five men also reached the pole, but all of them perished on the return journey. The Norwegian Carsten Egeberg Borchgrevink was the first to set foot upon and also to spend a winter on the continent (1895), and Sir Hubert Wilkins was the first to explore it by airplane (1928). The first two women to spend a year wintering in the Antarctic were members of the Ronne Expedition of 1946–48.

On the conclusion of the IGY on Dec. 31, 1958, a Special Committee on Antarctic Research (SCAR) was established to continue scientific programs on the continent. During 1959 the 12 member nations of SCAR—Argentina, Australia, Belgium, Chile, France, Great Britain, Japan, New Zealand, Norway, South Africa, the USSR, and the United States—continued to maintain 41 stations in the area. Direction of future United States activities was undertaken by the National Science Foundation, headed by Dr. Alan T. Waterman, with Albert P. Crary (whose appointment was announced on March 28) in charge of scientific operations.

In the 1958–59 summer season, 6 men under Crary made a three-month traverse in Sno-Cats from Little America Station (Little America V) to continue the previous summer's seismic soundings across the Ross Ice Shelf. Skeleton Inlet and glaciers leading up to the Victoria Land plateau were covered by soundings and the study of ice movements. A traverse party from Byrd Station went south into the Horlick Mountains and carried out seismic soundings at intervals of about 35 miles with gravimetric, magnetic, and altimetric measurements.

Later in the season another party from Byrd Station accurately charted new peaks and others in the Executive Committee Range that had been sighted by the Navy in 1947. The highest peak in the range was found to be 13,856 feet high. In addition, an airborne traverse team of 3 men from Little America followed a path at right angles to a hypothetical trough in the ocean floor, the axis of which averaged about 3,200 feet below sea level. (The trough had been found originally by the Ellsworth Station traverse in 1957–58.) Seven plane landings were made on the 130th meridian of west longitude in Marie Byrd Land, along a 550-stretch where the ice was found to be grounded at all seven points between the mountain ranges at either end of the line. Although there appeared to be virtually no possibility of water interchange between the Weddell and Ross seas, mounting evidence leaned toward the Antarctic continent's being divided by a down-warped, ice-filled depression connecting them. Additional data was still needed, however, especially on the area to the east.

During the winter of 1959, 18 men remained at South Pole (Amundsen-Scott) Station, 22 at Byrd Station, and 130 men at the McMurdo Naval Air Facility, the logistic base for the support of the inland stations. Little America Station was abandoned. Hallett Station in Victoria Land was operated jointly for the United States and New Zealand by 15 men, while Ellsworth Station on the

WIDE WORLD

The U.S. Navy icebreaker *Glacier (rear)* comes to the aid of the Belgian expedition ship *Polar Hav*, which was trapped for seven weeks in the Antarctic before release in April.

Weddell Sea coast in Edith Ronne Land was transferred to Argentina on February 2. There, 28 Argentinians and 1 American pursued a limited scientific program. A limited program was also maintained at Wilkes Station on Budd Coast, which was turned over to the Australians on February 4.

On April 14, 1959, Rear Adm. David M. Tyree succeeded Rear Adm. George J. Dufek as commander of the Navy's support forces. The 1959–60 program, known as Operation Deep Freeze Sixty, was under his direction.

The Argentinians continued in 1958–59 to maintain their six permanent bases on Palmer Peninsula and General Belgrano Station on the Filchner Ice Shelf. The last named was replenished by the icebreaker *General San Martín* when it took Argentine personnel to man Ellsworth Station. Because the United States icebreaker *Edisto* was beset for a long time in the pack ice close to Cape Norvegia, 22 of the Americans who had manned Ellsworth were evacuated by the Argentinians. Eventually freed, the *Edisto* reached Ellsworth and brought out the remaining 11 Americans after making the official transfer of the station to Argentina. On its return trip, the ship was again beset, and the U.S.S. *Glacier*, which had intended to attempt a penetration of the Bellingshausen Sea, was sent to her rescue. Meanwhile, the *General San Martín* proceeded to the Argentine

Aboard his flagship, the icebreaker *Glacier*, in New York on April 14, Rear Adm. George J. Dufek (right) presents stuffed penguin to Rear Adm. David M. Tyree, who succeeded him as commander of U.S. Naval Support Forces, Antarctica.

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base of the same name in Marguerite Bay on the Palmer Peninsula, which was destroyed by fire. The personnel were evacuated by helicopter, and the base was abandoned. The Argentine bases, as well as the four Chilean bases on the Palmer Peninsula and the South Shetland Islands, were engaged mainly in weather observations and local surveys, as were the seven British bases in the same sector, where all three nations have made overlapping territorial claims. In addition, the British maintained Halley Bay Station on the east shore of the Weddell Sea in Queen Maud Land.

King Baudouin Station, the Belgian base on Princess Ragnhild Coast in Queen Maud Land, had been established early in 1958 by Baron Gaston de Gerlache, son of Adrien de Gerlache, who led the expedition to Bellingshausen Sea in the *Belgica* in 1897–99. The wintering party collected valuable scientific information and made a geological and surface survey of the interior to the south, thus obtaining ground control points for aerial photographs of the area. En route to resupply the base in 1958–59, the *Polar Hav* was beset for seven weeks but was able to carry out its mission with the assistance of the *Glacier*.

The Russians extended their post-IGY activities by establishing a new station at the Pole of Relative Inaccessibility and another, called Lazarev Station, on the coast of Queen Maud Land on March 10, 1959. Their Oazis Station was scheduled to be turned over to Poland to pursue a scientific program in cooperation with the Russians. On September 16, a Soviet transcontinental party left Mirny Station on the Queen Mary Coast for Vostok Station, its first objective, reached on November 29. Designed for seismic and glacier studies, the trip was to end at Lazarev Station. After the Russians reached the South Pole on December 26, it was announced that they would return to Mirny without crossing the continent.

In 1958–59 the Australians continued to maintain their bases in their claimed sector south of the Indian Ocean. Investigations in various branches of science were carried out together with local surveys and aerial photography. On Feb. 21, 1959, the Australians made the first recorded landing on Oates Coast, at the extreme eastern edge of their Antarctic claim. The New Zealanders continued to maintain Scott Station on the Ross Sea, and on October 17, a 9-man international team that included 6 Americans left from there for a four-month traverse of Victoria Land.

The Norwegians terminated their activities at Norway Station in Queen Maud Land, which they had operated as part of the IGY since 1956. Since this station formed an important link in the chain of stations contributing to the overall picture of Antarctic weather, it was agreed that a 10-man party of South Africans under Hannes La Grange would operate it on the conclusion of the 1959–60 season.

The Japanese Showa Station on Lützow-Holm Bay, also in Queen Maud Land, was to function for another year with a program that included dog-team parties to conduct surface surveys. Scientists led by Dr. Tatsuo Tatsumi were to replace the 1958–59 group when the expedition ship *Soya* reached the station in January 1960.

A Conference on Antarctica, attended by delegates of the 12 members of SCAR, opened in Washington on Oct. 15, 1959. The delegates drew up a treaty, signed on December 1, which (1) prohibits the use of Antarctica for warlike purposes; (2) permits free scientific use of the continent; (3) freezes existing territorial claims there; (4) promotes international cooperation for scientific purposes; and (5) sets up an inspection system to make sure that its provisions are not violated. Article 5 bans nuclear explosions and the disposal of atomic wastes in Antarctica. The 12 governments concerned must give final approval to the treaty before it enters into force. Two months thereafter a consultative committee is scheduled to meet in Canberra, Australia.

(See also CARTOGRAPHY; GEOGRAPHY AND EXPLORATION; INTERNATIONAL GEOPHYSICAL YEAR; METEOROLOGY AND CLIMATOLOGY.)

FINN RONNE,
Captain, U.S. Naval Reserve; Antarctic Explorer.

ANTHROPOLOGY. During 1959 several important trends which had been developing throughout the preceding ten years became increasingly evident. To mark the end of the decade, it will be of value to summarize the more outstanding tendencies that have manifested themselves. They include:

(1) In physical anthropology, an increasing concern with the relation of man's physical evolution to his capacity for culture, and with the implicated physiological, biochemical, genetic, and growth processes—in contrast to the earlier preoccupation with comparative human anatomy.

(2) In ethnology, the formalization of ethnographic analysis in terms of systematic models which have proved useful in other disciplines, including communications theory, descriptive linguistics, symbolic logic, and various branches of mathematics.

(3) The resurgence of interest in the history and processes of cultural evolution, based on a fusion of recent archaeological and social-anthropological typologies with improved methods of dating and with a more sophisticated understanding of the mechanisms of cultural stability, of cumulative technological change, and of revolutionary social reorganizations in response to stress.

(4) In applied anthropology, the increasing employment of anthropologists as researchers and consultants in psychiatry, public health, hospital administration, and technological aid and social development programs (in "contemporary" rather than "primitive" societies).

(5) The beginning of a shift in emphasis in the cultural anthropologist's use of psychological concepts, from affective (particularly Freudian) to cognitive theory.

(6) And, overall, a marked increase in precision of methodological procedures, in the direction of instrumentation and quantification (or, where this is inappropriate, of logical formalism).

These developments presage a new anthropology which, in the course of the next generation, will differ markedly from the anthropology of the past generation. This new anthropology will compete in rigor of conceptualization and method with more precise behavioral disciplines such as descriptive linguistics. It will accomplish a much higher degree of internal organization than at present obtains among its component major specialties of physical anthropology, archaeology, and cultural anthropology.

The geographical scope of ethnographic description may shrink or expand, depending on the course of the cold war. For political reasons, large parts of the world are forbidden or hazardous regions for the traditional small informal anthropological field party. The Soviet Union and the United States do not send ethnological field teams into each other's territory or into the territories of their respective allies. Mainland China has become almost an ethnological terra incognita to Americans, and they are not welcome in some parts of Southeast Asia and Africa.

As the erstwhile primitive populations of the earth become more nationalistic and more developed technologically, the traditional devotion of the anthropologist to primitiveness as a social type will be replaced by a concern with peasant communities and with such developmental processes as technological evolution, political and ideological reorganization, trends in cultural conservatism, and changes in man's relation to his physical environment.

International Cooperation.—Anthropological traditions vary from country to country in the definition of the term "anthropology," in the emphasis given to particular methods and theories, and (sometimes) even in the definition of what constitutes a scientific problem. In order to facilitate international communication of concepts and data, and to overcome some of the restrictions on investigation noted above, the Wenner-Gren Foundation for Anthropological Research has supported the launching of a new journal, *Current Anthropology*. Planned as a fully international journal, it will publish (in English) review articles, brief reports, and correspondence from scholars in every interested country in the world, including the Soviet Union. The organizing editor during 1959 was Sol Tax (University of Chicago). The new emphasis on international collaboration in anthropology was indicated also by the holding of the annual meeting of the American Anthropological Association in Mexico City in December 1959.

The *Oreopithecus* Discoveries.—One of the most significant discoveries of recent years in the field of human evolution is currently being reported from Italy, where extensive new finds of the small fossil hominid *Oreopithecus* are being uncovered from lignite deposits. Although the bones had not at the date of writing been fully analyzed and described in scientific publications, a preliminary report to the American Anthropological Association by William L. Strauss (Johns Hopkins) has indicated that these extremely ancient anthropoids, which existed during the lower Pliocene period, several million years ago, were similar in certain anatomical features to later protohominids and even to modern man. These similarities suggest the possibility that the line of human ancestry diverged from that of the monkeys and the great apes much farther in the past than had been commonly suspected. (See illustration at right.)

The Darwin Centennial.—One hundred years ago, in 1859, Charles Darwin published *The Origin of Species*. The principal theory of organic evolution expounded in this work—that natural selection, acting on inheritable variations, yielded cumulative change in taxonomic characteristics of plants and animals—was of fundamental importance in giving early anthropology a coherent rationale. Anthropology as a discipline, distinct from the informal collection of travelers' tales about primitive peoples and of speculations about the provenience of old bones and stone tools, was founded on the theory of evolution put forward by Darwin and Alfred Russel Wallace. Although later research has modified many of the applications of this theory to anthropological data, the stamp of Darwin's and Wallace's thinking still lies on the modern science.

To mark the centennial, anthropologists have contributed to several symposia, including "The Evolution of Man's Capacity for Culture," published in *Human Biology; Evolution and Anthropology: A Centennial Appraisal*, published by the Anthropological Society of Washington; and the University of Chicago's five-day convocation of scientists from Europe and America, beginning on November 24. Loren C. Eiseley (University of Pennsylvania) had previously published *Darwin's Century* (1958), a study of the cultural sources of Darwin's theory. (See also GENETICS.)

Support of Anthropological Research.—The National Science Foundation has advanced its program for the support of the social sciences by establishing an Office of Social Sciences, with an anthropologist, Fred Eggan (University of Chicago), among the members of its advisory committee. This action indicates a continuation of National Science Foundation support for anthropological field research, with additional recognition for the purely social and cultural aspects of anthropological investigation. Grants to anthropologists in support of basic research during 1959 amounted to several hundred thousand dollars, exclusive of a number of travel grants and of pre- and postdoctoral training fellowships.

Federal sponsorship of basic anthropological research is also contributed by the U.S. Public Health Service, particularly through the National Institute of Mental Health. Federal funds for various special research projects were provided by the defense agencies, by the National Academy of Sciences–National Research Council, and by the State Department under the Fulbright Act.

J. HURZELER; WENNER-GREN FOUNDATION

Discovery of these fossil remains of the hominid *Oreopithecus* in Italy, 100 miles north of Rome, stirred anthropologists in 1959. The find indicates a much earlier beginning for the line of human ancestry than had been believed.

A considerable proportion of research funds in anthropology is now supplied by the government, in sharp contrast to the pre-World War II period, when anthropological research was almost exclusively financed by philanthropic foundations, museums, and individual sponsors. This trend parallels the tendency in other sciences for research and training programs alike to become increasingly dependent on governmental monies as national policy increasingly emphasizes the importance of science.

Studies in the Culture of Science.—With the dawn of the atomic age and the space age, and the accompanying revolution in automatic communication, control, and calculation, the world has become aware of the importance of scientific and technological innovations for more widespread social change. Although most anthropologists have observed the new era more as laymen than as scientists, a small beginning is being made in the scientific study of science itself. Anthropologists have been professionally interested in two aspects of this study: the interpersonal aspects of interdisciplinary social science team research, and popular attitudes toward science and scientists.[1]

[1] A widespread distrust and even dislike of science and scientists has been revealed by a study of American high school students published in *Science* (Aug. 30 and Dec. 6, 1957; Feb. 14, 1958) by Margaret Mead (American Museum of Natural History) and Rhoda Métraux.

At least in American anthropology, problems of scientific communication are assuming serious dimensions as published and unpublished information accumulates at a constantly accelerating rate. Attempts to solve these problems by the devices of team research, conferences, symposia, and review papers impose an increasingly heavy burden of scientifically unproductive activity (administration, committee work, and the writing of guest papers) on the most creative members of the profession, and tend thereby to stultify research still further. As in other sciences, various plans are constantly being made for rendering scientific material more readily available by redesign of journals and the addition of technical library and bibliographical aids.

The current popularity of social anthropological studies of psychiatric research institutions, such as *The Psychiatric Hospital as a Small Society* (1958) by William Caudill (Yale University), contributes valuable data to the anthropological study of the culture of science, for the institutions under study are almost always research as well as therapeutic and training establishments, and the studies therefore include analyses of scientific activity itself.

(See also ARCHAEOLOGY and the Index entry, *Anthropology.*)

ANTHONY F. C. WALLACE,
Visiting Associate Professor of Anthropology, University of Pennsylvania.

ANTIBIOTICS. See Index entry.
ANTIGUA. See WEST INDIES FEDERATION.
ANTIMONY. See MINERAL PRODUCTION.
ANTITRUST LAWS. See Index entry.
APPLES. See FRUITS.
APRICOTS. See FRUITS.

ARAB LEAGUE. A loose association of 10 Arab states, the Arab League includes the United Arab Republic, Iraq, Jordan, Lebanon, Saudi Arabia, Yemen, Sudan, Libya, Morocco, and Tunisia.

The league was founded on March 22, 1945, in Cairo, where it has its headquarters. Each member state has one vote in the Arab League Council, which may meet in any Arab capital. Abd al-Khaliq Hassouna, the former foreign minister of Egypt, has been secretary general of the league since 1952. The organization's purposes include the strengthening of ties among Arab states and peoples, and the coordination of their political, military, and economic programs. A primary consideration has been the protection of the Arabs of Palestine who have become refugees in various states. The league has sponsored economic cooperation among member states through its Economic Council, directed the economic boycott of Israel, attempted to coordinate oil policies by its Oil Committee, and fostered the establishment of an Arab bank and of Arab educational institutions.

The chief development in 1959 was the open quarrel between Gen. Abdul Karim al-Kassem, prime minister of Iraq, and President Gamal Abdel Nasser of the United Arab Republic (UAR). This break has affected all measures and proposals of the league.

At meetings in Cairo on Jan. 5–14, 1959, the league's Economic Council proposed an Arab common market. The project was bitterly assailed by Iraq, but the Arab Trade Exchange Agreement was amended to provide for a preferential lowering of the tariffs on industrial goods (by 35%) and on agricultural products (by 60%). At the same meetings the league decided to establish an Arab navigation company, with subscription of its capital by the governments and nationals of the 10 member states and of Kuwait, Bahrain, and Qatar. Also, an Arab airline was proposed; and more than 75% of the stock of the Arab Financial Institution for Economic Development was subscribed.

On April 2–7, meetings were held in Beirut, Lebanon, chiefly to settle the rift between Iraq and the UAR over the violent outbreaks in Iraq (Iraq, Jordan, and Tunisia were not represented at the meetings). General al-Kassem had accused the UAR of fomenting attempts to overthrow the Iraqi regime, while President Nasser claimed that they were organized by Communists nurtured by the Iraqi government. The league's Political Committee refused to censure Iraq, but member states were urged to resist Communist influences. United Nations Secretary General Dag Hammarskjöld's plan to give the Palestine refugees jobs in Arab countries was rejected at the Beirut meetings.

The 32d session of the Arab League Council was convened in September in Casablanca, Morocco. Nationalists from Algeria were present as observers, but representatives of Iraq and Tunisia did not attend. The league advocated a continuation of the Arab boycott of Israel; supported the UAR's refusal to permit Israeli shipping in the Suez Canal; and advocated independence for Algeria. A motion to consider revision of the league's charter was referred to a future meeting of ambassadors.

At a meeting in Jidda, seaport city of Saudi Arabia, in October, representatives of the Arab League approved proposals for an Arab-owned, 1,250-mile oil pipeline from Kuwaiti and Saudi Arabian fields to the Mediterranean coast. In April an Arab oil conference in Cairo had suggested the building of such a pipeline; financing remained to be arranged.

(See also AFRICA; MIDDLE EAST; and separate articles on the Arab League countries.)

SYDNEY N. FISHER,
Professor of History, Ohio State University.

ARABIA. This peninsula in southwestern Asia (area, 1,180,280 square miles; estimated population, 13 million) is bounded by the Persian Gulf and the Gulf of Oman on the northeast, the Arabian Sea and the Gulf of Aden on the south, the Red Sea on the southwest, the Gulf of 'Aqaba on the west, and Jordan and Iraq on the north. It comprises the independent Kingdom of Saudi Arabia and the Imamate of Yemen; the remaining states, all under some form of British domination, control, or influence, are the Sultanate of Muscat and Oman, the Colony of Aden, Aden Protectorate (including the Federation of the Arab Amirates of the South), Trucial Oman (Trucial States), and the sheikdoms of Bahrain, Kuwait, and Qatar. Yemen, which formed a loose alliance in 1958 with the United Arab Republic under the name of the United Arab States, has attempted to induce other states of Arabia to join this federal union. (For components of Arabia not discussed in this article, see ADEN, MUSCAT AND OMAN, SAUDI ARABIA, and YEMEN.)

Petroleum Resources.—Arabia contributed in 1958 about 14% of the world's production of crude oil. The proven reserves in the area are estimated at about 110 billion barrels, or over 40% of the world's known reserves. The amount of crude petroleum produced by Arabian countries in 1958 totaled 989,265,503 barrels. Of this total, Kuwait produced 510,775,525 barrels; Saudi Arabia, 370,485,754; Qatar, 63,335,889; the Neutral Zone (between Kuwait and Saudi Arabia), 29,795,315; and Bahrain, 14,873,020. Oil royalties awarded Arabian countries in 1958 amounted to about $785 million.

The Arabian American Oil Company (ARAMCO) holds the concession to exploit the oil resources of Saudi Arabia and its offshore regions. Owned by the Standard Oil Company of California, the Texas Company, the Standard Oil Company of New Jersey, and Socony-Vacuum, ARAMCO also possesses the Trans-Arabian Pipeline Co., which transports a considerable portion of its oil across Arabia to the Mediterranean coast in Lebanon. Standard Oil of California and the Texas Company hold the concession for Bahrain, and the British Petroleum Company and the Gulf Oil Corporation operate jointly in Kuwait. The Iraq Petroleum Company (British, American, French, and Anglo-Dutch interests) owns the concessions for Qatar,

Muscat and Oman, Trucial Oman, and Aden Protectorate. In southern Oman, at Dhofar, Cities Service Petroleum Corporation operates a concession. Oil rights in the Neutral Zone are divided between the Paul Getty Oil Company and the American Independent Oil Company.

The usual split of profits between the producing company and the government of the state was 50–50 until the Japanese Petroleum Trading Company entered in 1957 into an agreement for a 56–44 split in favor of the Saudi Arabian government in the offshore regions of the Neutral Zone. Later, the Standard Oil Company of Indiana agreed to a 75–25 split with Iran in regard to offshore areas on that side of the Persian Gulf. These breaks from the customary division of profits has increased the pressure on the older concessionaires to liberalize their payments. (See also MIDDLE EAST; PETROLEUM.)

Bahrain.—This sheikdom consists of several islands in the Persian Gulf near the coast of Saudi Arabia. The capital, Manama (est. pop., 45,000), is located on the largest island (213 square miles), which gives its name to the entire group. The total population is estimated at 130,000.

The main income is derived from oil, which in 1958 provided revenue of about $15,600,000 from a production of 14,873,111 barrels. Two thirds of this sum was handed over to the public treasury, while the remainder was retained by the ruler, Sheik Sir Salman ibn Hamad al-Khalifa (acceded in 1942) for the private use of the ruling family of over 200 members. By treaty, Great Britain conducts Bahrain's foreign relations and guarantees her protection. Residing in Manama is the British political agent for the Bahrain Islands, as well as the British agent for the entire Persian Gulf region. The ruler maintains consultative councils manned by elected representatives, but there is little democratic government. Although the courts and the law codes have been modernized, the judges are all members of the ruling family.

In 1956, Bahrain suffered labor disturbances and strikes which were terminated by exiling several of the leaders to St. Helena. However, in 1957 the ruler issued a series of ordinances which established a labor code providing for trade unions and the settlement of trade disputes. Compared with most Middle Eastern labor legislation, that of Bahrain is remarkable, and credit is largely due to the British labor advisers.

It is estimated that Bahrain's oil resources may be exhausted in 30 years, and thought already is being given to the future when oil royalties stop. A $7 million pier is being constructed at Manama in hopes that Bahrain may retain her position as a major trading center in the Persian Gulf. Large fresh-water springs in the gulf are to be capped and the water piped ashore for much-needed irrigation.

Kuwait.—This desert sheikdom (area, 6,000 square miles; est. pop., 240,000, of which half is native) lies at the head of the Persian Gulf, between Saudi Arabia and Iraq. Kuwait is ruled by Sheik Sir Abdallah al-Salim al-Sabbah (acceded in 1950), who is advised by an 11-man council composed of members of the al-Sabbah family. The army and police are headed by Sheik Abdullah al-Mubarak al-Sabbah, but the protection of the state rests in the hands of the British under a treaty concluded some 60 years ago. The British agent in Kuwait controls the foreign affairs of the state.

The importance of Kuwait depends on the 60 billion barrels of proven oil reserves beneath the desert sands. The Kuwait Oil Company (KOC), jointly owned by the British Petroleum Company and Gulf Oil Corporation, holds the concession for the mainland, and the Japanese-owned Arabian Oil Company has rights for offshore developments in the Neutral Zone. In 1958, KOC developed 38 new wells, and United States firms in the Neutral Zone drilled 47 more wells, making a total of 103 producing wells there. The Japanese are bringing in a drilling platform and have established two camps (one in Kuwait and one in Saudi Arabia) to further oil exploration. The Japanese contract calls for a 57–43 split in favor of Kuwait, which shares in the profits from all operations, including sales to the final consumer. In 1958, Kuwait exported 465 million barrels of crude oil, with the United States taking 15.9%; the United Kingdom, 28.7%, and France, 12.2%. Refinery output was over 43 million barrels, and in 1959 premium gasoline was produced for the first time. In 1958, oil taxes and royalties amounted to $415 million.

Since Kuwait is included within the sterling bloc, KOC earnings and Kuwait's income constitute an important source of hard currency for the British—estimated at 10% of the British earnings of dollars. In spite of the ruler's determined effort to spend, Kuwait's revenues in 1958 far exceeded estimated expenditures of £90–100 million. Economic activity, development, and expansion were in evidence in every field in 1959. One of the chief projects in 1959 was the completion of the first phase in developing the new Port of Kuwait to alleviate congestion and lessen the time ships remain in the harbor. Another smaller harbor is being dredged by the American firm Pomeroy-Hawaiian Dredging Co.

Disorders in Iraq in 1959 had their repercussions in Kuwait, and in February the sheik stopped demonstrations in support of President Nasser and the United Arab Republic. Most of the foreigners in Kuwait are Arabs, 40,000 of whom are Iraqis. Many of the schoolteachers are Egyptian and others are Palestinian in origin. There is a small undercover Communist group which might attempt to seize power should Communists take over in Iraq, but most Arab nationalists in Kuwait rely on British power to protect them from such a move. Because of the wealth of the state, there is little poverty.

Qatar.—This sheikdom, ruled by Sheik Ali ibn Abdullah ibn Qasim al-Thani, comprises a barren peninsula on the Persian Gulf with an area of 8,000 square miles and an estimated population of 35,000. The capital, Doha (pop., 20,000), is the residence of the British political agent, who operates under a treaty which provides for a perpetual truce with Great Britain. The state had little significance until its oil resources were recently developed by a subsidiary of the Iraq Petroleum Company, which held a concession for the mainland, and by the Overseas Exploration Company of the Shell Oil group. The center of the oilfield is at Dukhan, about 60 miles from Doha. On April 16–23, 1959, at a meeting in Cairo of oil experts from seven Arab countries and Kuwait and Qatar, suggestions were presented for the building of a $600 million pipeline from Qatar to Lebanon. At the present time Qatar oil is loaded on tankers at Umm Said, a deep-sea port 19 miles south of Doha. The sheikdom is largely undeveloped, with only 175 miles of roads for vehicles. In 1958 the sheik received over $60 million in taxes and royalties from the oil companies. He purchased a villa at Geneva, Switzerland, in 1959 and indicated that he intended to spend much of his time there.

Trucial Oman or **Trucial States.**—This territory, which extends along the coast of Arabia for about 400 miles from the Qatar Peninsula south to the Sultanate of Muscat and Oman, is named from the treaties or truces concluded in the 19th century with Great Britain. Its seven sheikdoms comprise an area of about 6,000 square miles and contain a total population estimated at about 115,000; they are Abu Dhabi, Dibai (or Dubai), Sharjah and Kalba, Ajman, Umm al-Qaiwain, Ras al-Khaimah, and Fujairah. Dibai is the chief port. The British political agent lives in Sharjah, where a detachment of the Royal Air Force is stationed.

The sheikdoms are hardly more than coastal towns with a desert hinterland on the peninsula jutting out to the Strait of Hormuz and separating the Persian Gulf and the Gulf of Oman. A subsidiary of the Iraq Petroleum Company holds a concession for oil in Abu Dhabi, where a preliminary strike was made in 1954. Offshore rights are held by Abu Dhabi Marine Areas, Ltd., which is controlled by the British Petroleum Company. The British continue to hold the Buraimi Oasis, a disputed territory where six out of eight villages have been assigned to the sheikdom of Abu Dhabi. Connected with this claim is a large area (30,000 square miles) of desert containing perhaps 10,000 inhabitants. Oil resources may exist there, but control over Buraimi was presumably taken in connection with the British subjection of the imam of Oman.

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ARCHAEOLOGY. Highlights of world archaeological research are summarized below in two sections: (1) Western Hemisphere; and (2) Eastern Hemisphere. For related information, see ANTHROPOLOGY and the Index entry, *Archaeology.*

WESTERN HEMISPHERE

The extent of archaeological fieldwork in the Western Hemisphere continued its rapid expansion in 1959. Of the work undertaken during the year, some of the more important long-range programs will be summarized here; readers interested in further detail are referred to the excellent summaries in the "News and Notes" section of the quarterly journal, *American Antiquity,* published for the Society for American Archaeology by the University of Utah Press, Salt Lake City.

United States.—One particularly important development was the creation of the Branch of Archeology in Washington, D.C., as part of the Division of Interpretation of the National Park Service of the Department of Interior. Although the National Park Service throughout its history has shown an interest in archaeology, too often the basic research required to understand the history of the

AMERIND FOUNDATION, DRAGOON, ARIZONA

Aerial view of excavations at Casas Grandes, Chihuahua, Mexico, shows: *A*, multistoried secular buildings; *B*, temple mound structures; *C*, ball court with platform for spectators; *D*, pyramid composed of rubble; and *E*, circular mound.

site was forced to be secondary to other interests in the service. Now, with the new branch, the role of archaeology in all areas administered by the National Park Service can be assessed properly at the planning and policymaking stages.

An example of the type of work undertaken by this office is the Wetherill Mesa Project of Mesa Verde National Park, where archaeologists with the assistance of a research grant from the National Geographic Society (q.v.), are excavating and stabilizing sites on top of the mesa. Besides adding immensely to our scientific knowledge of the area, these newly opened areas will take the annual pressure of tens of thousands of tourists out of the narrow canyons and distribute them more evenly throughout the park. The wear and tear on many of these magnificent pueblo structures recently has caused the National Park Service to close many ruins.

An interdisciplinary research program is now under way at the University of Arizona as a result

Dr. Louis S. B. Leakey compares cast of 700,000-year-old skull fragment (right) found in Tanganyika, with that of Peking Man. The African fossil, oldest known evidence of tool-making man, was one of the major discoveries of 1959.

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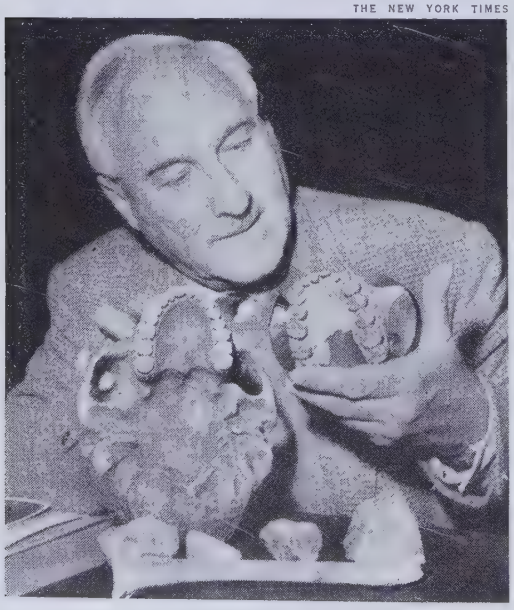

of financing by the Rockefeller Foundation of a long-term project to study the utilization of arid lands. The research includes geohydrology, geochronology, climatology, biology, and archaeology. The archaeological work will include the study of aboriginal agricultural practices (particularly in the prehistoric Southwest), of changing human adaptations to changing climates in arid regions, and of the long-term effects, both environmental and social, of human occupation of arid areas.

The newest long-term, privately financed research program in the United States has been opened ten miles south of Taos, New Mexico. It is known as the Fort Burgwin Research Center, an affiliate of the Wichita Foundation, Inc. Although it will be dedicated to the development of the scientific and cultural programs of northern New Mexico, its chief work will be with archaeological problems. The center is housed in the reconstructed buildings of old Cantonment Burgwin, a pre-Civil War Army post built in 1852 and abandoned in 1860. To date, the archaeologists have excavated the long-forgotten buildings of the cantonment and conducted a survey of the prehistoric sites of the region. From this data a long-range archaeological research program has been formulated by the center and will be conducted in cooperation with the Museum of New Mexico.

Middle America.—The most outstanding new large-scale archaeological project now under way in the Western Hemisphere is the Joint Casas Grandes Expedition of the Amerind Foundation of Dragoon, Ariz., and the Instituto Nacional de Antropologia e Historia of Mexico. Working at the famous site of Casas Grandes in the Municipio of Casas Grandes in northwestern Chihuahua, Mexico, the Amerind Foundation is responsible for financing and directing the excavations for a three-year period, as well as for the final publication of reports; and the Instituto is in charge of the consolidation and preservation of the ruin as a national monument of Mexico.

To date, only a small portion of the site has been excavated, but sufficient information has been uncovered to demonstrate that this site is not, as once thought, a southern extension of the Anasazi culture (popularly known as the Basket Maker and Pueblo cultures) of the Southwest. Instead, the site shows strong Meso-American influence from the south in such things as temple mounds, plazas and ceremonial structures, ball courts, etc. The site was an important trade center, for in one room alone the excavators found two million *Nassa* shells, 10,000 *Conus* shells, *Strombus* and other varieties, as well as partially complete and finished shell ornaments. Apparently, the inhabitants of Casas Grandes were carrying on an extensive trade in shell and salt with the aboriginal people living around the Gulf of California, and specialists at Casas Grandes were manufacturing jewelry for general sale or trade.

The main section of the ruins covers a rectangle some 700 meters along a north-south axis and 1,300 meters along an east-west axis, or roughly 237 acres. The western half was apparently reserved for ceremonial structures, while the eastern half accommodated the multistoried living structures. A canal three meters wide and one meter deep had been excavated by the inhabitants to bring water three miles from a warm spring to the living area of the site. As work continues over the next two years, excavations will uncover many new and important things and serve to give a better understanding of the Meso-American influences on the Southwest in pre-Spanish times.

All of the large, stone, helmeted heads of the Olmec culture from the La Venta and San Lorenzo

AUTHENTICATED NEWS; HARVARD UNIVERSITY

(*Above*) An eight-foot bronze of Athena, believed to date from the 5th century B.C., was among classical sculptures unearthed on July 18 from a 2,000-year-old warehouse in Piraeus, Greece. (*Right*) Stone Age craftsmen carved this limestone Venus, found in southern France, about 22,000 years ago. The bas-relief was cut in a block nine inches long.

areas in southern Mexico have now been brought out of the jungle to museums in Villahermosa, Tabasco, and Jalapa, Veracruz.

Financed privately, but under the scientific direction of the Department of Anthropology of the University of California at Los Angeles, archaeological excavations were made in 1959 at one of the largest sites of western Mexico, just north of the village of Amapa, near Santiago Ixcuintla, Nayarit. The site covers an area of at least one square mile and consists of a large number of mounds of various sizes, many systematically grouped around a plaza. Seven thousand intact vessels were encountered in the work. The site is largely post-Classic in time, with many Mazapan-like figurines and copper artifacts. It is closely related to the nearby site of Peñitas.

South America.—In Peru, the Fulbright program of international education enters the last year of its archaeological program with field parties working in valleys along the coast where flood control projects will destroy archaeological sites. A roundup and evaluation study of the findings is in preparation as a preliminary report on the larger monographs to be published later. On the extreme northern end of the Peruvian coast, from Lambayeque to Piura, the American Museum of Natural History had a field party conducting excavations and surveys for the past year. Although it was hoped that links would be found with the Formative period cultures recently defined for coastal Ecuador, the majority of the sites were of a later time, from the Chimu period to the Spanish occupation.

In Brazil, most of the recent work has been on shell middens (refuse heaps) in the state of Paraná under the auspices of the Centro de Ensino e Pesquizas Arqueológicas of the Universidade do Paraná in Curitiba. The Museu Nacional of Rio de Janeiro is also starting an intense survey and excavation of shell middens from Rio de Janeiro southward. These shell middens do not belong to a single culture, as was once supposed, but are rather the result of the refuse accumulated over a long period of time by several groups.

Further work is being conducted on Easter Island by the Universidad de Chile and by visiting professors under the sponsorship of the Fulbright Commission. With the possibility that this island will soon become a tourist resort and that construction of an airfield and resort hotel will destroy some archaeological evidence, salvage archaeology will be conducted in advance of the construction and efforts made to stabilize some of the monuments to prevent their destruction by visitors.

Obsidian Dating.—For several years a research project has been carried out by a number of geologists of the U.S. Geological Survey with the cooperation of archaeologists, especially at the Smithsonian Institution, on a new method of dating. The surface of obsidian (a volcanic glass) is altered as a result of its ability to adsorb water from the atmosphere. Temperature, rather than humidity is the main factor controlling the speed of adsorption. The layer of hydration can be measured by cutting a thin section, examining it under a microscope, and measuring the thickness of the layer in microns. Hydration is most rapid in hot tropical climates and slowest in the Arctic. By measuring artifacts of known archaeological age, rates of hydration have been established for different climatic areas. To date, the work is still highly experimental, most of the samples tested having come from the Western Hemisphere, but the results are highly encouraging. If the hydration layer of obsidian proves to be useful for dating, another means of determining "absolute" dates of archaeological materials will join the ranks of dendrochronology and carbon-14 as important tools of the archaeologist in reconstructing man's history throughout the world.

CLIFFORD EVANS,
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EASTERN HEMISPHERE

Europe, the Mediterranean area, and southwestern Asia again figured most prominently in the Eastern Hemisphere's archaeological news during the past year. Exceptions were the notable finds of human paleontological remains in China and Africa. A summary of the year's representative events by continents follows.

Europe.—Perhaps the most outstanding discoveries of the year were made in the Mediterranean area in the field of classical archaeology. A number of the finds were accidentally uncovered in the course of urban construction. Such an instance oc-

curred in Piraeus, in Greece, where archaeologists hailed the recovery of outstanding works of sculpture. These were found in the remains of a 2,000-year-old warehouse believed to have been abandoned after a fire during the time Athens was sacked by the Romans in 86 B.C. Prof. Ioannis Papadimitriou, Greek director of antiquities, reported that one of the bronze statues ranked in importance with the great sculpture, *Charioteer of Delphi.*

In the National Museum of Athens was found an extremely complex 2,000-year-old computing machine, believed to have been used to compute planetary orbits as early as 65 B.C. In the course of Greek archaeological excavations at Brauron, on the Attica coast near Athens, a masterpiece of sculpture representing Artemis and her relatives was recovered.

In Italy, the urban expansion of Rome has resulted in several finds in classical archaeology. Excavations in the Vatican area by Italian archaeologists have uncovered ruins identified as the remains of Nero's imperial palace and grounds. Part of Imperial Rome's second largest stadium, the "Variano" Circus, second only to the Colosseum, was discovered in the course of work on a new subway. The remains of the Emperor Heliogabalus' arena, which marked an extravagant period in the decline of Rome in the 3d century, was found between the Palatine and the Aventine hills.

Outside of Rome, an early Christian catacomb was uncovered near the old basilica and abbey of St. Paul Outside the Walls, containing well-preserved tombs and frescoed walls. Skin-diving archaeologists are recovering antiquities on the Tyrrhenian coast, including Etruscan remains dating from about 500 B.C. Skin-divers are also at work off the coast of southeastern Sicily, near Syracuse.

In Britain, a well-preserved mosaic and a fine bronze were found at the Roman site of Verulamium (now St. Albans). The Ministry of Works uncovered the foundations of Nonsuch Palace, built for Henry VIII in 1538 at Ewell in Surrey. The relics of the Roman legion which had been engulfed by local tribesmen about 109 A.D. are being traced at York (ancient Eboracum).

In southern France, the skull of a Cro-Magnon girl found by the University of Harvard expedition under Dr. Hallam Movius, Jr., was found to be about 21,000 years old when dated by the carbon-14 method. A rock carving of Venus, discovered by the same expedition in 1958, was estimated to be about 22,000 years old. A later report disclosed that a French mission had found another Venus, a statuette, near Le Moustier in the Dordogne area.

In Spain, construction work on a U.S. Navy airbase near Rota has unearthed Phoenician tombs about 3,000 years old. A golden treasure of personal adornments was accidentally uncovered near Seville. The treasure supposedly belongs to the Tartessian culture, dating about 550 B.C., between the Bronze and Iron ages.

One of the largest Roman cities outside of Italy was discovered near Xanten, in Germany. It is the remains of Ulpia Traiana, which had a population of 30,000 in 200 A.D. and was a kind of "poor man's Pompeii," having a similar plan and layout. It is being excavated by German archaeologists.

Near Pecs, in southern Hungary, archaeologists have established that a Negroid race of high culture had monumental structures with painted walls about 6,000 years ago. The paintings showed Negroid men hunting tigers, an animal never present in Hungary. This culture seems to show strong connections with Mesopotamia and possibly with the Biblical story of the Flood.

Africa.—Dr. Louis S. B. Leakey, of the Coryndon Museum of Natural History, Nairobi, Kenya, announced the sensational discovery in Olduvai Gorge, Tanganyika, of the fossilized skull of the oldest tool-making man yet known. At least 700,000 years old, the emergent man is believed to be related to *Australopithecus* and has been nicknamed the "Nutcracker Man."

To the north, leading archaeologists under the auspices of UNESCO met in Egypt to ponder ways and means of salvaging the monumental Egyptian structures which will be flooded when the Aswân High Dam is built. The most important antiquity threatened is the temple of Abu Simbel. Also in Egypt, near Giza, excavations were carried out at Abu Rowash by a Dutch archaeological mission. Reported were the discovery of 200 catacombs dating from the Old and Middle kingdoms. A masterpiece of Egyptian architecture was disclosed at Buhen in the Sudan, where a huge fortress was excavated by Prof. Walter B. Emory of the Egypt Exploration Society.

Tunisian archaeologists are examining the ruins of a 4th-century city discovered in the course of pipeline construction south of Tunis—another example of archaeological salvage work.

Asia.—The elements lent a hand to the combined expedition of Harvard and Cornell universities in their work at Sardis, in Turkey. Landslides following winter floods revealed treasures covering 3,000 years of history on the site of Lydia, city of King Croesus. Under the remains of what the team described as "an imposing Roman mausoleum," which had earlier been an ancient Greek burial chamber, diggers found wall fragments identified as belonging to Lydia. Also found in the area were two Roman statues and a "shopping center" of the late Roman and early Byzantine eras, with evidence that one of the shops had later been converted to a Christian chapel.

The work of several foreign archaeological expeditions in Iraq was temporarily postponed. Farther to the south in Bahrein, in the Persian Gulf area, Danish archaeologists discovered the remains of what they believe to have been Dilmun, an ancient city-state which, according to legend, was the home of Noah, and which flourished 4,000 to 5,000 years ago.

A British expedition under Sir Mortimer Wheeler of the London Institute of Archaeology was invited by the Pakistan government to undertake excavations at the site of Charsadda, near Peshawar. Fifty-two successive layers were outlined in this city, which fell to Alexander the Great in 327 B.C.

In Israel, the James A. de Rothschild–Hebrew University expedition under Dr. Yigael Yadin discovered evidence which established that Joshua had conquered Hazor in the 13th century B.C., confirming the Biblical account. Israeli archaeologists also uncovered a Phoenician sanctuary about 2,400 years old, overlooking the Plain of Sharon near Tel Aviv. It had a long and uninterrupted history from the Early Bronze age to Hellenistic times. In southern Israel, in the Negev desert, a 2,000-year-old farm was rebuilt and repopulated with Israeli Bedouins as part of an experimental settlement project. This imaginative scheme to wrest a livelihood from the desert is an effort to emulate the Nabataeans, who once were masters of desert agriculture there.

In Jordan, government archaeologists uncovered the head of a statue of Astarte, the ancient goddess of fertility, in a 4,700-year-old tomb. She

was known as the moon goddess to the Canaanites, Phoenicians, Babylonians, Assyrians, and Carthaginians. At Gibeon, a University of Pennsylvania expedition under Dr. James B. Pritchard unearthed a large and long-sought wine cellar about 2,600 years old. This ancient wine industry of Gibeon came to an end about 600 B.C. when King Nebuchadnezzar carried away the people of Judah to Babylon as exiles.

In China, Communist scientists announced the discovery of the well-preserved lower jaw of a Peking woman, who lived about half a million years ago. It was found by archaeologists of the Institute of Vertebrate Paleontology of the Chinese Academy of Sciences in a cave at Choukoutien, near Peking, where the first fossils were found in the 1920's. Also in China, some of the finest ancient Chinese art treasures were uncovered at the site of the huge Sanmen Gorge Reservoir on the Yellow River. According to the team of government archaeologists, the materials suggest that the Lungshan culture found there was directly descended from the Yang-shao culture, contrary to earlier theories.

In Sarawak, Borneo, Tom Harrison of the Sarawak Museum reported exciting new discoveries from the great cave at Niah. Stratified materials ranged in date from 50,000 B.C. to the Recent period. Crudely painted "ships of the dead" were found in other newly discovered caves.

New dates for Polynesian history were obtained by the American Museum of Natural History's archaeological expedition to the Marquesas Islands in 1959. The expedition director, Dr. Harry L. Shapiro, reported discoveries from the 2d century B.C. that established an earlier date for the settlement of Polynesia than had been thought.

Darwin Centennial.—The Darwin Centennial in honor of the 100th anniversary of the publication of Charles Darwin's *The Origin of Species* was celebrated in Chicago in November 1959. (See also ANTHROPOLOGY; GENETICS.) It was attended by many experts who discussed the effects of Darwin's theory of evolution on the study of life, man, and the mind.

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ARCHERY. See SPORTS, GAMES, AND SHOWS.

ARCHITECTURE. In the year of the death of Frank Lloyd Wright (q.v.), the world was a long way from achieving the "organic" architecture toward which he had looked. Modern architecture, not yet accepted in some quarters, was regarded in others as already obsolete. The new State Office Building in Louisville, Ky., for instance, was to be built in a style described by its architect as "governmental Georgian" because it was feared that a contemporary building might not be acceptable; but elsewhere the contemporary curtain wall, a very recent innovation, had been used with such frequency that it was, by 1959, regarded in some quarters as rather old-fashioned, and an article called it "one of the most irritating eyesores on the U.S. scene."

A major contributor to the rapidly changing point of view was certainly the unprecedented amount of new building all over the world, as well as the giant scale of many of the projects architects are being called on to design. The volume of building presents the chance to experiment, but introduces as well a powerful compulsion toward change, toward new forms for their own sake, as well as forcing a serious search for methods of bringing order to whole areas and even to entire cities which are being newly built. This search has often resulted in special attention to structure —exposed, dramatized, even exaggerated.

Scale.—It was becoming apparent during 1959 that in many places the whole environment was being rebuilt (as in New York, where the curtain wall was transforming midtown Manhattan) or being newly built (as in suburbs everywhere). Meanwhile the federal highway program (see HIGHWAYS) was making profound changes, often as poorly integrated with urban buildings as in San Francisco, where the Board of Supervisors, acting to save the city's compact downtown area, actually stopped construction of freeways planned by state highway engineers.

With the environment changing so rapidly, it is not surprising that there was great interest in projects large enough to control the whole environment. Business campuses in the country, for example, like that for the International Minerals and Chemicals Corporation in Skokie, Ill., by Perkins and Will, and the Monsanto Chemical Company's office campus in St. Louis, Mo., by Vincent Kling, attracted attention. So did such college campuses as that of Concordia Senior College in Fort Wayne, Ind., by Eero Saarinen and Associates, and such facilities as the Central Service Facility of the Washington Water Power Company (on a 28-acre riverside site in Spokane), whose architects were Kenneth W. Brooks and Bruce M. Walker.

Abroad, whole new cities were in the making. Brazil's new capital, Brasília, being readied for occupancy, was notable for the boldness of architect Lúcio Costa's ten-mile-long, crescent-shaped plan, as well as for the dramatic flair of its public buildings, all by Oscar Niemeyer, from the presidential palace held aloft on light fantastic concrete wings to the uncompromisingly rigid block of a large hotel.

Progressive Architecture magazine's first award-winner for the year was also in the field of urban design—a project by Wurster, Bernardi, and Emmons, Edward Larrabee Barnes, and De Mars and Reay for Capitol Towers, Sacramento, Calif.

Structure.—For the effect it had on architects' imaginations, the most influential material in 1959 was concrete. On thin shells, like the sail-shaped roofs of Joern Utzon's winning design for the Sydney Opera House in Australia, or on the soaring undulations covering Félix Candela's Los Manantiales Restaurant at Xochimilco, Mexico, increasing attention was given to detailing, to demonstrate the shells' lightness and to make them seem to float. Pier Luigi Nervi's circular sports palace in Rome (one of three stadiums which he has designed for the 1960 Olympics), which will seat 16,000 people, uses concrete over vast spans. Skidmore, Owings and Merrill, given the job of developing an American building for the Banque Lambert on a major boulevard in Brussels, Belgium, but wishing to avoid too glassy a look among monumental buildings, created outside the glass walls a structural skeleton of precast pieces of concrete joined at the center of each story so as not to disturb the continuity of beam and column at each floor level.

The development of precasting and prestressing techniques encouraged architects to think of concrete as a precision material available in separate pieces capable of being accurately fitted together. Louis I. Kahn's recent work, especially his Medical Research Laboratory at the University of Pennsylvania, is noteworthy for the particular care given to the detailing of heavy concrete members so carefully dimensioned and finished that they fit together as neatly as the wooden pieces on a traditional Japanese house.

Not surprisingly, similar interests have resulted in a series of important new concrete buildings in Japan. Kenzo Tange's Kagawa Prefectural Office is an especially successful example. The dramatization of large pieces of concrete fitted together has also absorbed Le Corbusier, whose National Museum of Western Art in Ueno Park, Tokyo, has paralleled and influenced the Japanese examples. Another Le Corbusier work, a Dominican monastery near Lyon in France, is heavily concrete and rectilinear and bears far more resemblance to his Tokyo museum than to the curvilinear forms of his famed chapel, Notre Dame du Haut, at Ronchamp.

New Forms.—A striking characteristic of the architectural magazines and of many of their subscribers during the year was a constant search for newness. The work of some of the influential younger men was called the New Sensualism. New Brutalism was another term used to identify some recent work; and a "new solidity," a "new . . . immediacy of image," "new action," "the new radical architecture," "a new topology," "a new tradition," and even "the new modern" were appellations invoked. Some recent work of modern architects in Italy, with a surprising degree of recall of the forms of the turn of the century, was labelled "neo-Liberty." Even "neo-classic" and "neo-Palladian" applied to a modern building, which would have been fighting words a few years earlier, were used without apparent malice to describe the works of Philip Johnson. His newest projects, forsaking the disciplined regularity of New York City's Seagram Building, which he designed with Ludwig Mies van der Rohe, made frequent use of forms which curved smoothly into one another.

Johnson's projected colonnade in the Lincoln Center for the Performing Arts in New York was a work of fantasy with the mood of a stage set. The same sort of fantasy appeared in the domed pavilions of Minoru Yamasaki's projected additions to the Detroit Museum of Art, and in designs by The Architects' Collaborative (Walter Gropius and associates) for Iraq's University of Baghdad. Even Paul Rudolph's laboratory for the School of Forestry at Yale University, with tree-shaped roof supports, was described by the *Architectural Forum* as having curves reminiscent of Art Nouveau.

There was increasing frankness among some younger architects about such reminiscences. There was apparent, too, an increasing willfulness in the creation or exaggeration of forms for visual effect, as in Paul Rudolph's Jewett Arts Center at Wellesley College, a contemporary building on a Gothic campus, whose sunshades, for dramatic effect, extend past the walls they protect, and whose high skylights are introduced partly to make the building's silhouette relate to the spiky Gothic forms nearby. Another example, Italian architect Gio Ponti's new building in Stockholm for the Italian Swedish Institute, is described as Italian on the inside and Swedish on the outside. This all seemed in strong contrast to Frank Lloyd Wright's idea of style, expressed by architect Louis I. Kahn on Wright's death: "Wright gives insight to learn that nature has no style, that nature is the greatest teacher of all. The ideas of Wright are the facets of this single thought."

ERNEST BRAUN

Two views of the Dunbar Carpenter residence at Medford, Oreg., which won an award of merit in the 1959 competition for outstanding architecture staged by The American Institute of Architects. The architect of this winning entry, one of three selected by the jury, was George T. Rockrise of San Francisco.

Residences.—Residential design, too, was characterized in 1959 by vast volume and by a wide variety of forms. Emphasis in the publications fell on large and elaborate houses like the concrete framed F. A. Deering house on Casey Key, Florida, by Paul Rudolph. The house is rectangular outside, but inside its ten rooms are arranged on five different levels overlooking the water. The Miller house in Chappaqua, N.Y., by Edward Larrabee Barnes, achieves equal opulence with different forms, under gables filled with colored glass.

A.I.A. Awards.—Three of the American Institute of Architects' five First Honor Awards for 1959 went to buildings and groups of buildings designed on a scale large enough to control the whole environment: the Concordia Senior College campus and the Washington Water Power facility, both mentioned above, and the May–D & F Department Store of the Zeckendorf Plaza Development in Denver, Colo., by I. M. Pei and Associates, Architects. The two smaller buildings which received awards are notable for their elegance. They are the McGregor Memorial Community Conference Center at Wayne University in Detroit, Mich., by Minoru Yamasaki and Associates, and the Diaz-Simon Pediatric Clinic, on a narrow lot in New Orleans, La., whose architects were Colbert and Lowery and Associates.

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ARCHIVES, National. See NATIONAL ARCHIVES AND RECORDS SERVICE.

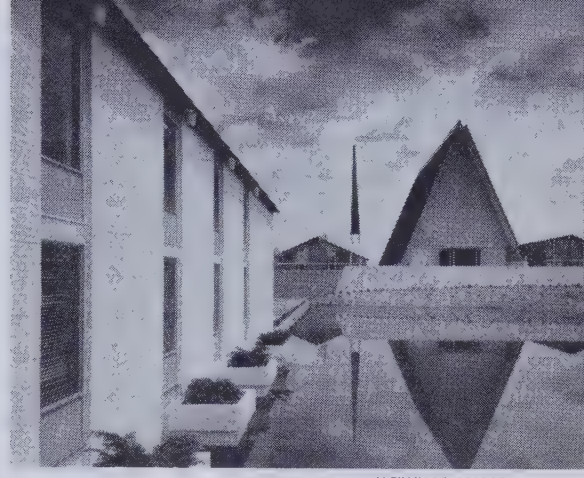
ARCTIC EXPLORATION. The International Geophysical Year, 1957–58, gave tremendous impetus to polar scientific research, and under the continuation of the IGY (now called International Geophysical Cooperation—1959, or IGC) many of these activities were continued in 1959. It appears that some of these investigations are becoming almost permanent in nature. The investigations of stratospheric physics, especially ozone content, were continued at several North American Arctic weather stations, as were measurements of short-wave (solar) radiation and long-wave (terrestrial and cloud) radiation at Alaskan and northern Canadian stations.

The Arctic Institute of North America in 1959 supported 28 Arctic research projects, involving about 60 field workers, scattered from Point Barrow on the northern coast of Alaska through the Canadian Archipelago to the mountains of Labrador, where a small party studied effects of glaciation on the coastal landscape. Another party spent the summer in the Belcher Islands of Hudson's Bay, investigating both the marine life and the breeding habits of ducks. At the Arctic Research Laboratory, Point Barrow, long-term studies of the physics of permanently frozen ground were continued in 1959, as well as investigations of geology, soil, and vegetation characteristics. Lake temperatures and oxygen amounts were measured in lakes north of the Brooks Range, as well as lake ice strength and melting.

Glaciology.—In southern Alaska and in the Olympic Mountains of the State of Washington, IGY studies of the mass (snow and ice) budget of maritime glaciers were continued in 1959, in order to learn more about the meteorological factors important in the snow accumulation and melting. Similar studies, in higher latitudes, were undertaken on the Gilman Glacier in northern Ellesmere Island. The Canadian station there, at Lake Hazen, was open during the summer of 1959 for further glaciological and botanical studies. North of the mountain range which shelters Lake Hazen from the Arctic Ocean, another expedition worked on the coastal ice shelf of northern Ellesmere Island. This party consisted of American and Canadian scientists, who studied the meteorology and ice characteristics during the summer (melting) season. It is from this ice shelf that large pieces have broken off to form the so-called "ice islands" which drift in the Arctic Ocean surrounded by the polar sea pack ice.

A small Canadian party of four members spent the latter part of the 1959 summer on Axel Heiberg Island, at latitude approximately 80°N., preparing for a larger expedition in 1960. The main objects of this research will be the study of the glaciology and meteorology of the central and northern parts of the island, as well as geology and permafrost.

The Greenland icecap is still being investigated, mainly in its northern parts. The U.S. Army Corps of Engineers continued its investigations near Thule of the conditions of surface living and travel over large distances, and its examination of ice movement and physical characteristics, both from the surface and under the edge of the icecap. A two-year international expedition in Greenland, consisting of Swiss, German, Austrian, Danish, and French members, under the direction of Paul Émile Victor, was established in 1959 on the site near Station Central which was occupied by a large French expedition in 1949–51. The expedition will continue the survey of the central icecap and the attempt to establish, by depth soundings,



ALEXANDRE GEORGES

Concordia Senior College, Fort Wayne, Ind., won a first honor award of The American Institute of Architects in 1959. Triangular-shaped chapel dominates this view of the campus, designed by Eero Saarinen & Associates, of Michigan.

whether Greenland is a single large island or a group of islands overlaid by ice.

Arctic Ocean.—The polar basin has reached the forefront of scientific interest. With long-distance flying and the employment of submarines in oceanographic research planned for the near future, a much more detailed knowledge of atmospheric and oceanographic conditions is imperative. Such information is now being collected. The United States, as before and during the IGY, maintains occupied research stations on floating ice islands, as well as on the drifting polar pack ice itself. In 1959 the scientific station on ice island T-3 was in full operation, with American and Canadian scientists doing research in meteorology of the high layers of the polar atmosphere, as well as the air layer close to the ice, and also in ice melting, depth of the ocean, and temperature and density of the sea water. A new United States ice floe station, C, was established on June 5, 1959, to replace the former Station A, set up in 1957 and abandoned in November 1958 after drifting toward the North Pole and splitting. Until January 1960, when this station, too, had to be abandoned, scientists continued investigations of sea ice physics, marine biology, sea water salinity, depth of the ocean, topography of the bottom, and the exchange of heat—through ice of some 10 feet in thickness—between the Arctic Ocean waters (with a temperature of +32°F.) and the atmosphere (which in winter drops to −58°F.).

The United States nuclear submarine *Skate*,

Crewmen obtain ice samples for testing during Arctic surfacing of nuclear submarine U.S.S. *Skate* in March 1959.

U.S. NAVY

during a trip to the region in March 1959, made depth soundings of the earth's floor and undertook studies of the varying thickness (or "profile") of the ice. In the course of the trip the *Skate* set a record by remaining under the ice for 12 days and logging 3,090 miles. (See also NAVY, U.S.)

The USSR also continued in 1959 to operate ice floe stations in the Arctic, as it has for the past decade. The Soviet news agency Tass reported, however, that on September 14 a scientific group had abandoned the ice floe (Station SP6) on which it had drifted, near the North Pole, for three and one half years.

In the Svalbard Archipelago the Norwegian Polar Institute continued the long-term scientific investigation into geology, glaciology, zoology, and surveying in which that institute has been engaged since its foundation in 1948.

(See also GEOGRAPHY AND EXPLORATION; INTERNATIONAL GEOPHYSICAL YEAR; METEOROLOGY AND CLIMATOLOGY.)

SVENN ORVIG,
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ARGENTINA. A wedge-shaped land pointed toward the Antarctic, Argentina is bounded on the west by Chile, on the north by Bolivia and Paraguay, on the northeast by Brazil and Uruguay, and on the southeast by the Atlantic Ocean. Its 1,072,745 square miles extend 2,300 miles from north to south and, at the widest point, 1,000 miles from east to west; but the country is best known for the fertile plains, the pampas, which fan out in an 800-mile radius from the capital city of Buenos Aires. Over one fourth of Argentina's 20,438,000 inhabitants (est., Dec. 31, 1958) live in the metropolitan area of Buenos Aires, with 3,703,400 (est., mid-1957) in the city itself. Next in size (est. 1954) are Rosario (616,718) and Córdoba (510,739). Spanish is the language of the people, 81% of whom are native born, 16% European by birth, and only 3% of Indian or other origin.

Government.—Argentina is a federal republic of 23 provinces (1 unconstituted), and a federal district. The executive branch of the national government is headed by President Arturo Frondizi, who began his 6-year term on May 1, 1958. Legislative power is vested in a 46-member Senate, in which the provinces and the federal district are each represented by 2 senators, and a 187-member Chamber of Deputies, where representation is proportional to population. The judiciary is composed of a Supreme Court, 5 appeal courts, and the usual minor courts.

Religion and Education.—Most Argentinians profess the state-supported Roman Catholic religion, and both the president and vice president must be of that faith. Those of other beliefs have complete freedom of worship.

The rate of literacy is very high, for education is both free and compulsory for all children between the ages of 6 and 14. As of 1954, there were 16,189 primary and 459 secondary schools with, respectively, 109,669 and 15,948 teachers to care for the 2,565,164 and 102,742 pupils. There are also technical and normal schools, in addition to 7 national universities.

Finance.—The year 1959 began with an austerity program designed to cut deficits in government operations, halt inflation, and restore economic and financial stability. The official rate of exchange of 18 pesos = U.S.$1 was replaced by a fluctuating rate to be determined by supply and demand, and when free trading began on January 12, the peso opened at 64 to the dollar. Immediate results were a rise in the cost-of-living index (1953 = 100), from 324 in January to 497 in July; an increase in currency in circulation, from 71,352.4 million pesos on Dec. 31, 1958, to 87,210.1 million on July 15, 1959; and, on June 2, a fall in the value of the peso to an all-time low of 107 to the dollar. The middle of the year seemed, however, to mark a turning point, for between June 30 and August 31 the Central Bank's gold and foreign currency holdings rose from 7,470.4 million pesos to 12,234.6 million. By September 15, currency in circulation had decreased to 82,933 million pesos, while the exchange rate was up to 83 pesos to the dollar. Nontheless, Minister of Economy Alvaro C. Alsogaray reported that the domestic public debt totaled 116,488 million pesos, to which should be added provincial (7,618 million) and municipal (793 million) debts.

At the end of September, when President Frondizi submitted for congressional approval the national budgets for the fiscal years 1958–59 and 1959–60, the deficit for 1958–59 was estimated at only 38,517 million pesos, including 32,433 million attributable to state enterprises. For 1959–60 the deficit forecast was 27,216 million pesos.

Transportation and Communications.—Although Argentina has over 40% of the total railway trackage in South America, its 27,873-mile network is concentrated in the agricultural eastern and north-central section, with about 33% of the mileage in the single province of Buenos Aires. The railway operating deficit for the fiscal year 1958–59 was forecast at 14.1 billion pesos.

Only about a third of the 36,660-mile national highway system is either paved or improved, although the government has announced a 5-year program to construct 1,554 miles of new paved highways and 2,175 miles of new improved roads. In the provinces road construction plans center largely on feeder roads for farm development. Highway transport equipment is in poor condition, although 603,765 motor vehicles were registered at the end of 1958.

Air transport service is provided by Líneas Aéreas del Estado (operated by the Military Transport Command), by the government-owned Aerolineas Argentinas, and by several private lines, among which Transcontinental, S.A., which was organized in 1958, joins some 20 foreign lines in providing international service. The most noteworthy development in air service during 1959 was the initiation of jet transport service with British Comet IV planes.

More than 90% of the telephone system is owned and operated by the government. On April 1, 1959, Argentina had 1,128,537 telephones in use, or about half of those in South America. Commercial radio broadcasting is carried on by 55 long-wave stations, and a television station has been operating since 1951.

Agriculture.—About 40% of the Argentine land is devoted to pasture, some of which is in alfalfa and planted grasses, and only 10% is utilized for crops planted for harvest, yet over 90% of the value of the country's exports usually comes from wheat, corn, hides and skins, and other staples. The official wheat crop estimate for 1958–59 was 6,720,000 metric tons. Production of other leading crops in 1958, in thousands of bushels, was as follows: corn, 215,000; barley, 52,000; rye, 32,160; and flaxseed, 23,621. In addition, Argentina produced 836,200 short tons of sunflower seed, 500,000 bales of cotton, and, in 1958–59, 1,185,000 short tons of sugar and 250,000,000 pounds of rice.

The flooding of cattle grazing areas in 1959 reduced pasturage and necessitated further slaughtering of breeding stock already depleted by rancher discouragement over low prices and government marketing controls. As a result, meat export quotas were cut to assure domestic supplies while the herds were being rebuilt. In 1958, Argentina produced 4,299 million pounds of meat (1,596 million exported) and about 14.3 million bovine hides and skins. Low sales of wool and the production of 182,000 metric tons in the year ending Sept. 30, 1958, left an accumulated exportable surplus of 224,800 tons, while the 1958–59 clip was estimated at 190,800 tons.

Industry.—Labor unrest and raw material shortages resulting from import restrictions are a hindrance to Argentine industrial production; in the first half of 1959 the index (1953 = 100) averaged 113, as compared with 125 for the year 1958. Both in value of production and in number of workers the food production industries rank highest. Argentina can also rely on domestic wool and cotton for its textile mills, and most of the tobacco used in manufactured products also is home grown. For the manufacture of wood products, paper, and cardboard, however, the country is largely dependent on imported lumber; even though 30% of its own land is forested, the forests are badly located for exploitation.

Despite an estimated annual demand for 1.8 million metric tons of steel, import restrictions and a domestic production of only 236,400 tons kept 1958 consumption down to 1.1 million tons. Pig iron production at the new $250 million San Nico-

lás mill was not scheduled to begin until January 1960, and only the completion of extensions begun at the Zapla steelworks would allow the present output of 40,000 metric tons of pig iron to be raised to 150,000 tons. Cement production in 1958 totaled 2,472,000 metric tons; that of electricity, 7,296 million kw.-hr. In the rapidly expanding automotive industry, production reached 61,082 units, of which Industrias Kaiser Argentina accounted for 10,342 station wagons, 7,221 jeeps, 2,891 pickups, and 2,157 Carabela cars.

Mineral Products.—Argentina is not an important mineral producing country, although lead (39,400 metric tons in 1958), zinc (76,500), tungsten (925), and beryllium (915 tons for 11 months) are found in some abundance. There are iron deposits in Jujuy Province and iron and manganese in Río Negro. In Santa Cruz (Patagonia) Province transport and technical problems have so limited commercial production at the Río Turbio coal deposits that the 1959 output was forecast at only 300,000 metric tons.

The most immediate mineral need is for petroleum, the importation of which cost almost $250 million in foreign exchange in 1958. With the help of a number of foreign oil companies admitted in 1958 to participation in the national exploration and development program, output for the first half of 1959 rose 29.1% over that in the same period of the previous year and totaled 3,022,349 cubic meters. Output for the year was forecast at 47.5 million barrels, as compared with 35.8 million in 1958.

Foreign Trade.—The 1958 trade deficit, from imports valued at $1,233.2 million and exports at $993.9 million, amounted to $229.3 million. Leading imports, by value, were machinery and vehicles (24%), fuels and lubricants (20%), and iron and steel (18%); the principal export was meat (30%), followed by cereals and flaxseed (26%), other arable farm products (16%), wool (10%), and hides (6%). Among favorable trade balances were those with the United Kingdom and the Netherlands; leading deficits occurred in trade with Venezuela and with the United States, which furnished 16% of Argentina's imports and took 13% of its exports.

The 1959 Argentine trade figures differ to the point of apparent irreconcilability. Officially there was a surplus in the first half of the year, with exports valued at $490.2 million and imports at $363.8 million, but the import figure covered only goods which had cleared customs; at the end of June, merchandise worth $232 million was piled up in customs sheds awaiting admittance.

Principal Events, 1959.—On January 18, President Arturo Frondizi set out from Buenos Aires on an official visit to the United States. Behind him he left his country in the midst of a general strike (January 17–21), with the maintenance of order delegated to military commanders. It was a situation prophetic of a year characterized by labor unrest and by reliance on the armed forces for the support of constitutional government until the nation's basic economic problems could be solved.

When the president returned on February 2, he found that the strike had been broken. Hundreds of labor leaders were in jail, and 12 major union headquarters were being run by military administrators. Nevertheless, the strikes were to continue throughout the year: in the first 6 months alone there were an estimated 201, including maritime strikes paralyzing the port of Buenos Aires, a strike at the Kaiser automotive plant in Córdoba, and a bank workers strike that lasted from April 16 to June 20. Wage increases were won, and, in a further conciliation of labor, the mobilization of 330,000 oil, railroad, and municipal transport workers, which had been in effect since November 1958, was ended on June 30.

An April 3 general strike, called by the metal workers' union, became instead a demonstration against the high cost of living and the infringements on union rights. The ensuing battles with the police were related to the government's decision (April 7) to expel from Argentina Nikolai Belous, counselor of the Soviet embassy, on the charge that he had instigated the disturbances; four others (three Russians and one Rumanian) were also declared *persona non grata* because of their involvement in agitation (April 8). On June 8, the Bulgarian minister, Boris Popov, became the sixth Communist diplomat to become similarly unwelcome.

A third source of unrest was the heritage of mutual distrust left to the Argentine people by Juan Domingo Perón. This attitude was most strongly fixed among the leaders in the armed forces who had driven the former dictator so ignominiously from his native land in 1955, and it was their pressure on the administration that on May 13 forced the "resignation" of the president's personal economic adviser, Rogelio Frigerio, who was regarded as Frondizi's chief negotiator for Peronist support. In June, photostatic copies of a pre-electoral pact with Perón (reportedly negotiated for the president by Frigerio), bearing the signatures of the two men, were made public. Although the government called the document a forgery, it served to anger Peronists because of the nonfulfillment of its promised grant of legal status to their party, while it increased the distrust of many who recalled the president's appeals for Peronist and Communist support in the 1958 election.

The attempted revolution that Perón had apparently hoped to incite, and which actually followed, was the work not of Peronists, but of anti-Peronist army and navy officers led by Lt. Gen. Arturo Ossorio Arana and Rear Adm. Arturo Rial and publicly supported by Rear Adm. Isaac F. Rojas, vice president in the regime that overthrew Perón. On June 19, however, the president won a general pledge of support from military leaders who preferred the maintenance of constitutional government to revolution; in return, he was forced three days later to agree to a major government reorganization. Of leading importance in the new cabinet was Dr. Alvaro C. Alsogaray, who received the portfolios of Economy and of Labor and Social Welfare on June 25.

Even as the past revolt ended, a new one threatened—this time, a service rivalry. Angered that Navy Secretary Adolfo B. Estévez had issued a statement supporting the president in the June

Argentine President Frondizi and wife, Elena, shown leaving Buenos Aires on January 18 for visit to the United States.

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army crisis without consulting other high naval officers, 14 admirals met in protest on July 14 and requested his dismissal. When the president refused, navy resignations followed. By July 24, after the dismissal of the chief of naval operations, Vice Adm. Alberto Vago, who had led the revolt against Estévez, the navy was near mutiny. On the next day, Admiral Vago was reinstated, and the secretary dismissed.

Meanwhile, elections in two provinces indicated that dissatisfaction with the administration was by no means confined to labor or the armed forces. The election in Mendoza on April 26 was won by conservative Democrats with 84,302 votes, as compared with 72,136 blank votes attributed to Peronists and 52,765 gained by the president's Intransigent Radical Party. The Communists won 34,415 votes. In Santa Fe's July 26 election, Peronists and opposition Radicals dominated the returns. The Communists gained 22,881 votes.

Since strikes continued and the loyalty of at least some members of the armed forces had become doubtful, the more conciliatory labor policies of Minister Alsogaray were adopted. On July 7, a threatened strike of light and power workers was averted by a pattern-setting 41% wage increase. Other unions took due note, notably those of the commercial employees and the sugar workers of Tucumán, both winning increases despite the government's desperate need to keep the wage front from crumbling. Not only could federal employees be paid only half their wages in July, but Alsogaray admitted that the government had taken half the money out of the pension funds in exchange for promissory notes. On September 15, railroad workers threatened a 24-hour strike for September 23 and said they would walk out every fifth day thereafter until the government granted their demand for an improved pension plan. A general strike, called for September 23–24, failed largely because the railroaders, having won their demands, agreed to stay on the job.

New discontent developed in the army on September 2, when Secretary of War Elbio C. Anaya dismissed the anti-Peronist chief of staff, Gen. Carlos Severo Toranzo Montero, after a dispute over appointments and swore in (September 3) in his place Gen. Pedro Castineiras, an officer sympathetic to Peronists. Asserting that 95% of the army was behind him, Toranzo Montero called for support, while Anaya ordered the arrest of 14 high-ranking anti-Peronist officers who answered the call. The Córdoba garrison indicated its loss of confidence in Anaya, requested his resignation, and said it would receive orders only from Toranzo Montero, who had set up headquarters in the Army Mechanical School in Buenos Aires behind barricades of hundreds of buses. The lack of response both to the government's order for 60 tanks and to its alert to the air force led to conferences (September 4) between the president and Toranzo Montero that resulted in the officer's reinstatement and in the replacement of General Anaya as secretary.

On November 25, Argentina and Brazil signed a cultural exchange treaty in Buenos Aires, and on the following day they also signed new trade treaties. At the same time, they reached agreement on problems of mutual defense, particularly with regard to subversion.

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ARGUS, Project. See ATMOSPHERE RESEARCH; ATOMIC ENERGY; SPACE FLIGHT.

ARIZONA. Southwestern state, United States; admitted to the Union, Feb. 14, 1912. The "Grand Canyon State" ranks 6th in area and 35th in population among the 50 states.

Area and Population.—Area: 113,909 square miles (land, 113,575; inland water, 334), divided into 14 counties. Population: (1950) 749,587; (est., July 1, 1958) 1,175,000. Urban places with 1950 populations above 7,500 (unless another date is indicated):

Amphitheater[1]	12,664	Phoenix (*capital*)	365,000[3]
Douglas	9,442	Tempe	7,684
Flagstaff	7,663	Tucson	48,774[2]
Glendale	8,179	Wakefield[1]	8,906
Mesa	16,790	Yuma	9,145

[1] Unincorporated. [2] Special census, 1953. [3] 1959 estimate.

Executive.—Chief state officers in 1959:
Governor: Paul J. Fannin (Republican)
Secretary of State: Wesley Bolin
Treasurer: H. Y. Sprague
Attorney General: Wade Church
Auditor: Jewell W. Jordan
Supt. of Public Instruction: W. W. Dick

Constitution and Judiciary.—The present constitution went into effect in 1912. The Supreme Court comprises five justices; chief justice in 1959 was M. T. Phelps.

Legislature.—The Arizona Legislature (Senate, 28 members—two per county; House of Representatives, 80 members—apportioned to the 14 counties every four years on the basis of their gubernatorial vote turnout) meets annually, commencing the second Monday in January. Party composition of the legislature in 1959 was: Senate, 27 Democrats and 1 Republican; House, 55 Democrats and 25 Republicans.

The 1959 session (January 12–March 21) passed 146 bills, and one private bill was vetoed by the governor. Legislation of special significance included a school equalization aid bill and education excise tax. The latter, a 1% tax on sales, will be used to support equalization aid to public school districts on an average daily attendance basis. Other enactments raised public assistance payments for dependent children and the aged and blind—the first such increase in a decade; tightened restrictions on drunken and reckless driving and on driving without a license; regulated boating and water sports; authorized county flood-control districts; authorized the state Tax Commission to assess value of producing oil and gas interests; established a commission to regulate gas and oil drilling and production; and amended the method of filling vacancies on county boards of supervisors.

One constitutional amendment was proposed at the regular session, to be voted on by the voters in the 1960 general election. The measure would permit employment by the state of aliens as teachers, if they are authorized to teach in the United States under the teacher-exchange program as provided by federal statutes.

Finance.—State revenue of $161,101,189.21 for the 1958–59 fiscal year consisted of $87,350,305.96 from state taxes, $47,572,481.78 from the federal government, and $26,178,401.47 from all other sources. Major tax sources were a 2% general sales tax, selective sales and gross receipts taxes, and individual and corporate income taxes. Expenditures of $155,413,767.59 comprised $51,981,024.04 for education, $34,688,488.60 for health, welfare, and safety, $56,317,946.72 for highways, and $12,426,308.23 for other purposes.

Banking.—As of June 10, 1959, the state's 3 national banks had $926,094,000 in assets, $582,418,000 in demand deposits, and $267,280,000 in time deposits. The 4 state banks (June 30, 1959) had assets of $264,302,619, demand deposits of $131,475,893, and time deposits of $74,552,584.

Education.—School attendance is compulsory between the ages of 8 and 16, inclusive. Operating expenditures of $94,187,337.07 ($389.03 per pupil) for public elementary and secondary schools in the 1958–59 school year comprised $60,803,344.98 from local school districts, $28,827,599.75 from the state, and $4,556,392.34 from the federal government. Outlays for construction and improvements amounted to $20,385,545.57. The National Education Association estimated teachers' salaries as averaging $5,328 (high school, $5,790; elementary, $5,118).

In the 1958–59 school year there were 496 elementary schools (grades k-8) with 7,721 teachers and 220,318 pupils, and 89 secondary schools (9–12) with 2,591 teachers and 62,148 pupils. Private and parochial elementary and secondary schools enrolled 23,818 pupils. There were 29,607 college and university students.

Social Welfare.—Public assistance expenditures from state and federal funds (excluding institutional costs) for the 1958–59 fiscal year totaled

$21,185,743.54, and included $9,421,672.52 for the aged, $8,010,233.84 for dependent children, and $1,554,228.17 for general relief. A monthly average of 25,820 persons received assistance.

The state spent $2,904,991.96 for the operation of a hospital for the mentally ill (1,638 patients on Sept. 18, 1959) and one for the mentally deficient and epileptic (650). Penal and correctional institutions include a training school for delinquents and a state prison (1,463 inmates).

Labor Force.—The state's labor force in June 1959 totaled 416,200, including 46,600 agricultural workers. Nonagricultural employment was up to 349,400 from 332,700 in the previous June and also above the 345,300 average for the 12 intervening months. Government services accounted for 20% of nonfarm employment; trade for 24%; manufacturing for 15%; and service industries for 13%. Unemployment was down to 19,500 in June 1959 from 23,200 a year earlier. An additional 1,500, chiefly copper mining employees, were involved in labor-management disputes. Gross unemployment compensation payments for the year ending June 30, 1959, totaled $8,324,496.

Manufacturing.—Some 650 manufacturing establishments in 1959 employed an average of 39,200 persons who received $212,517,762 in wages. Value added by manufacture (1957) totaled $336,275,000. Production workers in manufacturing averaged $96.62 for an average workweek of 39.6 hours in August 1959.

The major manufacture is that of transportation equipment, which in 1957 engaged 12,789 persons who received $72,132,000 in wages. Value added by manufacture totaled $135,641,000. Other important industries were food processing (5,318; $22,200,000; $41,132,000) and primary metals (4,942; $26,215,000; $38,278,000).

Mining.—Arizona ranked 16th among the states in the value of mineral output in 1958, with 1.90% of the national total. For the 49th successive year it remained first in the output of copper (50% of the United States total). It was also first in pumice; second in manganese; third in molybdenum, silver, and vanadium; fourth in beryl and perlite; fifth in gold, lead, and uranium; and sixth in zinc. Metals comprised 92% of the value of all minerals produced. As of Dec. 15, 1958, 16,200 persons were employed in the state's mineral industries.

ARIZONA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	119,000	$ 179,000
Copper (recoverable content of ore)	485,839	255,551,000
Gold (troy ounces)	142,979	5,004,000
Lead (recoverable content of ore)	11,890	2,782,000
Lime	126,000	1,817,000
Manganese ore	62,279	5,220,000
Molybdenum (pounds) (Mo content)	2,320,000	2,827,000
Pumice	401,000	1,025,000
Sand and gravel	12,208,000	9,526,000
Silver (troy ounces)	4,685,000	4,240,000
Stone	1,528,000	2,731,000
Uranium ore	257,756	7,049,000
Zinc (recoverable content of ore)	28,532	5,821,000
Other minerals	...	11,953,000
Total	...	$314,520,000[1]

[1] Total has been adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines and the Arizona Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $261,973,000 from $265,565,000 for the same period of 1958. For the full year 1958, which yielded the highest agricultural income in the state's history, income comprised $163,782,000 from livestock and livestock products (including $131,025,000 from cattle), $271,800,000 from crops, and $5,163,000 from government payments. Cotton continued to be the most profitable field crop.

ARIZONA CROP INCOME

Crop	Cash receipts 1957	1958
Barley	$ 8,249,000	$ 7,412,000
Cantaloups	10,688,000	10,826,000
Cotton lint	130,276,000	130,612,000
Cottonseed	15,350,000	14,596,000
Grapefruit	2,411,000	4,011,000
Hay	13,251,000	14,110,000
Lettuce	30,446,000	47,925,000
Oranges	4,019,000	6,342,000
Potatoes	3,060,000	4,480,000
Sorghum grain	5,706,000	3,864,000
Wheat	4,519,000	6,118,000

(Source: U.S. Department of Agriculture.)

The state had 10,000 farms in 1958. Total acreage (1954) of 17,944,000 included 5,536,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 971,000 cattle and 782,000 chickens (excluding commercial broilers). There were 324,000 family and hired workers engaged in farming during the week of Oct. 19–25, 1958.

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $37,977,791, and 210 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 33,280 miles (9,275 surfaced). Registered *motor vehicles* numbered 579,568 on the same date, including 407,818 passenger cars. There were (1958) 6 *railroads* operating 2,531.75 line miles; 5 regularly scheduled *airlines;* and (1959) 183 *airports and airfields* (100 commercial and municipal, 13 military, 64 private, and 6 other).

Communications media (1959) included 48 AM and 3 FM *radio stations;* 8 VHF and 2 UHF (educational) *television stations;* 17 daily *newspapers* (circulation, 291,340) and 67 other newspapers (102,514); and (January 1) 126,900 business and 231,100 residential *telephones.*

Principal Events, 1959.—Events of significance were initiated with the January 5 inauguration of Paul J. Fannin as Arizona's 11th governor (fourth Republican). Principal features of the governor's legislative program were school aid and traffic safety, both of long-standing interest and controversy. Despite affirmative legislative action (see above, *Legislature*), traffic fatalities continued to exceed the 1958 rate.

For the second time in the last decade (previously in 1950) the City of Phoenix was selected as an "All American City" by *Look* magazine and the National Municipal League. Other commemorations saw the University of Arizona, Tucson, and Arizona State University, Tempe, initiate 75th anniversary celebrations.

Simon Rifkind, special master in chancery acting on behalf of the U.S. Supreme Court, concluded hearings regarding distribution of Colorado River water. A final decision was not expected before 1960.

Mineral production in the state was off considerably because of strikes in the Bisbee, Morenci, Superior, and San Manuel areas. Principally affected were the Phelps-Dodge, Kennecott, and Magma mining corporations. Strikes in the construction industry delayed work on schools, highways, the Glen Canyon Dam (see DAMS), and private developments. Elsewhere in economic activity, agricultural production and income exceeded totals for 1958, and industrial and commercial development continued to exceed other sector totals.

Upon action initiated by the state attorney general and the state bank superintendent, the Arizona Savings and Loan Association was placed in receivership for allegedly mismanaging depositors' funds. Final court action resolving the association's position was not expected until 1960.

Late in the year, controversy erupted in the Tucson area when the U.S. Department of the Interior withdrew some lands from the Tucson Mountain Park for private mining development purposes. Protests forced a reconsideration, however, and permission for mining was revoked in December. Controversy continued over locations of access highways to the new federal interstate highway system being developed in Arizona. Principal comment was generated by bypassed communities previously intersected by federal highways.

Among miscellaneous developments, the Central Arizona Project was reactivated to study water needs and sources—with concentration on the future use of Colorado River water; commercial jet traffic hit the state with emergency landings of Boeing 707's at Sky Harbor, Phoenix, and Tucson Municipal Airport; grand jury proceedings were initiated against Pima County officials; and the state's two major cities, Phoenix and Tucson, doubled their land areas, through annexations, to 110 and 46 square miles, respectively. At Phoenix the University of Arizona announced plans for a fine arts center and auditorium, designed by Frank Lloyd Wright (q.v.) before his death in the city on April 9, and the city's new Museum of Art was opened in mid-November.

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ARKANSAS. South Central state, United States; admitted to the Union, June 15, 1836. The "Wonder State" ranks 27th in area and 31st in population among the 50 states.

Area and Population.—Area: 53,104 square miles (land, 52,675; inland water, 429) divided into 75 counties. Population: (1950) 1,909,511; (est., July 1, 1958) 1,751,000. Urban places with 1950 populations above 10,000 (unless another date is indicated):

Benton	10,148[1]	Jonesboro	17,014[2]
Blytheville	17,804[2]	Little Rock (*capital*)	102,213
Camden	16,622[3]	Magnolia	10,426[4]
El Dorado	24,477[5]	North Little Rock	49,588[5]
Fayetteville	18,069[1]	Pine Bluff	39,795[2]
Fort Smith	59,959[1]	Texarkana	19,733[2]
Helena	11,236	West Memphis	15,776[3]
Hot Springs	29,307		

[1] Special census, 1957. [2] Special census, 1956. [3] Special census, 1955. [4] Special census, 1958. [5] Special census, 1954.

Executive.—Chief state officers in 1959:
Governor: Orval E. Faubus (Democrat)
Lieutenant Governor: Nathan Gordon
Secretary of State: C. G. Hall
Treasurer: J. Vance Clayton
Attorney General: Bruce Bennett
Auditor: James Jones
Commissioner of Education: A. W. Ford

Constitution and Judiciary.—The present constitution went into effect in 1874. The Supreme Court comprises seven justices; chief justice in 1959 was Carleton Harris.

Legislature.—The General Assembly (Senate, 35 members; House of Representatives, 100) meets in odd-numbered years commencing the second Monday in January.

In 1959, obviously mindful of Gov. Orval Faubus' grass-roots prestige—in 1958 he carried every county in a third-term victory—the assembly enacted all but one of his school segregation proposals. These included a new pupil assignment law, upheld in federal court on September 21, which was put in use at both Little Rock and Dollarway, and a last-ditch constitutional amendment which, if approved in the 1960 referendum, would allow the voters in any integration-threatened district to close the public schools therein and divide the available funds equally among the displaced students as tuition aid. Not a single vote was cast against some of the early-year segregation bills, but by midsession a few legislators were voting nay or abstaining. In the final days a hard-core Senate minority led by the Pulaski County (Little Rock) delegation blocked a Faubus-endorsed, spur-of-the-moment plan to enlarge the then-deadlocked Little Rock School Board (see below, *Principal Events, 1959*), tabling one bill for that purpose and killing its alternate by filibuster.

The assembly also followed Faubus' lead on measures unrelated to integration, among them: an extension of the minimum (20%) assessment program; stricter insurance and securities regulations; a three-year bond authorization, subject to voter approval, which would yield up to a $21 million maximum (the measure was passed in lieu of a highway tax increase); and an untrimmed education allocation, including a slight increase for higher education (but with no taxes to insure that revenues would fulfill allocations). The assembly expressed distrust for national Democratic Party leadership by freeing the state's electors from future party loyalty.

Finance.—In the 1958–59 fiscal year, state revenue of $242,427,989.80 comprised $152,835,090.61 from state tax sources, $69,289,446.39 from the federal government, and $20,303,452.80 from all other sources. Tax revenue consisted of $50,636,623.43 from a 3% general sales tax, $8,438,575.07 from individual income taxes, $8,349,159.15 from corporate income taxes, $37,736,525.22 from motor fuel taxes, $18,475,794.88 from licensing, and $29,198,-412.86 from all other state tax sources. Expenditures of $242,721,464.83 included $57,297,861.34 for education, $59,067,357.63 for health, welfare, and safety, $56,806,-364.06 for highways, and $69,256,406.77 for all other purposes.

Banking.—As of June 10, 1959, the state's 55 national banks had assets of $620,430,000, demand deposits of $433,391,000, and time deposits of $128,141,000. The 182 state banks (June 30, 1959) had $603,550,717.37 in assets, $412,300,791.06 in demand deposits, and $131,438,-647.92 in time deposits.

Education.—School attendance is compulsory between the ages of 7 and 15, inclusive. Operating expenditures of $65,028,427 ($179.91 per pupil) for public elementary and secondary education in the 1957–58 school year included $30,563,361 from local school districts, $32,709,299 from the state, and $1,755,767 from the federal government. Outlays for construction and improvements amounted to $3,298,204, and teachers' salaries averaged $3,104 (high school, $3,294; elementary, $2,954).

ARKANSAS SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–6)	1,328	14,694	252,809
Public junior high (7–9)	255	4,100	98,916
Public senior high (10–12)	211	2,460	68,286
Private and parochial elementary and secondary	101	466	11,343
Junior colleges	3	89	917
Teachers colleges	2	149	2,531
Colleges and universities	15	1,253	17,979

Social Welfare.—In the 1958–59 fiscal year, federal and state funds expended for public assistance (excluding institutional costs) totaled $37,932,963.41, including $29,014,259.33 for the aged, $5,119,083.52 for dependent children, and $2,523,566 for the permanently and totally disabled. A monthly average of 73,603 persons received assistance.

Labor Force.—The state's labor force totaled 638,900 in August 1959, including 186,800 agricultural workers. Nonfarm employment reached 430,000, compared with 423,800 for the previous June and an average of 424,200 for the year between mid-1958 and mid-1959. Manufacturing accounted for 28.4% of nonfarm employment; trade for 22.2%; and government for 19.3%. Unemployment dropped substantially to 26,500 in August 1959 from 44,000 a year earlier. The state paid $10,573,199 in unemployment compensation for the year ending June 30, 1959.

Manufacturing.—The state's 3,120 manufactur-

MAJOR ARKANSAS MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1]
Lumber and wood products	22,435	$52,373	$76,020
Chemicals and products	5,130	24,140	72,106
Pulp, paper, and products	4,487	20,385	55,583
Primary metal industries	2,913	14,805	42,832
Furniture and fixtures	6,157	17,947	30,507
Electrical machinery	1,450	5,107	21,038
Stone, clay, glass products	2,579	9,146	20,374
Leather and leather goods	3,811	10,164	20,180

[1] For definition, see text footnote 1 in the article, *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

UPI

(*Left*) In a special recall election in Little Rock on May 25, moderate school board members were retained, while ardent segregationists were ousted. Here, moderates are carried in triumph in postelection celebration. (*Right*) Arkansas' Governor Orval Faubus, who had given his support to the losers, speaks at a press conference in Little Rock on May 27.

ing establishments in 1958 employed an average of 90,066 persons who received $298,193,877 in wages. Value added by manufacture (1957) totaled $640,981,000, and outlays for new plant and equipment amounted to $85,340,000. Production workers in manufacturing averaged $62.51 for an average workweek of 41.4 hours in August 1959.

Mining.—Arkansas in 1958 ranked 26th among the states in the value of mineral output, with 0.80% of the national total. It was first in bauxite (96% of domestic output), second in barite, third in bromine, and fifth in manganese production and aluminum capacity. The value of its mineral output, which was $11,908,000 under the 1957 figure, was the lowest since 1953.

ARKANSAS MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Barite	182,779	$ 1,668,000
Bauxite (long tons)	1,257,916	11,394,000
Clays	578,000	1,578,000
Coal	364,000	2,744,000
Manganese ore	22,221	1,737,000
Natural gas (1,000 cu. ft.)	32,890,000[1]	2,664,000[1]
Natural gasoline (bbl.)	885,643	2,574,000
Petroleum (bbl.)	28,700,000[1]	80,934,000[1]
Petroleum gases (bbl.)	1,274,238	2,743,000
Sand and gravel	8,644,000	7,039,000
Stone	8,461,000	10,178,000
Other minerals	...	7,264,000
Total	...	$131,603,000[2]

[1] Preliminary. [2] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 was up to $307,025,000 from $271,310,000 for the same period of 1958. For the full year 1958, income comprised $231,443,000 from livestock and livestock products, $365,048,000 from crops, and $31,448,000 from government payments. Principal livestock income sources were cattle, $80,374,000, and broilers, $70,399,000.

ARKANSAS CROP INCOME

Crop	Cash receipts 1957	1958
Corn	$ 4,139,000	$ 2,872,000
Cotton lint	159,173,000	160,447,000
Cottonseed	17,283,000	16,985,000
Oats	4,860,000	3,213,000
Peaches	2,747,000	3,740,000
Rice	53,667,000	57,676,000
Sorghum grain	2,216,000	3,116,000
Soybeans	67,205,000	90,009,000
Strawberries	1,834,000	2,974,000
Wheat	4,368,000	3,498,000

(Source: U.S. Department of Agriculture.)

The state's 145,000 farms in 1954 had a total acreage of 17,944,000 (5,536,000 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 1,493,000 cattle and 5,056,000 chickens (excluding commercial broilers). During the week of Oct. 18–24, 1959, 314,000 family and hired workers were engaged in farming.

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $56 million, and 502 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 74,272 miles, including 11,023 miles of state highways, 56,740 miles of county roads, 4,874 miles of city streets, and 1,653 miles of state park, forest, and reservation roads. Of the total, 12,365 miles were surfaced. Registered *motor vehicles* numbered 673,666 on Dec. 31, 1958, including 440,619 passenger cars. There were (1959) 30 *railroads* operating 4,368 line miles; 6 regularly scheduled *airlines;* and 100 *airports and airfields* (13 commercial and municipal, 4 military, and 83 private).

Communications media (1959) included 62 *radio stations;* 6 VHF *television stations;* 31 daily *newspapers* (circulation, 231,000) and 139 other newspapers (211,443); and (January 1) 114,400 business and 268,000 residential *telephones.*

Principal Events, 1959.—Attention continued to focus on Little Rock, where a maze of events led to the August reopening of the public high schools with minimum integration. The year began there amid a legal snarl: the high schools remained closed under a state segregation law, a pre-existing federal court order called for an immediate start on gradual integration, and a newly elected School Board was split 3–3 over how to deal with the dilemma. During the nearly six-month wait while the courts reviewed the school-closing law, local moderates and segregationists fought for control of the deadlocked board. The segregationists almost broke the deadlock in early March, failing by the barest of margins to enlist General Assembly intervention in their favor (see above, *Legislature*).

The showdown in the board fight came in May over contract renewal for studentless high school teachers. After the moderates quit a board session, the segregationists fired 44 out of some 200 high school personnel without a hearing. This alleged "teacher purge" sparked massive public action, the moderate citizenry grouping under the STOP banner (Stop This Outrageous Purge) to file petitions for recall of the three segregationists, and their opponents organizing the CROSS (Committee to Retain Our Segregated Schools) which filed similar petitions against the three moderate board members. Despite Governor Faubus' 11th-hour support of CROSS, a heavy vote on May 25 resulted in the ousting of the segregationist trio and the retention of the moderates, both issues being decided by narrow margins. The Pulaski County

Board of Education then filled the vacancies, placing the board under solid moderate control.

On June 18, a federal court threw out the 1958 school-closing law, and the next day the board announced plans to reopen the high schools under the pre-existing order that they be integrated. Of 55 Negroes seeking to enroll in once-white high schools, only six were so assigned under a new student placement law (see above, *Legislature*), three each to Central and Hall High schools, but none to Technical High. In a surprise move the board advanced the school opening date to August 12, possibly to forestall the calling of a special session of the General Assembly. On the day the desegregated schools reopened, an estimated 250 jeering demonstrators attempting to break city police lines around Central High were dispersed by local firemen and policemen armed with water hoses and nightsticks. In the disturbance, considerably milder than the violence attending the opening of Central High in 1957, 21 citizens were arrested on minor charges, but none had been tried by late in the year. School officials reported no major student disorders as classes began on schedule. Within a few weeks, all private and church-sponsored schools, established in 1958 to educate white students, were disbanded. (See also EDUCATION.)

The uneasy calm which followed was disrupted on the night of September 7, when dynamite blasts ripped the fire chief's auto, the city mayor's private business office, and the School Board building—none occupied at the moment. Public indignation flared and Governor Faubus termed the incidents "sickening and deplorable." Within days, the Little Rock police arrested and arraigned five local citizens. Of the five, one confessed to a part in the bombing and began serving a five-year state prison term and three others were found guilty by juries which each recommended three-year sentences. The trial for the other defendant was on docket. Sworn testimony charged Ku Klux Klan inspiration for the bombings.

Also in Little Rock, on June 17, a federal grand jury found, after a detailed probe, "no cause for indictment" in connection with segregationist Dr. Dale Alford's 1958 "write-in" congressional victory over moderate Brooks Hays, veteran congressman and Democratic nominee. Hays subsequently accepted an Eisenhower appointment to the Board of Directors of the Tennessee Valley Authority.

At Hoxie in northeastern Arkansas, voters refused to recall two School Board members under fire mainly for having helped desegregate the Hoxie schools in 1955 (in the fall of 1959 eight Negroes were enrolled in grades 1-12). At Dollarway, outside Pine Bluff, a district in which the races are about evenly balanced, the petition of three Negroes to enroll in the all-white high school caused civil unrest and a delay in the fall opening. The U.S. Court of Appeals for the 8th Circuit upheld the Dollarway board in assigning the petitioners to the local all-Negro school under the 1959 student placement law, clearing the way for a segregated opening on September 25.

Elsewhere in the state in 1959 the Ark-La Gas Company began operation of a several million-dollar cement plant in Little River County, and work began on a Mississippi River bridge at Helena.

Legislature and Principal Events by:
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Assistant Professor of History,
Southern State College, Arkansas.

ARMED FORCES. See AIR FORCE, U.S.; ARMY OF THE U.S.; MARINE CORPS, U.S.; NATIONAL GUARD; NATIONAL SECURITY; NAVY, U.S.; and the Index entry, *Armed Forces.*

ARMY OF THE UNITED STATES. The principal missions assigned to the Army in 1959 were: (1) to maintain forces overseas for the deterrence of aggression or for effective resistance to aggression if deterrence fails; (2) to maintain mobile, combat-ready strategic forces at home for the rapid reinforcement of deployed forces overseas, and to come to the aid of allies in areas where no United States forces are now deployed; (3) to provide forces as required for the defense against possible air and missile attack; and (4) to maintain a basis for rapid mobilization, including strong combat-ready civilian components.

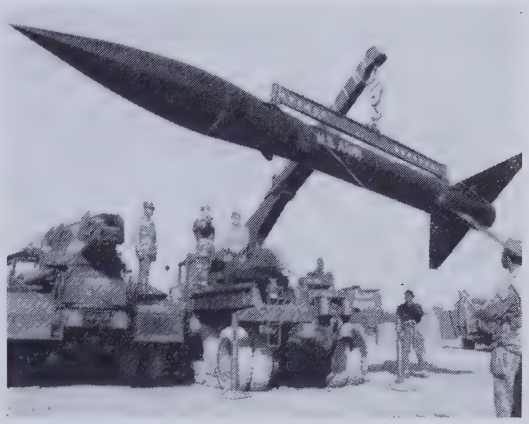
Personnel and Strength.—Important personnel appointments in 1959 included those of Dewey Short as assistant secretary of the Army for manpower, personnel, and reserve forces; Gen. Lyman L. Lemnitzer as chief of staff of the Army; Gen. George H. Decker as vice chief of staff; Gen. Carter B. Magruder as commander in chief, United Nations Command, and commander of the Eighth Army in the Far East; and Gen. James E. Moore as chief of staff of Supreme Headquarters, Allied Powers, Europe (SHAPE), replacing Gen. C. V. R. Schuyler, who retired. Gen. Maxwell D. Taylor, former chief of staff, and Dr. William H. Martin, director of research and development, retired in 1959. Dr. Martin was succeeded by Richard S. Morse. Gen. Clyde D. Eddleman, former commanding general of the U.S. Seventh Army, succeeded retiring Gen. Henry I. Hodes as commander in chief, U.S. Army, Europe (USAREUR), and commanding general of the NATO Central Army Group. Gen. Charles D. Palmer replaced his brother, Gen. Williston D. Palmer, as deputy commander in chief of the United States European command. Gen. Williston D. Palmer, retired, has been designated as director of military assistance, Office of the Assistant Secretary of Defense.

The Army was directed to effect a reduction from an authorized strength of 900,000 officers and men as of June 30, 1958, to a strength of 870,000 by June 30, 1959. This loss necessitated a reduction in combat units and logistical, administrative, and service support.

New Assignment Procedures.—A more effective method has been introduced into the Army for identifying and assigning recruits with "rare and unusual" qualifications, as well as those possessing high aptitude area scores. As set forth in new regulations, a screening procedure carried on at reception stations or in training activities provides for identification and reporting of such personnel by name, thus assuring that proper consideration is given special talents in determining assignments after basic combat training.

The military services reached agreement as to the uniform lengths of foreign duty tours in more than 100 overseas areas. The 13-month tour in Korea represents a reduction of the time formerly required of Army personnel in that area, and is regarded as a step toward minimizing hardships of overseas service. In general, the standard pattern calls for 36-month service for servicemen accompanied by dependents in more favorable areas, and 24 months for those not so accompanied. In areas where living conditions are less favorable, tours of shorter duration have been established.

Operations and Training.—Within the continental United States, the major portion of resources available for field exercises was utilized in maneuvers designed to improve the readiness of the Strategic Army Corps (STRAC). Such exercises and maneuvers have permitted evaluation of new divisional



U.S. ARMY

(*Left*) Within a 500-yard range, U.S. Army's new 90-millimeter recoilless rifle, fired from the shoulder by a two-man team, has the delivery power of a medium-size tank gun. (*Right*) At a base in Italy, U.S. Army personnel, under U.S. military assistance program to NATO allies, instruct Italian soldiers in operating the Honest John surface-to-surface missile. NATO's plans call for the establishment of 100 missile batallions by 1963, with other bases in Britain, Scandinavia, and Turkey.

and other organizations, and the experience gained has been instrumental in developing modifications.

Fast air movement in February 1959 of a reinforced battle group of 1,100 STRAC paratroops from North Carolina to Panama demonstrated the capability of reinforcing overseas assault areas from the United States.

All of the reserve component combat divisions were converted to the new organizational structure which had been approved for Active Army forces in order to meet the requirements of the modern battlefield.

Nike missile sites manned by National Guard battalions were established in 1959 as active parts of the air defenses of Los Angeles and Seattle. Two Lacrosse surface-to-surface missile battalions and one battalion for the operation of the Hawk missile were activated.

Logistics.—A major effort has been devoted to training at the individual and unit levels and to the development of technical knowledge and professional skill through specialized military education. Steps toward modernization of the United States ground forces were taken in procuring equipment to modernize the Army. New tables of organization and equipment were established to provide the foundation upon which to base specific logistical planning. New M-60 machine guns were acquired. Project Elimex (eliminating useless stocks) was successfully concluded and continuing elimination standards were implemented. An improved supply system for fast-moving supply items and repair parts was established as a result of the experimental Project MASS (Modern Army Supply System).

As a long-range solution to many new strategic requirements, plans were initiated for a radically advanced communications system known as the Universal Integrated Communications System (UNICOM). This system permits both a saving of time and deferred service by means of automatic switching centers, and markedly increases speed, security, and accuracy through extensive automation. Its other features include a high degree of standardization in signaling rates; integral electronic data processing; and improved trunking means and multimode operation of voice, teletypewriter, digital data, facsimile, and video signals.

The successful space flight in 1959 of the Army's monkey, Able, and the Navy's monkey, Baker, as passengers in the nose cone of the Army's Jupiter missile, resulted in advances in space medical research. (See also SPACE FLIGHT—*Space Medicine.*)

Research and Development.—In weapons development the trends are toward a reduced number of types of artillery, a dual nuclear and nonnuclear capability in principal weapons, an increase in mobility of weapons through weight reduction and adaptability to air transportability, and a search for highly effective area weapons which fill the gap between conventional artillery and currently available nuclear weapons. Within the limitations of security, some of the principal accomplishments can be revealed as follows: (1) a new small arms family; (2) a directional anti-personnel fragmentation weapon; (3) a new grenade launcher; (4) a light, accurate, antitank assault rocket grenade; (5) the 90-millimeter recoilless rifle; and (6) new armored vehicles.

Some of the new developments which will have wide impact for tomorrow's Army range from personal equipment to entire new weapons systems. They include new portable radar sets, forward-area voice radio sets, an air transportable armored personnel carrier, the utility helicopter HU-1 Iroquois, missiles, self-propelled field artillery, foods, and personal equipment. (See also AERONAUTICS; MISSILES.)

Reserve Components.—A vital facet of the Army's activities for the performance of its mission is the maintenance of trained combat-ready reserve components capable of prompt provision of qualified units and individuals, either to help meet the requirements of a general war or to replace units of the STRAC when it is deployed overseas in an emergency. These requirements are met by the Army National Guard and the U.S. Army Reserve. Army reserve forces considered to be immediately available for mobilization are contained in the Ready Reserve, which has an authorized strength of 1,448,000 officers and men. A total of 700,000 personnel are assigned to units in a paid drill status, and 748,000 are listed as individual reinforcements. The unit strength of the former consists of 400,000 National Guardsmen and 300,000 Army Reservists. On mobilization, about 1,100,000 of the total 1,448,000 Ready Reservists would be required by the combat divisions and supporting units in the Army Reserve Forces Troop Basis. The balance would be required as individual reinforcements for Active Army units and for the initial organization of additional units.

Budget and Expenditures.—Funds appropriated for the Army for the fiscal year 1960 (Public Law 86–166, signed by President Eisenhower on Aug. 18, 1959) totaled $9,375,805,000. This amount did not include construction funds for the Active Army, the Army National Guard, and the Army Reserve, which aggregated $307,011,300 (Public Law 86–275, signed Sept. 16, 1959), and the amount of $281,000,000 transferred from the Army Stock Fund.

Operation and maintenance funds available in the fiscal year 1960 are less than those for the fiscal year 1959. Restrictions on obligations and expenditures were enforced

throughout the fiscal year 1959. Continuation of these restrictions as applied to fiscal 1960 appropriations will require the Army to extend its managerial abilities in order to accomplish its principal missions.

(See also NATIONAL SECURITY.)

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ARSENIC. See MINERAL PRODUCTION.

ART. See PAINTING AND SCULPTURE and the Index entry, *Art.*

ARTHRITIS. The arthritic and related rheumatic diseases continue to be among the most common of the chronic diseases and of the causes of prolonged disability. The ever-increasing interest in the problems associated with arthritic and related diseases was reflected during 1959 in a number of national and international scientific meetings and in the formation of voluntary health agencies to combat these diseases in Argentina and India. In the United States, close cooperation continued to exist between the three major agencies in this field —the American Rheumatism Association, a professional organization; the Arthritis and Rheumatism Foundation; and the National Institute of Arthritis and Metabolic Diseases of the U.S. Public Health Service.

Methods of treatment not substantiated by sound clinical trial continue to be promoted through newspapers and magazines. As a result, arthritic sufferers in the United States spend over $245 million a year seeking relief from devices and other products which are misrepresented in advertisements.

Rheumatoid Arthritis.—In spite of the intensive clinical and basic research being conducted, definitive knowledge of the etiology, prognosis, or cure of this disease is still lacking. Two conferences held during 1959 defined possible new avenues of research through studying certain naturally occurring rheumatic diseases in animals, and from a re-evaluation of the patient's bodily response to the disease. Rheumatoid arthritis was shown to be indigenous to all populations throughout the world, although the need for prevalence studies was indicated in some areas such as Africa.

The basic treatment regimen of salicylates, rest, and simple exercise remained unchanged. Adrenocortical steroids are indicated in selected cases. Dexamethasone became generally available in 1959; and apart from the much smaller equivalent dose, its actions and adverse side effects were similar to those of the other adrenocortical steroid compounds. The antimalarial compounds, such as chloroquine, while widely used, were still of questionable value in the long-term treatment of rheumatoid arthritis. The American Rheumatism Association initiated a program of cooperative clinics throughout the United States whereby eventually an evaluation of a particular treatment could be determined. Interest in reconstructive surgery, particularly of the hands and feet, continued to mount.

Great strides were made in the purification of the "rheumatoid factor"—a protein substance found in the blood of patients with rheumatoid arthritis. This factor, it is now believed, is the result of the disease and plays no part in its cause. The very useful diagnostic tests based on its detection continued to be modified and improved. Much knowledge of the composition and physiology of the diffuse connective tissue system which appears to be the prime target of most of the rheumatic diseases continues to be gained. Important information on changes occurring with aging was announced. Increasing attention also is being paid to the psychosocial aspects in studying and treating rheumatoid arthritis and related diseases.

Evidence accumulated that rheumatoid spondylitis was a separate disease entity and not just a variant of rheumatoid arthritis. The peculiar association between this disease and certain forms of cardiac disease was re-emphasized. The kidney lesions of systemic lupus erythematosus received considerable attention, as did the elucidation of the specific blood reactions and their relationship to rheumatoid arthritis.

Rheumatic Fever.—Prompt treatment of streptococcal infections with such antibiotics as penicillin has been shown to prevent rheumatic fever. Recurrences of the disease are controlled by continuous administration of prophylactic agents, the most efficacious being injections of long-acting penicillin at monthly intervals. In spite of this control, rheumatic fever and its most serious complication—rheumatic heart disease—continue to present a problem. The exact role of the streptococcus in the etiology of rheumatic fever is still not fully known. Although long suspected, Sydenham's chorea, a manifestation of this rheumatic disease, was finally shown to be associated with a streptococcal infection, the onset of which could have occurred up to six months earlier.

In the treatment of acute rheumatic fever, bed rest and adequate salicylate therapy are still fundamental. The role of the adrenocortical steroids in treatment is still controversial. They can, however, be invaluable in severe cases, especially those with heart involvement.

Osteoarthritis.—This condition, caused by degeneration of the cartilage and secondary overgrowth of bone, is widespread not only in man but also in wild and domestic animals. It has been disclosed that the disease in cattle and horses has caused tremendous economic loss. A better understanding of the development of this condition as a result of trauma, aging, and hereditary and metabolic changes is emerging as a result of animal, laboratory, and clinical research. Ochronosis, a disease causing severe osteoarthritis as a result of the deposition of a black pigment in cartilage, has been shown to be due to the absence of a specific enzyme in the liver. Good results have been reported with surgery in those with severe disabling arthritis of the hips, by using replacement prothesis or a type of extended sympathetic denervation.

Gout and Gouty Arthritis.—Primary gout is caused by an inheritable peculiarity in the metabolism of uric acid, while secondary gout may arise as a result of disorders of the blood-forming system. While primary gout is much more common in males, the secondary form occurs more often in females. Although the metabolic abnormalities in this disease are gradually being revealed, the cause of acute attacks is still not known.

In the treatment of acute attacks, colchicine, phenylbutazone, and adrenocortical steroids are judiciously used. Rigid dietary restrictions, except in severe tophaceous cases, are not now considered necessary. In chronic cases with excessive uric acid accumulations, medications which increase urinary excretion of uric acid are used. For this purpose two new compounds, sulfinpyrazone and zoxazolamine, have been made available, in addition to probenicimide. Gout is one of the few rheumatic diseases which can be adequately controlled and late complications avoided with available methods of treatment.

Rehabilitation.—Evidence continues to be presented from many countries concerning the effectiveness of rehabilitation programs in returning incapacitated patients to a more self-sufficient state. The retraining of arthritic patients to return to gainful employment has been found to be a practicable and rewarding undertaking.

RONALD W. LAMONT-HAVERS,
Medical Director,
The Arthritis and Rheumatism Foundation.

ASBESTOS. See MINERAL PRODUCTION.

ASCENSION. See SAINT HELENA.

ASIA. A continent of the Eastern Hemisphere. Estimated area (including Turkey but excluding USSR), 10,479,500 square miles; pop. (est. 1958),

1,592 million (excluding USSR). See also FAR EAST; articles on the countries of Asia; and the Index entry, *Asia*.

ASPHALT. The West Indies federation island of Trinidad provides the major part of the world's supply of natural asphalt. The United States also produces large quantities of asphalt and asphaltic products. Sales of bituminous limestone increased 15%, from 1,135,000 short tons in 1957 to 1,306,000 in 1958. Bituminous sandstone sales decreased from 34,000 short tons in 1957 to 21,000 short tons in 1958. Bituminous limestone was mined in Alabama, Oklahoma, and Texas; sandstone, in Missouri and Oklahoma. Sales of gilsonite, mined in Utah, were 317,000 tons in 1958, compared with 206,000 tons in 1957. Asphalt, cement, and fluxes accounted for 70% of total domestic sales.

Imports of solid petroleum asphalts increased by 26%, from 744,000 tons (revised) in 1957 to 939,000 tons in 1958. Imports of liquid petroleum asphalt decreased from 447,000 tons (revised) in 1957 to 419,000 tons in 1958. Shipments from Venezuela amounted to 97% of the total.

Sales of petroleum asphalt paving products totaled 13,383,850 tons in 1958; sales of roofing products, 3,101,187 tons; and sales of all other products, 1,694,062 tons. Sales of road oil totaled 1,164,976 tons.

ASSOCIATIONS. See SOCIETIES AND ORGANIZATIONS.

ASTRONAUTICS. See NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; SPACE FLIGHT.

ASTRONOMY. Although the Soviet Union's launching of two rockets to the moon in late 1959 provided the year's most spectacular developments (see SPACE FLIGHT), important progress was made also in other investigations of our universe.

Aided by the artificial satellites and the vast amount of data collected during the International Geophysical Year (IGY), scientists concentrated on the solar system in 1959. The bodies currently under intensive study are the earth, the sun, Mars, and to a lesser extent, Venus and Jupiter. New knowledge concerning meteors and interplanetary dust, charged particles from the sun, and magnetic fields in space is becoming increasingly important in these studies.

Solar Flares.—It has long been known that sunspot frequency, auroral activity, disturbances of the geomagnetic field, and related phenomena follow the 11-year sunspot cycle. Now it has been learned that radio transmission is affected by the state of the upper atmosphere. While some of the atmospheric effects are regular (diurnal or seasonal), others are irregular and are connected with events on the sun. For example, on May 10, 1959, at 21:02 Universal time, a great solar flare—one of the largest and brightest ever observed—occurred in the northeast quadrant, near a group of spots; peaks of intensity were reached 16 and 38 minutes later. Simultaneously with this eruption, there occurred a sudden increase in cosmic and atmospheric noise absorption, and, a little later, major outbursts of solar noise. A magnetic storm which began on May 11 and continued until May 13 was probably induced by the flare. There is now evidence that solar flares may also occasionally produce effects on the dark side of the earth. (See also METEOROLOGY AND CLIMATOLOGY.)

The Naval Research Laboratory, using rockets at heights of 130 to 150 miles, has proved that streams of X-rays pour out from the sun during solar flares. Their immense energies indicate local temperatures of over 100,000,000°C. in the solar atmosphere, many times higher than previous estimates.

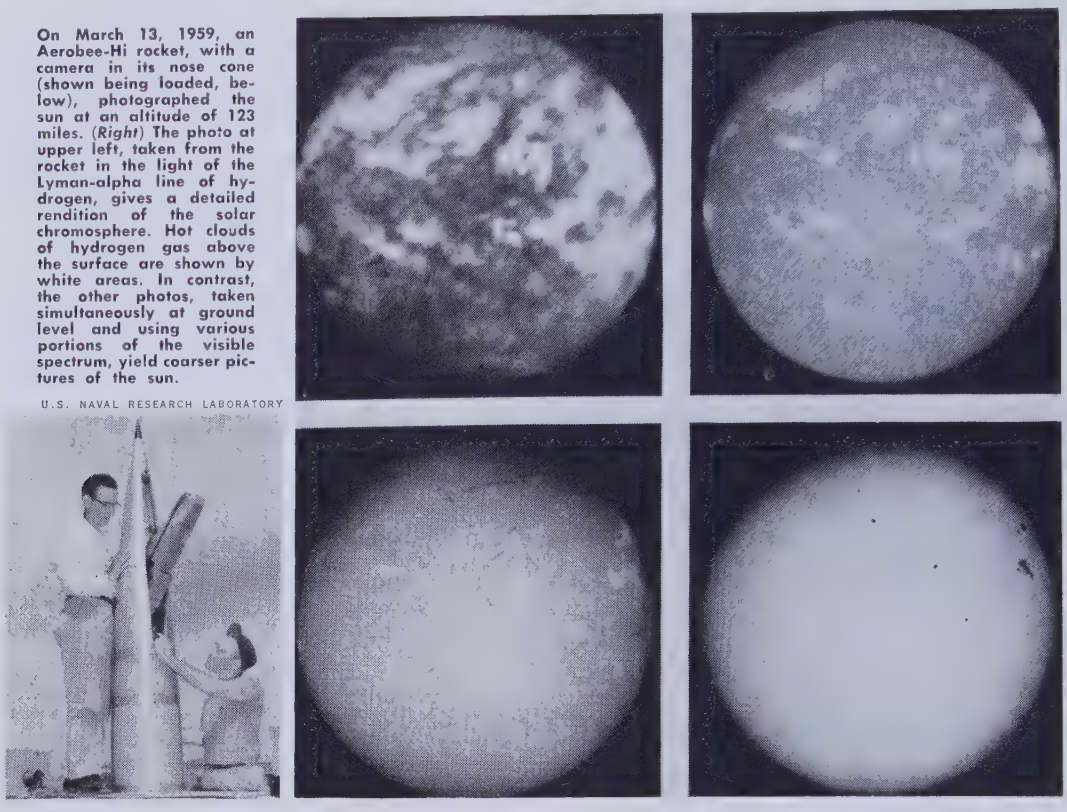
Interplanetary Gas.—Theories as to what, if anything, fills the space between the planets have been revised considerably in recent years. Besides the meteoroid particles of all sizes in outer space, there is the low-density interplanetary gas where electrons are most effective in contributing to the zodiacal light. The sun seems to be the source of this gas; we know that violent eruptions take place there, and we may assume that a slow, rather constant outflow of gas emanates from its surface. The planets add the molecules which escape from the outer regions of their atmospheres but which are still contained by solar attraction. This material generally moves as the planets and near the plane of the ecliptic. New knowledge indicates that interplanetary gas may be considered largely as part of the solar atmosphere, which extends at least beyond the earth's orbit.

It has long been observed that some coronal streamers extend out many solar radii from the sun, and it has more recently been calculated that at some 40,000 kilometers above the surface (1 kilometer = 0.62137 mile) the coronal temperature is about 1,000,000°K. Additional data on conditions as far from the sun as 20 solar radii have now been obtained, and these confirm the hypothesis that even at the distance of the earth (but along the sun's rotation axis, at right angles to the plane of the earth's orbit) the gas may still be as high as 100,000°K. At the same point in the solar atmosphere, the density of this gas would be perhaps about 3,000 electrons and 3,000 protons per cubic inch. Hence, the earth and perhaps some planets farther from the sun move through a dust-laden solar atmosphere of high temperature and low density. The retarding effect would be negligible for planets, but may affect comets, particularly their tails.

The earth's atmosphere may be considered to end where its density has declined to that of the surrounding solar atmosphere, which itself may be said to end where its density has decreased to that of interstellar gas. According to one theory, the earth's atmosphere may extend as far as the moon, but the boundaries of neither the earth's nor the sun's atmosphere are known at present. There is continuous interaction between the two atmospheres, however, and the earth's temperature probably is affected by the hot solar gas which flows down into the atmosphere below the F_2 layer of the ionosphere. Heat in our atmosphere is also contributed by the zones of radiation which encircle the earth (whose energy is supplied by cosmic rays and streams of ionized gas from the sun), and by the energy of sunlight absorbed in the upper atmosphere. Because the temperature gradients above and below the peak ion density of the F_2 layer are not precisely known, we cannot tell the amount of heat supplied by each of these sources, although rockets and satellites may soon provide the answer. Above 80 km., the temperature increases until it reaches that of the solar gas, which may be a point 300,000 miles from the earth, or beyond the distance of the moon. The temperature gradient, which rises several degrees per mile of altitude in the F_2 layer, decreases to one degree or less at a height of one earth radius, and continues to fall at higher altitudes.[1] (See also ATMOSPHERE RESEARCH.)

Photographing the Moon.—The first photographs

[1] The foregoing discussion is in part based on the article, "The Earth and Its Environments," by Sydney Chapman, in *Proceedings of the IRE*, vol. 47, no. 2, February 1959.



On March 13, 1959, an Aerobee-Hi rocket, with a camera in its nose cone (shown being loaded, below), photographed the sun at an altitude of 123 miles. (*Right*) The photo at upper left, taken from the rocket in the light of the Lyman-alpha line of hydrogen, gives a detailed rendition of the solar chromosphere. Hot clouds of hydrogen gas above the surface are shown by white areas. In contrast, the other photos, taken simultaneously at ground level and using various portions of the visible spectrum, yield coarser pictures of the sun.

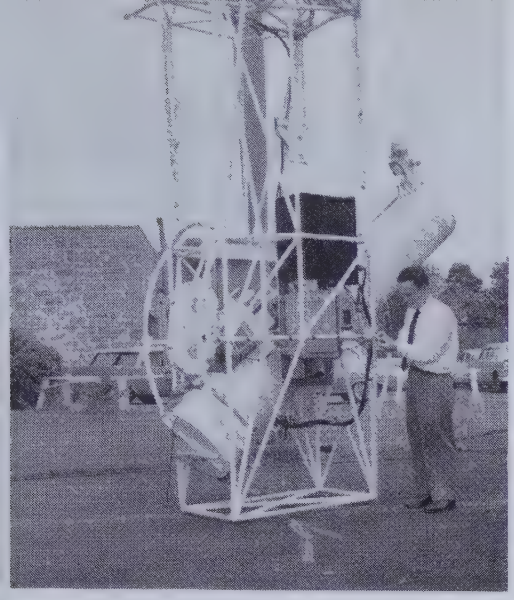
U.S. NAVAL RESEARCH LABORATORY

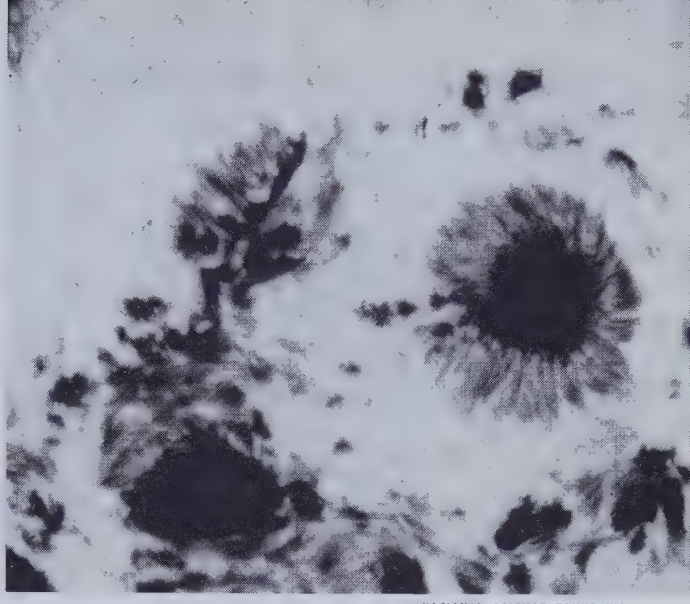
ever made of the nether, or far, side of the moon were taken by the Soviet Union's third moon rocket on Oct. 7, 1959. The 614-pound vehicle, launched on October 4 into an elliptical orbit around the earth and the moon, was reported by the USSR to have passed 4,906 miles below the moon's southern pole and then swung slightly to the north in response to lunar gravity. At a point about 260,000 miles from earth, the rocket's two cameras (with 200-mm. and 500-mm. lenses) were aimed at the moon by a signal from the Soviet Union. Photographs of the surface were made on 35-mm. film from about 37,000 to 43,000 miles distant. The film was then developed, fixed, and dried, and the pictures transmitted by an electronic scanning device, beginning at 274,000 miles from earth.

About 70% of the moon's far side (mostly in the northern hemisphere) was covered in the photograph released by the USSR on October 27. The surface in the picture seemed to be largely free of the deserts, craters, and mountains which mark the side of the moon turned toward earth. Some of the features were extensions of markings already visible from earth. The Russians gave names to seven of the dark spots not seen before, including the Sea of Moscow, a lava- or dust-filled depression 187 miles across, located in the center of a vast white section. The fact that the sun was at its zenith when the photos were made, and thus produced no shadows, accounted in part for the comparatively monotonous character of the surface. More detailed photographs are needed before the apparent difference between the near and far sides can be explained or fully confirmed. (See illustrations under SPACE FLIGHT.)

Photographing the Sun.—Further progress in solar study was privided in 1959 by high-altitude balloon flights. Project Stratoscope I, begun in 1957, was resumed in the summer of 1959 with three flights of a balloon-borne 12-inch solar telescope to about 80,000 feet. Refinements in the later series, conducted over Minneapolis, Minn., included the use of a closed-circuit television link and remote control guidance of the telescope. Photographs taken at this height are free of much of the obscuration of the earth's atmosphere, and in 1959 provided excellent views of sunspots. The project is sponsored by the National Science Foundation and the Office of Naval Research. Another milestone in scientific investigation of the sun was reached on March 13, 1959, when a Navy Aerobee-Hi rocket was fired 123 miles over White Sands (N.Mex.) Proving Ground. The launching produced the first detailed photos of the sun taken in the light of the Lyman-alpha line of hydrogen, revealing the hydrogen gas clouds which, because they emit ultraviolet light, are not visible through the screening layers of the ionosphere. (See also ELECTRICAL DEVELOPMENTS.)

Venus.—A very rare event was the occultation of the first-magnitude star Regulus by the planet Venus on July 7, 1959. In an occultation of this type, the star gradually disappears behind denser and denser layers of the planet's atmosphere. The July occultation was considered of great importance because it offered astronomers an opportunity to learn more about Venus. The phenomenon was observed from Europe, Asia, and Africa, and photographic, photometric, micrometrical, and motion picture observations were made. The planet's apparent diameter was 28".3 (seconds of arc) and, as viewed at Madrid, Spain, required about 11 minutes to cross the star. Preliminary data indicate that the density of Venus' atmosphere decreases outward tenfold every 14 km. The region probed was estimated to be from 100 to 150 km. above the planet's surface, or about 100 km.





NATIONAL SCIENCE FOUNDATION

(*Left*) Dr. Martin Schwarzschild, director of Project Stratoscope (National Science Foundation–Office of Naval Research), stands beside the project's 12-inch balloon-borne telescope. The black box houses telemetry and remote-control mechanisms, with TV transmitting equipment below. (*Right*) Photograph of sunspots, taken with Stratoscope equipment at 80,000 feet.

above the permanent cloud layer. The composition of the atmosphere of Venus remains a matter of controversy, although there is evidence that it contains much carbon dioxide. Temperature measurements vary widely, and there is no unity of estimates as to the rotation period, although it is probably more than 14 days.

Evidence of water vapor in Venus' atmosphere was detected for the first time in 1959. In a balloon which rose near Rapid City, S.Dak., and reached a height of 81,000 feet before landing the next day (November 28), Navy Comdr. Malcolm Ross and Dr. Charles B. Moore took spectroscopic readings of the planet's light by using a 16-inch telescope and other instruments. The amount of water vapor found was not determined immediately, but the discovery lent support to the theory that some form of life may exist there. Terrestrial observers have always been thwarted in searching for water vapor on Venus because of the earth's atmosphere, but the balloon gathered its data above an estimated 98% of the water in our air.

Studies of Venus made at the Lincoln Laboratory of the Massachusetts Institute of Technology in 1958 were published in 1959. Radio waves were sent to the planet and reflected back on February 10 and 12. (The uncertainty in transmission time was only ±0.0005.) Signals received on the second day were nearly 7.5 seconds later in returning to earth than on the first because the two planets had moved 696,640 miles farther apart in the two-day interval. Further radio studies of Venus were continued in 1959. This method of observation promises to furnish new and more accurate distances for bodies in the solar system. (See also PHYSICS.)

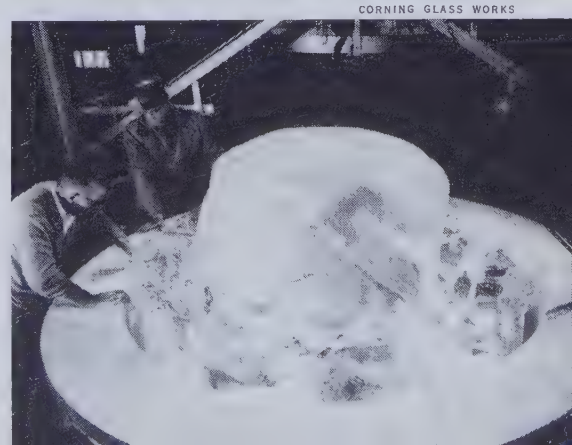
Mars.—This planet has been intensively observed in recent years, and a résumé has appeared of results obtained at Pic du Midi Observatory in France. Visual and photographic observations of Mars were compared and the polarization of 60 regions on the planet was determined. The latter confirms seasonal variations of the dark regions, the appearance of morning fogs, light yellow clouds in various places, and the evolution of the winter cloud over the poles. A superb map, based on selected photographs combined with visual observations, was drawn and reproduced. Telescopic powers up to 1,200 were used, and objects only 0".2 apart (35 miles) were separated.

The structure of the dark regions of Mars was found to be generally granular: small spots with less pronounced intervals. At the beginning of southern summer, very vivid colors, varying from region to region, were seen, but by midsummer these became more uniform. Important changes were noted in one region, and two brilliant spots also appeared. Some markings were certainly double, but "canals" as such seemed to be combinations of small spots arranged approximately in lines. Each polar cap, upon melting, seemed responsible for seasonal changes not only in its own hemisphere but also to 25° of latitude in the opposite hemisphere. We infer that these observations lend support to the hypothesis that some sort of vegetation exists on Mars.

Comets.—Comet Slaughter-Burnham (1959a) was discovered at Lowell Observatory, Flagstaff, Ariz., on January 27 on a plate taken Dec. 10, 1958, when its magnitude was 16. It has an elliptical orbit of low inclination and a period of 11.63 years. Comet 1959d, of magnitude 8, was discovered by Michiel J. Bester and Cuno Hoffmeister on July 26. When found it was in the southern part of Sagittarius, and its motion took it rapidly farther south. Comet 1959e, with a magnitude of 10, was discovered by George Alcock in England on August 25. It had a diffuse central condensation, and was in Corona Borealis. It passed

Chunks of glass weighing almost 4,000 pounds are melted to make the 84-inch mirror for the new telescope at the Kitt Peak National Observatory, near Tucson, Ariz.

CORNING GLASS WORKS



perihelion on August 18 at 1.14 A.U. Within a week, on August 30, Alcock discovered a second comet, 1959f, in the constellation Cancer. It was of magnitude 5 on September 4 and passed its perihelion point of 0.165 A.U. on September 15. By November, however, it had unexpectedly disappeared.

Comet Arend (1951k) was rediscovered by Elizabeth Roemer on July 6 at the U.S. Naval Observatory Station. It was diffuse, with a magnitude of 19. Comet Giacobini-Zinner (first discovered in 1909) was rediscovered by Dr. Roemer at the same observatory on a plate taken May 8, and it was sighted visually on July 4. Its magnitude by June 6 was about 18.7. This comet is the one which furnishes the Draconid meteors of October 9. Perturbations have shifted the comet's orbit slightly farther from that of the earth.

Eclipses.—There were three eclipses in 1959, two solar and one lunar; also on September 16/17 there was a penumbral lunar eclipse, visible in the eastern half of the United States, which might be counted as a fourth. The other eclipses were a partial lunar eclipse on March 24, invisible in the United States; an annular solar eclipse on April 8, the path crossing Australia; and a total solar eclipse on October 2, the path of totality starting just after sunrise in southern New Hampshire, crossing through northeastern Massachusetts near Boston, and continuing across the Atlantic Ocean and Africa to the Indian Ocean. For the United States, the October 2 eclipse came under poor viewing conditions, as totality occurred with the sun so very low and with only a small area of seacoast available for observation parties. Moreover, cloudy skies in Massachusetts prevented viewing from the ground, but better success was had in the Canary Islands and in airborne observations. Excellent photographs of the April 8 eclipse were obtained at several stations in Australia. As the moon was at apogee, the annular phase lasted longer than usual.

Sidereal Universe.—One important advance in sidereal astronomy was the publication in 1959 of superb photographs in natural color of nebulae and certain galactic regions. The plates were taken by William C. Miller at Mount Wilson and Palomar Observatories, many of them with the 200-inch Hale reflector. For the first time one can see at a glance the marvelous combinations of colors in these objects.

Work continues on defining the shapes, positions, and dimensions of the spiral arms of our galaxy. The use of the 21-cm. line of neutral hydrogen, using radio telescopes for observation, is proceeding most successfully. Since it was determined that there are various kinds of Cepheid variables, the use of these pulsating stars as a zero point for determining cosmic distances has been revised. While we know certainly that the older values derived were too small, authorities differ at present and much more work is needed before agreement can be reached on new values. The formerly published distances of other galaxies have been drastically revised upward by this development.

Novae and Supernovae.—Several novae were reported in 1959, two of them found belatedly on old plates. Cuno Hoffmeister thus discovered Nova Chamaeleontis of April 10, 1953, then of 7.3 magnitude. Allen Sandage found a supernova on a plate of the galaxy NGC 23, taken on Oct. 23, 1955. Invisible on a plate taken 61 days earlier, its absolute magnitude at maximum was −18, or about 1.6 billion times brighter than the sun. M. L. Humason, of Mount Wilson and Palomar Observatories, found a supernova of magnitude 12 in the galaxy NGC 7331 on June 28, 1959. On the same date he also discovered a supernova in a very small, faint galaxy at right ascension 13^h09^m, declination −3°40′, whose brightness was two magnitudes greater than that of the galaxy itself. Humason and Howard S. Gates of the Palomar staff found four supernovae in all through October 1959.

W. J. Luyten and Guillermo Haro, at Palomar, found a new-type star, perhaps "a dwarf nova which catastrophically collapsed into a neutron star." Luyten also found 16 more probably white dwarfs. Quite a long list of so-called flare stars is now available. The flares which cause their sudden brightness probably resemble those observed on the sun, but on an immensely greater scale.

Observatories.—The world's second largest optical telescope was dedicated in ceremonies on July 16, 1959, at the University of California's Lick Observatory. The 120-inch reflector, exceeded only by the 200-inch mirror at Mount Palomar, was placed in operation in the fall. The 84-inch glass disk for the Kitt Peak observatory in southern Arizona was cast early in 1959 and, after seven months of cooling, sent to Tucson, Ariz., for lengthy grinding and polishing. When completed, the huge mirror is expected to measure slightly over 80 inches in diameter, and will serve as the primary reflector at the National Astronomical Observatory, near Tucson.

Plans to build an observatory near Santiago, Chile, were announced by the sponsors, the University of Chicago, the University of Texas, and the University of Chile. The new telescope will permit study of the skies of the Southern Hemisphere, a region of the universe which has not been sufficiently observed. In Japan, work was begun on the new Okayama Astrophysical Observatory, the first of its kind in that country. Two reflectors, one of 74 inches and the other of 36 inches, will be installed in 1960.

Increasing attention is being devoted throughout the world to the use of radio astronomy for probing vast distances into space. The largest steerable radio telescope in the world is being constructed at the Naval Radio Research Station, Sugar Grove, W.Va., at a cost of $79,000,000. Due for completion in 1962, the facility will have a 600-foot saucer-shaped dish from which will protrude a 100-foot antenna. Plans for an even larger telescope to be built in Puerto Rico were announced by the Defense Department. The saucer-shaped antenna, of the fixed type, will be 1,000 feet in diameter, and will be used to study the earth's atmosphere as well as the solar system. (The largest radio telescopes at present are the 250-inch reflector at Jodrell Bank in England and a 345-foot transit type at Pulkovo Observatory in the Soviet Union.) Thirty miles from the colossal Navy structure, a 140-foot radio telescope is being completed at the National Radio Astronomy Observatory at Green Bank, W.Va. It will supplement an 85-foot steerable paraboloid antenna which began operating in July 1959.

Construction was begun in 1959 on a 210-inch steerable paraboloid antenna for the Radiophysics Laboratory at Sydney, Australia. Due for completion early in 1961, the telescope is expected to be superior in reflecting surface accuracy to the one at Jodrell Bank. An 85-foot steerable radio telescope designed primarily for solar research was dedicated on Oct. 7, 1959, at the University of Michigan. The instrument, constructed with Office of Naval Research funds, is located on Peach Mountain about 16 miles northwest of Ann Arbor, Mich. An 84-foot steerable paraboloid antenna, under construction since February 1959 at Penticton, British Columbia, was due for completion late in the year.

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ATMOSPHERE RESEARCH. Van Allen Radiation Belts.—Although the initial discovery of the radiation belts surrounding the earth was made in 1958, many details emerged from rocket and satellite flights in 1959. It was found that there are two major distinct zones of maximum radiation intensity surrounding the earth, referred to as the Van Allen radiation belts after their discoverer, Dr. James A. Van Allen of the State University of Iowa. Discovery of a third zone by the Explorer VI satellite was announced in late 1959 by the National Aeronautics and Space Administration.

These belts of radiation are regions in which protons and electrons are trapped by the earth's magnetic field. A charged particle moving in a magnetic field will spiral about lines of magnetic force, traveling in toward the earth until it is magnetically reflected and returned along the line of force. Once more it will spiral in toward the earth in the other hemisphere, and again it will be magnetically reflected. Hence the particle is "trapped," never escaping from this particular region of the earth's magnetic field, and surging back and forth from one hemisphere to the other in a fraction of a second. The particles will remain "trapped" for periods of many days, and will escape only by means of elastic scattering with gas atoms in the outer reaches of the earth's atmosphere.

The newly discovered third zone of radiation is centered about 1,200 miles above the earth, and is 300 miles thick. Of the two principal zones established earlier by Dr. Van Allen, the innermost one is located at 6,000 to 7,000 miles from the *center* of the earth and contains relatively hard radiation. Although the bulk of the energy in this zone is comprised of low-energy electrons (about 2×10^9 per cm.^{2} per second per steradian), there is a sufficient number of high-energy protons (about 2×10^9/cm.^{2}/sec./sterad) with energies greater than 40 Mev. (million electron volts) to be significant. Some of the protons have energies of many hundreds of millions of electron volts.

This intensity of radiation in the inner zone poses many problems of health hazard for future space travelers. By virtue of the fact that the inner radiation belt does not reach down to the earth's surface, nor does it encompass the polar regions, it may be possible for space travelers to go out through this gap in the radiation zones by means

of a polar trajectory. It is interesting to note that the nose cone of a recent Soviet rocket became radioactive on passing through the inner zone.

The outermost belt is most intense between 13,000 and 17,000 miles from the center of the earth. It contains more soft radiation than the inner zone, but none of the very hard radiation. There are approximately 10^{11} electrons/cm.^{2}/sec./sterad per cm.^{2} with energies greater than 20 Mev., and 100 protons/cm.^{2}/sec./sterad with energies greater than 60 Mev. The innermost of the two major zones of radiation appears to be quite stable in time, the radiation intensity remaining nearly constant from month to month. The radiation intensity in the slot between the two zones undergoes fluctuations of a factor of 10 times or more. The lower horn of the outer zone also appears to undergo large variations of radiation intensity with time.

Measurements of the intensity in the outer zone on March 3, 1959, made from the Pioneer IV satellite, showed it to be up by a factor of 100 times over similar measurements made from Pioneer III in December 1958. This increase in intensity followed five consecutive nights of auroral activity on the earth and the occurrence of an M region storm on the sun on Feb. 25, 1959. By late summer the intensity was down by a factor of three over that observed in December 1958. It seems likely that the particles trapped in the outer zone are replenished by solar plasma coming directly from the sun, but that they may not arrive with the high energies they later achieve by acceleration in the outer zone itself. It is still not known whether a blast of plasma from the sun will replenish the outer zone or whether it will temporarily wipe it out.

In the Soviet Union, scientists S. Dolginov and N. V. Pushkov placed a three-element, flux-gate magnetometer in Mechta, the first cosmic rocket launched Jan. 2, 1959, and detected an anomaly in the magnetic field surrounding the earth at about 13,000 miles altitude. The explanation for this anomaly could be the long-sought-after ring current around the earth—a westward drift of the protons trapped in the outer radiation belt and an eastward drift of the electrons.

Particle Bombardment of the Atmosphere.—Observations have been made by K. A. Anderson, of the State University of Iowa, concerning solar protons of energies 100 to 300 Mev. penetrating the atmosphere to balloon levels. Following such solar activity as an optical flare, radio frequency noise bursts, and a protracted noise storm, solar protons continued to flow into the earth's atmosphere for at least two days. Evidence from cosmic-noise radio-absorption measurements in the Arctic showed the presence of protons as late as 3½ days following the solar flare. Apparently the protons, after being ejected by the solar flare, are then trapped in the magnetic field of the sun and escape through some sporadic process involving turbulence and wave effects.

It is now becoming clear that strong ionization effects in the polar ionosphere result from the bombardment of the upper atmosphere by protons. There is also increasing evidence that these incoming particles undergo a spiral pattern centered on the magnetic pole as they travel in toward the earth. Incidental to this is the fact that sporadic E[1] occurrence in polar regions appears to have a spiral distribution, as does the distribution of auroras.

J. R. Winckler, of the University of Minnesota, has detected at balloon levels gamma ray fluxes of about 2×10^{-5} ergs/cm.^{2} sec. peaked in the 200 to 500 Kev. (thousand electron volts) region coincident with a solar flare. This appears to be bremsstrahlung radiation (produced by the deceleration of charged particles) which has escaped from the solar photosphere. Bursts of X-rays also have been measured at balloon altitudes directly beneath an auroral arc. (See also ASTRONOMY.)

High-Altitude Nuclear Tests.—Probably the most exciting and one of the most rewarding geophysical experiments ever conducted was the detonation of nuclear weapons in the ionosphere and in the exosphere in August 1958. On August 1 a megaton H-bomb called Teak was exploded at a height of 200,000 feet (60 km.), and on August 12 a megaton H-bomb called Orange was exploded at a height of 100,000 feet (30 km.) above Johnston Island in the Central Pacific Ocean. The results of these experiments have only recently become available. S. Matsushita and J. M. Malville of the University of Colorado have drawn some interesting deductions concerning atmospheric phenomena from these experiments.

Immediately following the explosions several events occurred. Artificial auroras were observed at Hawaii, along magnetic field lines, and in the vicinity of Apia, the magnetic conjugate point in Western Samoa. Strong counterclockwise circular electric currents were formed in the vicinity of Johnston Island at a height of 80 to 100 km., and these caused artificial magnetic storms in the Central Pacific. X-rays stemming from the explosion caused an increase in the D region absorption observed at Hawaii. Shock waves traveling at about 1.0 km./sec. caused irregularities of the electron density in the F layer at Hawaii. Ionization increased 10 times above normal over a wide area of the Pacific for 35 minutes after the first explosion and for 6 hours after the second explosion; the difference in time was due to the difference in height. A radio blackout occurred at Hawaii for 2 hours after each explosion. Strong radio wave absorption continued for many hours after the first explosion because of the greater height of the burst.

Beta decay electrons resulting from the fission fragments of an assumed 20-kiloton trigger bomb are capable of accounting for the artificial aurora observed above Apia. The distinctive violet color of the rays indicated a strong enhancement of the N_2^+ band system relative to the oxygen green line, and may imply that dissociative recombination rather than direct electronic excitation was the primary exciting mechanism for the forbidden OI lines. The high-altitude crimson arc may result from ion-atom interchange and dissociative recombination in a manner similar to the twilight enhancement of the oxygen red lines in the air glow.

The other high altitude nuclear explosions in 1958 (August 27 and 30, September 6) were three shots in the South Atlantic at heights of about 480 km., referred to as Project Argus. These experiments were not revealed until March 1959. Although these bursts were of great interest from the standpoint of the radiation belts and trapped particles, they were not of as much importance in the study of the upper atmosphere since their height was too great. (See also ATOMIC ENERGY.)

Ionosphere.—Observations made of the ion distribution in the ionosphere below 550 km. indicate that it is controlled not by diffusion but by changes in the recombination coefficient. Above 550 km. the ion distribution is diffusion controlled, according to F. S. Johnson of the Lockheed Aircraft Corporation. His findings indicate that there is a proton aureole surrounding the earth which can account for the propagation of "whistlers" and which originates from within the earth's atmosphere.

The phenomena of "whistlers," a class of very-low-frequency (VLF) radio waves originating with lightning discharges on the earth and traveling through the exosphere along lines of magnetic force before returning to the earth, has been well understood for several years. Another class of naturally occurring, very-low-frequency signals entering the atmosphere, which are not associated with lightning discharges but are strongly correlated with solar activity, has not been understood.

R. M. Gallet of the Central Radio Propagation Laboratory and R. A. Helliwell of Stanford University have come to the conclusion that many of these VLF emissions are generated by a "traveling-wave tube" mechanism—streams of high-speed ionized particles precipitating into the ionosphere in the presence of the earth's magnetic field. The electromagnetic waves which have been excited are then propagated in the same manner as "whistlers." The "traveling-wave tube" mechanism is one in which energy is transferred from the kinetic energy of electrons in a beam to an electromagnetic wave traveling at the same velocity. The theory requires particle velocities of the order of 10,000 km./sec. and electron densities in the exosphere which are in general agreement with "whistler" observations.

(See also INTERNATIONAL GEOPHYSICAL YEAR; METEOROLOGY AND CLIMATOLOGY; SPACE FLIGHT.)

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ATOMIC ENERGY. Important developments in the field of atomic energy in 1959 included the renewal of the informal three-power ban on testing atomic weapons, the successful carrying out by the United States of Project Argus, and a possible breakthrough in the search for a method of producing thermonuclear power.

[1] Sporadic E has been defined by Dr. E. K. Smith as follows: "By sporadic-E propagation is meant a comparatively strong and protracted [radio wave] transmission (several minutes to several hours) returned from the E region of the ionosphere by some mechanism other than the normal reflection process from the daytime regular E layer."

Weapons Tests.—The informal agreement among the United States, the United Kingdom, and the USSR to refrain from test explosions of atomic weapons first went into effect on Oct. 31, 1958, on the part of the Western powers, and on November 4 on the part of the Soviet Union.[1]

On Aug. 26, 1959, the United States announced that it would not resume nuclear tests for the remainder of 1959. On August 27, Great Britain stated that it would conduct no further tests so long as the conference then taking place in Geneva continued to produce "useful discussions." And on August 28, the Soviet Union announced that it would resume testing only if the Western powers did so. Major obstacles to agreement on a formal ban on atomic weapons have been the USSR's persistent refusal to permit unrestricted inspection of sites of suspected nuclear explosions, and its insistence on retaining veto powers so wide as to nullify the effects of agreements on other issues. (See also DISARMAMENT.)

On Nov. 4, 1959, France, which had for some time been developing an atomic bomb, advised the United Nations that it would conduct a nuclear test explosion of its own unless the United States, the USSR, and Great Britain consented to "renounce their nuclear armament." While no date for the test was given, French sources indicated that it would take place "more than a month and less than a year" after the United Nations announcement. It was made clear that unless the three countries which already had nuclear weapons agreed to halt production of such weapons, and to destroy their present stocks, the test would go through as scheduled—even if the three-power ban on testing were made permanent.

One major consequence of the ban on tests has been a slowing down of the development of new atomic weapons. Since the factor limiting possible use of atomic weapons in the event of war is no longer the amount of fissionable or fusion material available, but rather the weight of the individual weapons, a reduction in the weight of the weapons would increase correspondingly the atomic striking power of a given arsenal of aircraft and rockets. Reduction of weight can be accomplished, however, only by further testing of high-yield weapons.

When the informal ban on testing was imposed, the United States had scarcely begun test firings to develop offensive atomic weapons capable of resisting blast and radiation effects from nearby atomic explosions. Also, the program of test firings to develop new defensive weapons which would be lethal to such offensive atomic weapons was similarly curtailed.

Another major consequence of the ban is a reduction in the rate of radioactive fall-out. Radioactive particles produced by tests prior to Oct. 31, 1958, are falling to the earth in slowly diminishing quantities; nevertheless, the amount of radioactive dust on the ground continues to increase and may be expected to do so for several years, until the rate of fall-out becomes less than the rate at which the particles lose their radioactivity. The radioactivity of foods, also, may be expected to increase for several years. Even if there are no further tests, it will probably be at least 10 years before the radioactivity of foods becomes demonstrably less than it is at present, and the situation would be worsened by resumption of above-ground testing. (See also RADIATION; SANITARY ENGINEERING.)

Project Argus.—Just before the 1958 deadline for the cessation of weapons tests, the United States detonated three small atomic bombs 300 miles out in space. They were launched from the U.S.S. *Norton Sound*, from a position near the Falkland Islands in the South Atlantic, by means of special multistage liquid- and solid-fueled rockets. The effects of the explosions were monitored by the satellite Explorer IV, and by five-stage instrument-carrying rockets sent to an average altitude of 550 miles. These tests, constituting Project Argus, were conducted by the U.S. Navy, under the supervision of the Defense Department and the U.S. Atomic Energy Commission; the monitor rockets were launched by the Air Force, under the special code name of Project Jason.

As a result of the explosions, electrons (beta rays) from the fission products were trapped in the earth's magnetic field at altitudes ranging up to 4,000 miles at the equator, where they remained for an appreciable time as an artificial radiation belt. Very-low-frequency radio communications across the Atlantic were disrupted temporarily by these explosions, although high-frequency radio signals appeared to be unaffected. When the findings of Project Argus have been analyzed thoroughly, they are expected to throw light on the containment of plasma by magnetic fields (a major problem of thermonuclear research), and on problems related to manned space flight and the radio control of guided missiles.[2] The theoretical basis of the Project Argus experiments was worked out by Nicholas C. Christofilos of the University of California's Lawrence Radiation Laboratories at Livermore. (See also ATMOSPHERE RESEARCH; SPACE FLIGHT.)

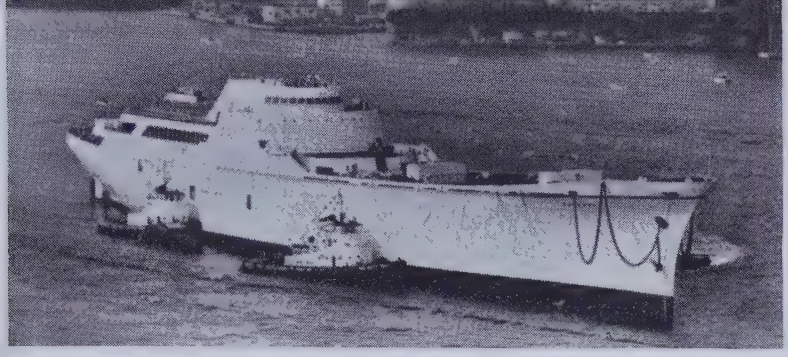
Thermonuclear Power.—Although many of the experimental thermonuclear power devices under investigation in 1958 have failed to produce the controlled fusion reaction hoped for, there was evidence late in 1959 that some thermonuclear power had been produced in the Los Alamos apparatus known as Scylla and in the Naval Research Laboratory's high-density magnetic mirror apparatus.

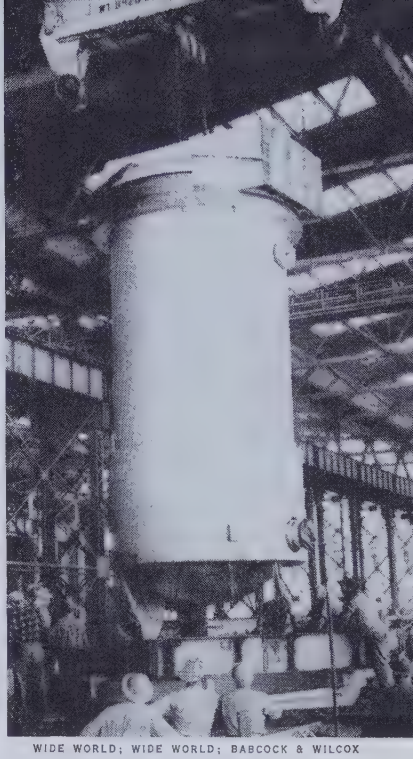
Another encouraging event was Los Alamos Scientific Laboratory's announcement in October of a revolutionary approach to the goal of controlled production of thermonuclear power. Described by some scientists as offering the greatest promise for the eventual development of a successful power reactor since the beginning of the United States thermonuclear power program, the new apparatus—like its predecessors—is based on the concept of containing intensely hot plasma (ionized gas) in a thermonuclear reaction zone by means of magnetic fields. The new apparatus incorporates a magnetic-containment field of an unusual shape, and relies on a novel method for introducing plasma into the field. The magnetic-containment field consists of four inward-curving, cusp-shaped magnetic fields, constituting what its designer, Dr. James L. Tuck, calls a "picket fence" enclosure. The "picket fence" shape promises to be free of the instability which has plagued the outward-curving magnetic enclosures of other experimental apparatus. To inject deuterium plasma through the "walls" of the magnetic enclosure, and into the reaction zone, an extremely powerful ion gun, developed by Dr. John Marshall, is employed.

In the event that magnetic-containment techniques (on which research has heretofore been concentrated) prove inadequate, an approach with

[1] Previously the USSR had unilaterally suspended nuclear tests from April to September 1958. It is believed that a test on November 3 was the last nuclear explosion in the USSR.

[2] One important result of the analysis of Project Argus data was announced late in 1959 by Army Signal Corps scientists at Fort Monmouth, N.J. It has been established that, in addition to the shell of electrons trapped in the earth's magnetic field, a second shell was formed by the explosions, consisting of waves of hydromagnetic energy circling the earth in the ionosphere at an altitude of 1,200 to 1,800 miles.





WIDE WORLD; WIDE WORLD; BABCOCK & WILCOX

(*Left*) Nuclear-powered surface ships include (top) the U.S. merchant ship *Savannah*, christened in 1959 and scheduled for service in 1960, and (bottom) the Soviet Union's icebreaker *Lenin*. (*Right*) The *Savannah's* reactor, here being loaded into its container, will carry 690 pounds of uranium-235 and enable the ship to travel 350,000 miles without refueling.

a different theoretical basis must be found if economical thermonuclear power production is to become a reality. For this reason, some universities, including Harvard and the Massachusetts Institute of Technology, have not constructed devices aimed directly at the generation of power, but rather have concentrated on basic research in the field. The universities mentioned received large grants in 1959 from the U.S. Atomic Energy Commission (AEC) for such research.

Even if the findings of experiments with magnetic-containment apparatus should turn out to have only indirect application to the problem of thermonuclear power generation, they are directly applicable to problems of missile re-entry, of radiation in outer space, and of advanced types of nuclear power plants for space vehicles. The very hot, very-low-density gases (consisting mostly of atoms stripped of their outer electrons, the outer electrons themselves, and photons) which constitute plasma are of central importance in the investigation and exploitation of outer space, and much of what is now known about them has been learned from magnetic-containment experiments originally directed toward production of thermonuclear power.

Atomic Power and Propulsion. *Power Plants.*—On Oct. 15, 1959, the Commonwealth Edison Co. announced the first chain reaction at its 180,000-kilowatt Dresden power plant, 50 miles southwest of Chicago. After further testing, the plant is expected to begin producing electricity early in 1960, with full operation by the middle of the year. Commercial power is presently in production at the United States first full-scale atomic power plant (60,000-kw.) at Shippingport, Pa., and at two small experimental reactors at Santa Susana and Pleasanton, Calif. Including the Dresden plant, sixteen commercial nuclear power projects were under way at the end of 1959. Three of these were scheduled to begin regular operation in 1960, and three more in 1961. (See also ELECTRICAL DEVELOPMENTS; PUBLIC UTILITIES.)

A bill approved on June 2, 1959, by the Joint Congressional Committee on Atomic Energy authorizes the construction of eight new power reactors, including five small prototype plants, to be financed by the government or by private industry with government assistance; a 30,000- to 75,000-kw. plant to be built by private industry with government assistance in research and development; a similar plant to be constructed by the government and operated by a public power group or rural cooperative; and a 15,000-kw. plant of advanced design to be built by the AEC alone or in cooperation with Puerto Rico. The bill also authorizes an increase in the capacity of the Shippingport, Pa., plant to 150,000 kw.

A report by Walter H. Zinn (formerly director of the Argonne National Laboratory), prepared in 1959 for the Joint Congressional Committee on Atomic Energy, concludes that the USSR is somewhat ahead of the United States with respect to the total power generated in experimental and power reactors, but that the reactor types now operating in the Soviet Union are less diverse than those in the United States. (The USSR is known to have graphite-moderated, pressurized-water, boiling-water, fast, and breeder reactor types.) Apparently neither country has settled on a single reactor type as best suited to the development of electric power, and both will continue to operate many types until this decision has been reached.

Ships and Submarines.—The nuclear-powered merchant ship *Savannah* was launched on July 21, 1959, at Camden, N.J. Costing $41 million, the vessel displaces 21,840 tons and can carry 10,000 tons of cargo and 60 passengers. Her reactor contains 690 pounds of uranium-235, and she will be able to cruise 350,000 miles without refueling at her rated speed of 20¼ knots. Sea trials will probably be held in the spring of 1960. While it is not expected that the *Savannah* will be economically competitive with conventional merchant ships, it is believed that experience with her will lead to designs which are competitive.

On April 15, 1959, the nuclear-powered submarine *Skipjack* was commissioned by the U.S. Navy, bringing the number of atomic-powered submarines under commission to six. Eight additional atomic submarines had been launched by the end of the year, including the *Seadragon* and *Triton* in August 1958; and, in 1959, the *Halibut* (January), *George Washington* (June), *Patrick Henry* (September), *Theodore Roosevelt* (October), *Robert E. Lee* (December), and *Scorpion* (December). Other nuclear-powered ships under construction included the guided-missile cruiser *Long Beach*, launched in July 1959; the guided-missile frigate (or destroyer leader) *Bainbridge;* and the aircraft carrier *Enterprise.*

Aircraft.—Propulsion systems for both manned and unmanned aircraft are being developed by the AEC and the Department of Defense in a joint program. For manned aircraft, direct-cycle power plants (in which air is mechanically compressed, heated by passage through a nuclear reactor, and then expanded through a turbine just as in conventional jet engines) and indirect-cycle types (in which heat is transferred from the reactor to the jet engine by means of a liquid metal) have been the subject of intensive experimentation. Many flights have been made in a test airplane fitted with a one-megawatt reactor and a complete radiation shield for the crew. The reactor was not used for propulsion on these flights.

In a ground test of a direct-cycle engine, the airflow through a nuclear element was interrupted deliberately while the engine was operating at full power. Parts of the nuclear element melted down within 15 seconds and a considerable quantity of radioactive material was blown out of the engine, forcing discontinuance of the test. Only the obstructed part of the engine was damaged, however, indicating that had such an accident happened in the air the aircraft would not have been endangered.

Other aircraft power plants under development include a nuclear-powered ramjet engine capable of high-speed travel within the earth's atmosphere (Project Pluto) and a nuclear-propelled rocket (Project Rover).

Direct Conversion of Nuclear Energy to Electricity.—Although there are some exceptions, including the direct use of heat from nuclear fission to warm buildings and to generate industrial steam, most applications of nuclear energy require the conversion of reactor heat into electricity. Normally, such conversion is effected by generating steam in a boiler, producing mechanical energy by means of a steam engine, and (finally) converting the mechanical energy into electricity by means of an electrical generator. Since the overall efficiency of this process is low and the cost of the equipment is high, the desirability of direct conversion of nuclear heat to electric energy, bypassing the intermediate mechanical stages, has long been apparent.

In April 1959 the first promising device for generating electricity directly from reactor heat was announced by the Los Alamos Scientific Laboratory. The experimental generator produced approximately 50 watts of direct current (25 amperes at 2 volts) from a cylinder approximately 1 inch in diameter and 6 inches long. Essentially the device is a thermocouple consisting of a tiny rod (the hot element) made of a mixture of zirconium carbide and uranium-235 carbide, enclosed in a metal sheath (the cold element), with the space between rod and sheath filled by cesium vapor. The amount of uranium-235 present in the hot element is too small to support a self-sustaining fission reaction. When the cylinder is placed in a reactor, neutrons generated by the reactor cause the fission of uranium-235 in the hot element; the heat of fission ionizes the cesium vapor to electrically conductive plasma; and the high temperature difference between the rod and the oil-cooled sheath drives electrons from the hot element to the cold element. The electrical current thus generated may be utilized in a circuit connected to the two elements of the thermocouple.

The development of a compact and self-contained nuclear thermoelectric generator, superior to batteries for many low-power applications, was announced by the AEC in January 1959. Officially designated SNAP III, the five-pound unit contains 20 pairs of thermocouples (constructed of lead telluride alloyed with bismuth, manganese, and other substances) radiating in a spokelike arrangement from a central core which contains a pellet of radioactive polonium-210 weighing two thirds of a gram. The polonium pellet reaches a temperature of 720°F. by radioactive decay, and the resulting flow of heat through the rods of lead-telluride alloy generates a small electric current. Over a period of 140 days (the half-life of polonium-210), SNAP III produced 5 watts of electricity, converting heat into electric current with an average efficiency of 8 to 10%. For some time after this period the generator produced about 3 watts, at a lower efficiency. Although the polonium isotope used in the experimental prototype is inordinately expensive ($30 million), it is expected that the use of relatively inexpensive radioactive substances will reduce the cost of subsequent models to the point where they may be used economically to power buoy lights, automatic weather stations, and space satellite instruments.

In November 1959 the AEC announced the development of a 250-pound miniature atomic power plant, the SNAP II, capable of generating 3,000 watts for a long period of time. Consisting of a miniature reactor together with a tiny, 30-pound mercury-vapor turbine, SNAP II is expected to be used as a power supply in large, heavily instrumented satellites and space probes to be launched by the United States.

Synthesis of Heavy Elements.—The heavy-ion linear accelerator (HILAC) at the University of California's Lawrence Laboratory has exceeded its designers' expectations in the creation of synthetic elements with atomic weights greater than that of uranium.

Atomic piles had previously been used for the production of plutonium, americium, and curium, but elements heavier than curium were obtainable in atomic piles only in extremely small quantities. An additional difficulty with the atomic pile process is that it does not produce all of the isotopes of the transuranium elements.

In the new method of synthesizing heavy elements, uranium and other elements of high atomic weight are bombarded by the accelerator with ions of elements near the middle of the periodic table. Of the great variety of products obtained from the bombardment, most are stable or radioactive isotopes of familiar elements, but occasionally a heavy ion is captured by a heavy atom, and a superheavy atom—beyond uranium in the periodic table—is produced. The elements thus far produced by both processes have been members of the actinide series, analogous to the rare earth series further up in the periodic table. (See also CHEMISTRY.)

Distillation of Fresh Water from Salt Water.—The AEC and the Department of the Interior have announced plans to build a low-temperature pressurized-water type of nuclear reactor, with a capacity of 40,000 thermal kilowatts, to convert salt water to fresh water. The reactor, to be constructed at Point Loma, San Diego, Calif., will produce steam under pressures up to 175 psi to be used in the conversion plant. The salt water will be passed through a flash distillation unit where much of it will evaporate in the form of a low-salt-content vapor, leaving behind a salty brine. The vapor will then be condensed to produce fresh water.

U.S. Atomic Energy Commission.—Commissioner John S. Graham was reappointed to another five-year term in 1959. Commissioner Willard F. Libby resigned to return to teaching at the University of California at Los Angeles, and Dr. John H. Williams, director of the commission's Division of Research since 1958, was appointed to replace him.

International Cooperation.—The United States signed atomic pacts with Great Britain and France on May 7, 1959. The agreement with Britain provides for the exchange of United States enriched uranium for plutonium made in British reactors, and for supplying Britain with design data on the construction of an atomic submarine, with details of weapons design data, and with nonnuclear parts of nuclear weapons. The agreement with France provides for supplying that country with enriched uranium to be used in the development of an atomic submarine power unit. Other agreements signed in May by the United States arranged for providing Canada, the Netherlands, Turkey, and West Germany (all North Atlantic Treaty Organization members) with the information and equipment necessary to train their military forces in the use of atomic weapons.

On Nov. 24, 1959, the United States and the Soviet Union signed an agreement covering a cooperative program of nuclear research, possibly including the joint construction of a large particle accelerator for use by scientists of all countries. The agreement may mark an important step in removing the secrecy that has characterized atomic research in most countries.

Under its Atoms for Peace Program, the United States continued in 1959 to supply other countries with nuclear materials, reactors, and technical information to advance their atomic projects. Besides the portions of the program being arranged through the European Atomic Energy Community (q.v.), assistance in setting up atomic research reactors has been given to individual countries, including Panama, the Philippines, and South Korea; and on November 1, the Export-Import Bank of Washington announced a loan of $34 million to aid a group of North Italian utilities in setting up a 165,000-kw. nuclear power plant. This was the bank's first loan for a foreign nuclear power plant.

(See also INTERNATIONAL ATOMIC ENERGY

AGENCY; and for further references, see the Index entry, *Atomic Energy.*)

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AUSTRALIA, Commonwealth of. Situated wholly in the Southern Hemisphere, Australia is the world's smallest continent and largest island. Its area (2,974,581 square miles, including adjacent Tasmania) is nearly as large as that of the continental United States, excluding Alaska; its compact land mass, encompassed by a 12,210-mile coastline, is more than three quarters the size of Europe. Politically, the Commonwealth is a federation (inaugurated Jan. 1, 1901) of 5 mainland states, 2 federal mainland territories, and the island state of Tasmania. These together form a self-governing, independent nation, whose citizens acknowledge the sovereignty of Elizabeth II as "Queen of Australia." Australia is a member of the Commonwealth of Nations (q.v.) and of the United Nations.[1]

The component states and territories of Australia, including capital cities, and their populations as of June 30, 1958, are as follows:

COMMONWEALTH OF AUSTRALIA

State or territory	Square miles	Population[1]	Capital (and population)[1]	
New South Wales	309,433	3,689,175	Sydney	(2,016,000)
Victoria	87,884	2,741,397	Melbourne	(1,726,000)
Queensland	670,500	1,417,404	Brisbane	(555,000)
South Australia	380,070	896,750	Adelaide	(544,000)
Western Australia	975,920	705,250	Perth	(382,000)
Tasmania	26,215	335,418	Hobart	(105,110)
Northern Territory	523,620	19,579	Darwin[2]	(8,066)
Australian Capital Territory	939	41,167	Canberra[3]	(39,061)
	2,974,581	9,846,140		

[1] June 30, 1958, est., excluding persons in employment camps; excluding also aborigines (full-blood, 47,000; half-blood, 27,000; est., 1947 census). [2] Municipality of Darwin, created June 28, 1957. [3] Federal capital.

Population Trends.—Low or irregular rainfall makes heavy settlement impossible over four fifths of Australia, the population density over the major portion of most states being less than 1 person in 8 square miles. About half the population lives in the capital cities. In 1958 the natural increase of the population was 138,781, and net immigration, 65,366; the aggregate increase of 204,147 represented a decline of 0.16% from the growth rate of 2.25% recorded in 1957. The estimated population on Dec. 31, 1958, was 9,951,618, compared with 9,747,471 a year earlier, and reached an estimated 10 million on March 10, 1959—a historic mark in the Commonwealth's population growth.

During 1958, long-term and permanent arrivals from other countries totaled 109,857, including 60,196 of British nationality. With departures numbering 44,978, net immigration was 64,879, compared with 77,622 (revised figure) in 1957. Arrivals from the United Kingdom and Ireland totaled 44,062 in 1958. Other principal sources of immigrants (all figures net) were Hungary (9,866), the Netherlands (5,691), Germany (4,620), and Greece (4,292). Persons provided with free or assisted passages totaled 696,830 up to June 1958.

Government.—Queen Elizabeth II is represented by a governor general (Viscount Dunrossil, formerly W. S. Morrison, speaker of the House of Commons, was appointed governor general on Nov. 12, 1959, to succeed Field Marshal Sir William Slim).

The governor general is advised by an Executive Council (comprising the ministers of state sitting as ex officio members), over which he presides. This body gives legal form to decisions of the cabinet, these being taken independently at private meetings presided over by the prime minister (Robert G. Menzies since Dec. 19, 1949), to which ministerial heads of departments are invited as required.

The federal Parliament comprises a 60-member Senate (10 members elected from each state) and an elected 124-member House of Representatives. The latter includes two members (one each from the Northern Territory and the Australian Capital Territory) who may take part in debate but vote only on questions affecting their territories. As in the United States, the powers of the federal Parliament are enumerated and limited to such areas as finance, commerce, defense, and foreign affairs. State legislatures (bicameral except in Queensland) retain jurisdiction in such fields as education, health, and public transportation. No state religion may be established.

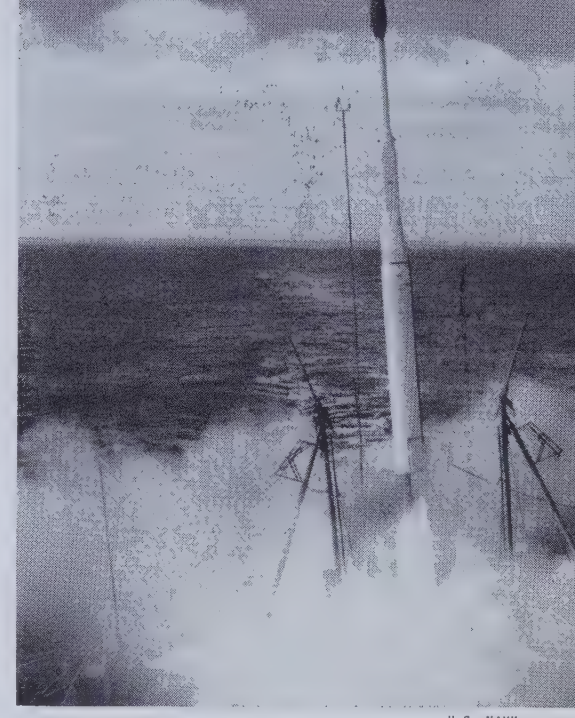
Final returns in the elections held Nov. 22, 1958, for the 23d federal Parliament showed that 5,141,109 out of 5,384,624 enrolled voters in the six states cast their ballots. The government, a Liberal-Country coalition, was returned to power with its majority increased to a record 32 in the House of Representatives. The coalition has held a Senate majority of 4 since July 1, 1959. New cabinet members in the seventh Menzies ministry included Harold E. Holt, who succeeded Sir Arthur Fadden as treasurer, and A. G. Townley, succeeding Sir Philip McBride as minister for defense.

Finance.—The 1958–59 budget results showed a total cash outlay of £A1,584,960,000 (consolidated revenue fund expenditure, £A1,297,243,000), against cash available, £A1,555,425,000 (consolidated fund receipts, £A1,287,882,000), producing a deficit of £A29,535,000, compared with a previously estimated £A110 million. (The Australian pound equaled U.S. $2.234, selling rate, or 20 shillings sterling, as of Aug. 31, 1959.)

Total cash resources were estimated under the 1959–60 budget at £A1,621,263,000, including £A1,204,625,000 from taxation, £A119,800,000 in post office revenue, and £A134,740,000 from other business undertakings. Total cash requirements of £A1,682,000,000 produced an overall deficit of £A60,737,000. Main charges to the consolidated revenue fund included: defense, £A192,800,000 (in 1958–59, £A189,300,000); national welfare fund, £A300,785,000; and payments to the states, £A321,728,000.

Education.—After federation the states retained responsibility for education in their respective jurisdictions; in the federal territories the Commonwealth government controls the public education systems. Preschool centers (236 in 1956) are conducted by a number of government-subsidized organizations, and broadcasting is used in preschool training. Attendance in primary schools is compulsory at the age of six years under the state school systems, but most Australian children begin school at the age of five. State schools in 1957 numbered 7,703 (New South Wales, 2,551), with 50,014 teachers and 1,425,126 pupils; nongovernment schools totaled 1,994, with 13,712 teachers and 453,979 pupils in 1956; and enrollment in Roman Catholic schools was 348,000 in 1956.

[1] The Commonwealth of Australia government also administers the Territory of Papua and the trusteeship Territory of New Guinea (see PAPUA AND NEW GUINEA, TERRITORY OF), the trust territory of Nauru (q.v.), Norfolk Island (q.v.), the Territory of Ashmore and Cartier Islands, the Cocos (Keeling) Islands, the Antarctic islands of Heard and MacDonald, and the Australian Antarctic Territory, comprising the region south of latitude 60°S. and between longitude 160° and 45°E. (other than Adélie Coast). Christmas Island (q.v.) in the Indian Ocean was transferred to Australian sovereignty Oct. 1, 1958.



U.S. NAVY

Multistage rocket aboard the U.S.S. *Norton Sound* in the South Atlantic is used to fire a small atomic bomb 300 miles into space in 1958, as part of Project Argus tests.

Facilities for higher education include technical, teachers, and agricultural colleges; nine universities, including a university in each state capital; the University of New England, at Armidale, New South Wales; and a university college (a branch of Melbourne University) at Canberra. Also located at Canberra is the Australian National University, which provides postgraduate education in four research schools. In Victoria a second university (the Monash University) was being established in 1958. Students enrolled at Australian universities (excluding the National University) totaled 36,815 (new students, 10,395) in 1957, and 3,176 bachelor degrees were conferred.

Social Welfare.—Provided by both Commonwealth and state governments, Australian social services are among the most diverse and far-reaching in the world, ranging from medical service (the Royal Flying Doctor) for patients in remote areas, to pensions for deserted wives (nearly 10,000 paid in 1956–57). Federal expenditure on social and health services had advanced from £A176,565,000 in 1953–54 to £A247,485,000 in 1957–58. Old-age pensions and those for invalids were being paid to 574,208 persons as of June 30, 1958, and allowances were being paid to 1,415,378 families with 3,073,945 children.

Six states together spent £A64,141,000 in 1956–57 on the care of the sick, relief of the aged, indigent, and infirm, and child welfare. Australian war pensions current on June 30, 1958, numbered 628,362, representing expenditure of £A50,278,000 for the previous fiscal year. Other service pensions in force in 1958 totaled 42,203, representing payment of £A5,630,000.

Defense.—Personnel strength in 1959 of the chief arms of defense were estimated as follows: army, 20,200; navy, 10,947; and air force, 15,260. Citizen personnel serving with the regular forces comprised 49,000 in the army, including national servicemen in training; 8,147 in the navy; and 828 in the air force. The cumulative call-up total for national service in the army was 180,692 to June 30, 1958. Providing for increased pay and allowances in all three services, Australia's overall expenditure for defense was estimated at £A190 million in 1958–59, including army, £A63,512,000; navy, £A42,401,000; and air force, £A59,302,000.

Extension of facilities for the testing of British weapons at Woomera, South Australia, continued in 1959. With consent of the Western Australian government, the target area was enlarged into uninhabited country between Port Hedland and Broome, making this the longest overland rocket range in the free world.

Transportation and Communications.—In 1957–58, passenger journeys on Commonwealth and six state railways aggregated 494,289,000, compared with 499,516,000 in the previous year, a loss of 5,227,000. Goods and livestock carried also showed a decline, from 47,476,000 tons in 1956–57 to 44,945,000 tons in 1957–58. Fourteen domestic air services, including Australian National Airways, flew a total of 41,894,000 miles and carried 2,151,613 passengers, a decline of approximately 1,460,000 miles and 2,250 passengers from the 1956–57 totals. The government-owned Qantas Empire Airways flew 59,390 route miles on international flights in 1957–58, an increase of 6,694 over the previous 12 months, and carried 84,624 passengers (76,158 in 1956–57). Airmail carried within Australia totaled 2,292,723 pounds in 1957–58; on overseas flights, 2,395,321 pounds.

On June 30, 1958, there were 1,936,960 telephones (1,416,023 automatic), of which 1,229,227 were served by metropolitan exchanges. Some 164 radio stations (56 national; 108 commercial) served 2,137,865 licensed receivers in 1957–58, and as of Sept. 30, 1958, television viewers' licenses totaled 390,059, and were increasing at the rate of 1,000 daily. Six television stations were in operation, comprising one national and two commercial stations in each of the cities of Sydney and Melbourne; six additional commercial licenses had been approved.

Roads open to general traffic approximated 519,000 miles in 1958, of which about 33% were macadam or similar composition. Motor vehicle registrations totaled 2,526,692 (automobiles, 1,676,055) in 1957–58.

General Economy.—Despite a trend in world trade unfavorable to primary-producing countries, the Australian government announced on July 31, 1959, that it was raising its imports licensing quota by £A50 million over the existing quota of £A800 million. Citing the strong position of the nation's economy, the government also announced a considerable easing of the licensing discrimination against the dollar countries, and said that it hoped to remove the remaining curbs altogether.

Retail sales for the year were expected to exceed the 1957–58 figure of £A3,089 million. Farm industries were doing well, and a record production of beef and veal was predicted in 1958–59. In the 1959–60 season, wheat exports were expected to rise substantially, while in 1959 black coal exports (800,000 tons in 1958) reached an estimated million tons for the first time since 1924.

The government's aim of achieving a steady rate of economic expansion faced the stumbling block of unemployment which rose by 17,000 early in 1959 to almost 82,000, or about 2% of the labor force of 4 million. This was the highest level in a decade. (See also below, *Principal Events, 1959.*)

Agriculture and Lumbering.—With a wheat area of 8,848,000 acres under cultivation in 1957–58 (an increase of some 974,000 acres over the previous year) and excellent seasonal conditions in all states, the harvest was expected to reach between 200 and 215 million bushels in 1958–59—approximately 100 million bushels more than the drought-reduced harvest of 1957–58. Average wheat production had been 186,500,000 bushels in the decade ending with the 1956–57 season. New South Wales, with an estimated yield of 67 million bushels, was responsible for most of the increase.

For the first time since 1947, sheep numbers failed to increase; they totaled 149,709,000 in March 1958, compared with a record 149,850,000 in the previous year. There was also a decline in dairy cattle (from 5,131,000 to 5,008,000), reversing a trend prevalent since 1952, while the number of beef cattle fell to 11,919,000 in 1958 from the 1957 figure of 12,005,000. Pigs totaled 1,424,000 in 1958, an increase of 7.5% over the previous year. Production of fresh meat increased slightly in 1957–58 to 1,286,000 tons, but the output of whole milk (1,261 million gallons); farm and factory butter (175,771 tons); and cheese (34,899 tons) showed declines.

Australian wool production in 1958–59 was expected to contribute 1,544 million pounds (greasy basis), compared with 1,463 million pounds in the previous season, to an estimated world yield of 5,063 million pounds. Some 157,500,000 sheep and lambs were shorn for a total of 1,341 million pounds of shorn wool, compared with 1,320 million pounds in 1957–58. In the season ending June 30, 1959, 4.8 million bales (297 pounds each) were sold, representing an increase of 400,000 bales over the previous season. A price decline starting in 1957 continued into the 1958–59 season, during which sales at auction yielded £A295.7 million, £A42.1 million less than in the previous season. The declining receipts reflected in part an average price drop of 13.88 pence per pound.

The production of sawn timber in the 1958–59 season was 1.4 billion superficial feet, representing a slight decline from the previous year.

Mineral Production.—Mining and quarrying of a wide variety of mineral products was valued in 1958–59 at £A176,320,000. Gold output of 1,102,731 ounces during the 1958 calendar year made Australia the fourth largest gold producer in the free world. Copper production was expected to reach about 120,000 tons annually in the next five years; 53,225 tons were mined in the first nine months of 1958. An estimated 20,362,000 tons of black coal and 11,600,000 tons of brown coal were produced in 1958. Tonnages of some of the other minerals produced in the same year were: asbestos, 12,500; aluminum, 10,712; tungsten, 900; zinc, 200,539; and lead, 333,264.

Industrial Production.—Some 360 new manufacturing projects, each involving expenditure of £A50,000 or more, were launched in Australia in 1957–58, with New South Wales and Victoria continuing to lead in industrial production. Heavy industry included output of 2,284,000 tons of pig iron, 3,106,000 tons of ingot steel, and 39,111 tons of tin plate in 1957–58. Production of manufactured gas (48,284 million cubic feet) reached a record level. The building industry used 883 million bricks and 2,320,000 tons of cement.

Other industrial output in the same period included woven woolen cloth, 32,133,000 square yards; rayon cloth, 21,305,000 square yards; cotton yarn, 44,492,000 pounds; women's hosiery, 2,126,000 dozen pairs; and boots and shoes, 21,298,000 pairs. The production of appliances in 1957–58 included 285,300 television sets, 193,700 refrigerators, and 164,100 washing machines.

Progress continued in the development of the motor vehicles industry, which is geared to local market requirements of about 240,000 commercial vehicles and passenger cars annually. Motor bodies produced in 1957–58 numbered 230,412.

Electric Power.—At the end of April 1959, power from the Snowy Mountains hydroelectric and irrigation project (one of the largest of its kind in the world) in southeastern Australia began to flow through 90 miles of transmission lines into the New South Wales electric system. The 320,000-kilowatt power station in which it is generated is over 1,000 feet underground. Later in 1959 a 14-mile-long tunnel was expected to go into service, providing the first diversion of waters from the Snowy River for irrigation in western New South Wales.

Including output from the Snowy Mountains station, the installed generating capacity of main electric systems increased by some 313,430 kw. to a total of 4,570,543 kw. in the year ended June 30, 1958. Total electricity generated for public supply and private use (including factories) rose to 19,793 million kw.-hr. in 1957–58.

External Trade.—In the year ending June 30, 1959, exports (£A803,600,000) exceeded imports (£A796,700,000) by £A6,900,000, compared with a favorable balance of £A27,200,000 in the previous year. Chief exports in the 10 months ending April 30, 1959, were foodstuffs of animal origin (butter, 150,225,000 pounds; beef, 422,647,000 pounds; lamb, 88,601,000 pounds) and of vegetable origin (flour, 790,816,000 pounds; barley, 539,000 tons; oats, 206,396 tons; wheat, 1,186,449 tons; rice, 680,379 hundredweight; and apples, 1,946,723 bushels). Also exported in the same period were hides and skins (72,026,000 pounds); oil (155,996,000 gallons); coal (513,104 tons); and zinc (217,000 tons). Principal imports during the 10 months included foodstuffs valued at £A29,005,000; tobacco, £A13,757,000; textiles, £A55,813,000; apparel, £A80,561,000; oils and fats, £A86,456,000; metal manufactures, £A116,017,000; machinery, £A242,291,000; and paper, £A29,159,000.

Greasy wool exports for the year ended June 30, 1959, totaled 1,188,377,000 pounds, valued at £A264,245,000, compared with 1,080,634,000 pounds, valued at £A324 million, in the previous year. The United Kingdom, with 304,779,000 pounds, was the chief buyer, followed by Japan, 274,568,000 pounds.

Principal Events, 1959.—For several million Australians the year's most notable development was the government's decision to reduce the individual income tax by 5%, and to increase pensions for the aged, invalids, widows, and ex-servicemen. The federal treasurer, Harold E. Holt, in announcing these measures on August 11, gave an optimistic account of the Commonwealth's economic position. The year 1958–59 showed, he said, substantial rural production. The majority of industries increased their output. Construction of houses and apartments was at the rate of 80,000 a year. Some 242,000 new motor vehicles were registered—an increase of 14,000 over the previous year. New money raised by listed companies amounted to £A144 million in the first nine months of 1958–59, an increase of 72% over the corresponding period of 1957–58. Overseas reserves fell by only £A10 million, and on June 30, 1959, stood at £A515 million.

AUSTRALIA NEWS AND INFORMATION BUREAU (J. TANNER)

Princess Alexandra of Kent, in Australia in August as Queen Elizabeth's representative at the Queensland centenary celebration, attends a ball with Prime Minister Menzies.

The government announced on March 16 that it had agreed with the Soviet Union to restore diplomatic relations. Relations had been broken off in April 1954 after the defection of Vladimir Petrov, third secretary at the Soviet embassy, reportedly with secrets of Soviet espionage in Australia.

On February 4 the Australian government took over the scientific research base at Wilkes Station, Antarctica, established by the United States during the International Geophysical Year. Operation of the base will be continued, without charge or liability, under an agreement with the U.S. State Department. (See also ANTARCTICA.)

Prime Minister Robert G. Menzies made a five-day visit to the United States in May to discuss foreign and financial matters with President Eisenhower and other United States officials. On December 1 he arrived in Djakarta, Indonesia for a one-week official visit—the first such visit by an Australian prime minister. After talks with President Sukarno, aimed at improving relations between the two countries, Prime Minister Menzies continued on to Kuala Lumpur, Malaya, for a five-day visit.

The National Capital Planning Committee, appointed to consider the future development of Canberra, released on May 8 the report of Sir William Holford, professor of town planning at the University of London. It recommended, among other improvements, the construction of a new Parliament House, a civic auditorium, and a house for the Queen of Australia, Elizabeth II.

Sir Josiah Francis, Australia's consul general in New York, said in Brisbane on March 1 that there was a possibility of assisted passages being arranged for United States citizens intending to settle in Australia. Inquiries at his office respecting immigration regulations and living conditions in the Commonwealth reached a volume of 4,000 a week in 1959.

DONOVAN ROWSE,
Author and Publicist.

AUSTRIA. Under a parliamentary declaration issued on June 7, 1955, in conjunction with the state treaty of July 27, 1955, Austria is a neutralized state with the borders of Jan. 1, 1938, an area of 32,375 square miles, and a frontier of 1,648 miles, bordering on six countries. It is a member of the United Nations, the Council of Europe, and the Organization for European Economic Cooperation (OEEC).

Population.—The population, which at the census of June 1, 1951, totaled 6,933,905, was estimated to be

7,021,000 in mid-1958. In the spring of 1959, 56,000 refugees were registered with the Ministry of the Interior, and it was estimated that another 32,000 lived in Austria without being registered. On March 31, 1959, the capital, Vienna, had a population of 1,652,427. Other leading cities (1951 figures) are Graz (226,453), Linz (184,685), Salzburg (102,927), Innsbruck (95,055), and Klagenfurt (62,782).

Government.—Dr. Adolf Schärf (Socialist) was elected president on May 5, 1957, for a 6-year term. The cabinet as reconstituted on July 14, 1959, following the parliamentary elections is again headed by Julius Raab (People's Party), and consists of an equal number of representatives from the People's and Socialist parties. The People's Party holds the federal chancellorship (Raab) and the ministries of Education (Heinrich Drimmel), Finance (Reinhard Kamitz), Agriculture (Eduard Hartmann), Trade (Fritz Bock), and Defense (Ferdinand Graf); the Socialists hold the vice chancellorship and the Ministry of Nationalized Industries (Bruno Pittermann), as well as the ministries of Foreign Affairs (Bruno Kreisky), Interior (Josef Afritsch), Justice (Otto Tschadek), Social Administration (Anton Proksch), and Communications and Electric Power (Karl Waldbrunner). The People's Party was accorded two state secretaries, attached to the ministries of the Interior and Foreign Affairs, while the Socialists received state secretaries attached to the ministries of Trade and Defense. Leopold Figl (People's Party), former chancellor and the minister of foreign affairs in the outgoing cabinet, was elected president (speaker) of the National Council on June 9.

The upper chamber of Parliament, the Federal Council, is composed of 50 members chosen by the 9 provincial legislatures, seats being distributed in proportion to the population of each province. The People's Party holds 26 seats; the Socialists, 24. Elections to the National Council (National Assembly), the 165-seat lower chamber, were held on May 10, 1959, with the following results (former post-World War II election results in parentheses): People's Party, 79 (1945, 85; 1949, 77; 1953, 74; 1956, 82); Socialists, 78 (1945, 76; 1949, 67; 1953, 73; 1956, 74); Freedom Party, 8 (1949, 16; 1953, 14; 1956, 6); and Communists, 0 (1945, 4; 1949, 5; 1953, 4; 1956, 3). (See also below, *Principal Events, 1959.*)

Provincial elections were held in two provinces in conjunction with the parliamentary elections. In Lower Austria the results (1954 in parentheses) were: People's Party, 31 (30); Socialists, 25 (23); and Communists, 0 (3); in Salzburg, People's Party, 14 (15); Socialists, 13 (13); and Freedom Party, 5 (4). Elections held in Vienna on Oct. 25, 1959, for the 100-seat Municipal Council produced the following results as compared with 1954: Socialists, 60 (59); People's Party, 33 (35); Freedom Party, 4 (0); and Communists, 3 (6).

Education.—Education is compulsory for all children between the ages of 6 and 14. For the first 4 years they attend the *Volksschule,* of which there were 4,309 public and 94 private schools in 1958–59. In rural areas the *Volksschulen* often continue for 4 additional years. After the first 4 years, however, the usual course is for pupils to attend either the *Hauptschule,* which offers a 4-year practical terminal course and also prepares for trade schools, or the *Mittelschule,* which prepares for the universities and higher technical schools. If a child from 14 to 18 years of age does not attend a *Mittelschule* or other specialized school, the normal procedure is to attend a trade school, usually on a part-time basis. There were 753 public and 71 private *Hauptschulen* in 1958–59. Physically and mentally handicapped children are taken care of in 115 public and 7 private *Sonderschulen* and in 369 special classes attached to regular *Volksschulen* and *Hauptschulen.* The number of *Mittelschulen* in 1958–59 was 196, of which 146 were public and 50 were supported by private organizations, chiefly by the Roman Catholic Church.

In 1958–59 (attendance at private schools in parentheses), 495,811 (12,403) pupils attended the *Volksschulen;* 185,510 (10,466), the *Hauptschulen;* and 20,250 (580), the *Sonderschulen.* Attendance at *Mittelschulen* increased by 1,245 to 85,411. In the winter semester of 1958–59, 32,608 students, of whom 10,015 were foreigners, attended the 14 Austrian institutions of higher education.

Religion.—According to the 1951 census, the religious affiliation of the population was as follows: Roman Catholic, 6,170,084; Protestant, 429,493; Old Catholic, 32,919; Greek Orthodox, 5,643; Jewish, 11,224; other, 17,450; none, 264,014; and unknown, 3,078.

Finance.—Final figures on the 1958 budget indicated that while expenditures had increased by 14% over 1957, revenues had risen by only 2%, leaving an overall deficit of 5,400 million schillings (26 schillings = $1). While gross tax receipts continued to rise during 1958, the increase was the lowest recorded since the war and amounted to 4% from direct taxes and 6% from indirect taxes. The projected 1959 ordinary budget (comparable figures for 1958 in parentheses) provided for expenditures of 37,458 (37,264) million schillings and revenues of 36,467 (36,278) million, leaving a deficit of 991 (986) million. To this should be added the extraordinary budget of 2,968 (1,707) million for investments, producing an overall deficit of 3,959 (2,693) million. An increase in tax receipts during the first part of 1959 gave hope that the final deficit would not be as large as anticipated.

Foreign convertibility of Austrian schillings was announced on Jan. 1, 1959, in line with practices inaugurated in other European countries following the dissolution of the European Payments Union. On February 17, new regulations materially cut the number of foreign exchange licenses required. Exchange rates for foreign currency are no longer controlled by the Austrian National Bank but are arrived at freely on the Vienna Exchange.

Gold reserves rose from 2,652 million schillings in January 1958 to 7,506 million in August 1959, and foreign currency reserves and savings deposits also reached new highs during 1959. On April 23, the Austrian National Bank reduced its discount rate from 5% to 4½%.

By the end of 1958 the Austrian government had floated loans totaling $52,029,263 and had guaranteed loans totaling $168,988,076 contracted by Austrian enterprises. A 100 million mark loan bearing 6% interest was successfully placed in West Germany in February; the proceeds were to be used for a power plant at Aschach. At the end of March, a 20-year $69.2 million bond issue at 7% was sold to cover investments planned in the extraordinary budget. A $6 million loan to three Austrian banks for the purchase of cotton was announced by the Export-Import Bank of Washington on June 25, and on September 25, the Austrian Investment Credit Corporation obtained from the International Bank for Reconstruction and Development a $9 million loan for industrial expansion.

Transportation and Communications.—By mid-1959, 1,106 miles of Austria's 3,740-mile railroad network had been electrified. Since this covered some of the most important stretches, nearly two thirds of the railroad service was powered by electricity.

Landings at Austria's six airports increased from 6,581 in 1957 to 8,178 in 1958. Austrian Airlines, which began regular flights in 1958, served 15 cities in 13 countries in 1959.

Austria has 55,000 miles of roads, including 5,170 miles of federal highways. About 100 miles of the 198-mile Vienna-Salzburg superhighway have been completed, and in 1959 ground was broken on two new superhighways: a north-south route that will eventually extend to Italy, and a road from Kufstein to the Brenner Pass. As of April 1959, there were 819,590 registered motor vehicles.

Freight traffic on the Danube River in Austria in 1958 totaled 5,037,616 metric tons (4,721,160 in 1957), of which 3,360,389 tons were international. Coal and coke accounted for about two thirds of the tonnage.

On Jan. 1, 1959, 49,322 television receivers were registered in Austria. New registrations average 4,000 a month.

Production.—In 1958 the Austrian gross national product totaled 128.9 billion schillings, or 5.8% more than in 1957. When allowance is made for price advances, the real increase was about 3.4%. The rate of increase was notably less than in 1957, when it had amounted to 10.1% (5.8% real) over the 1956 product. This decline in the rate of growth was due largely to the impact of the international recession on Austrian exports. The general index of industrial production (1953 = 100), excluding manufactured gas, was 150 in 1958, as compared with 146 in 1957; that of mining, 119 (124 in 1957); manufacturing industries, 152 (147); and electricity, 161 (146).

The monthly average number of unemployed rose from 113,185 in 1957 to 123,117 in 1958. In January 1959, the unemployed numbered 227,858 (209,233 in January 1958); at the end of July, 62,062 (74,170 in July 1958). At the end of January 1959, employed persons registered for sickness insurance totaled 2,215,300 (2,117,100 in January 1958); at the end of July, 2,290,400 (2,260,100 in July 1958).

Manufactures.—The 1958 output in metric tons (with 1957 figures in parentheses) of major products was as follows: pig iron and ferroalloys, 1,824,000 (1,956,000); crude steel, 2,388,000 (2,508,000); electrolytic copper, 9,600 (9,480); lead 8,880 (8,640); aluminum, 74,280 (72,840); cement, 2,154,000 (2,128,800); paper, 428,280 (432,168); cellulose, 428,416 (429,555); and woven cotton fabrics, 17,520 (16,800).

Electric Power.—The Glockner-Kaprun power group was completed at the end of 1958, when the final unit at Schwarzach went into operation. In 1959 ground was broken for a new power plant at Edling, Carinthia, and for another at Dorfertal-Huben, Tirol. Electricity production in 1958 amounted to 12,463 million kw.-hr. Austria im-

ported 659 million kw.-hr. and exported 1,900 million, leaving a balance of 11,222 million kw.-hr. for domestic consumption.

Minerals.—In 1958, Austria produced 3,410,676 metric tons of iron ore (3,495,924 in 1957); 141,048 tons of coal (151,340); 6,495,566 tons of lignite (6,877,260); 1,221,192 tons of raw magnesite (1,172,604); and 21,000 tons of crude graphite (18,000). Crude oil production declined from 3,185,616 metric tons in 1957 to 2,836,392 tons in 1958, but that of natural gas rose from 758,520,000 to 820,284,000 cubic meters in the same period.

Agriculture and Forestry.—Despite an extraordinarily cold spring and a hot, dry summer, the crop yield in 1958 was on the whole above the average for the preceding 10 years. Wine production was the largest in the postwar period, amounting to 1,897,077 hectoliters, as compared with 1,415,427 in 1957. Production of leading crops in thousands of metric tons (with 1957 figures in parentheses) was as follows: bread grains (wheat and rye), 958 (985); barley, 335 (392); oats, 333 (340); corn, 155 (149); potatoes, 3,542 (4,034); and sugar beets, 2,005 (1,655).

The wood cut declined from 11,231,085 cubic meters in 1957 to 10,240,149 cubic meters in 1958. Because of a marked decline in exports, the greatest drop was in the coniferous cut.

Foreign Trade.—In 1958 exports showed a decline principally in semifinished and finished products, while imports showed increases in finished products and a substantial decrease in raw materials. Austrian deliveries to the USSR under the agreement annexed to the state treaty amounted to 1,132 million schillings. About half of Austria's trade is with members of the OEEC (especially West Germany, Italy, Switzerland, Great Britain, France, and the Netherlands) and consisted in 1958 of exports worth 14,925 million schillings and imports worth 18,618 million. Trade with eastern Europe (in millions of schillings) was: exports, 2,966, and imports, 3,006; with the Western Hemisphere, exports, 2,123, and imports, 3,820; with the United States alone, exports were 1,777, and imports, 2,817.

Total imports in 1958 (figures for 1957 in parentheses) amounted to 27,912 million schillings (29,339), and exports to 23,864 million (25,442). By volume, imports amounted to 10,839,000 metric tons (11,738,000), and exports to 6,236,000 (6,731,000). Figures for the first 7 months of 1959, as compared with the same period in 1957, showed imports of 16,380 million schillings (16,168) and exports of 13,990 million (13,647).

On November 20, Austria joined Great Britain, Sweden, Norway, Denmark, Switzerland, and Portugal (Outer Seven countries) in initialing a convention establishing a European Free Trade Association (q.v.). It was hoped that the agreements would be ratified by March 1960 so that tariff reductions could be inaugurated on the following July 1.

Principal Events, 1959.—On March 5, under the chairmanship of Chancellor Julius Raab, the People's Party took the initiative in proposing the dissolution of Parliament, although that body was not scheduled to expire until 1960. Raab complained about the difficulty of obtaining Socialist approval for a number of parliamentary bills, notably those on public housing, the sale of stock in nationalized industries, tax concessions for small businessmen, and the implementation of a 1955 agreement with the United States for settling a dispute with American oil companies. The Socialists under the leadership of Vice Chancellor Bruno Pittermann rejected his accusations but willingly accepted the challenge for new elections. In an uneventful electoral campaign the People's Party relied on a slogan of "prosperity and security," while the Socialists charged that their opponents wanted to end the coalition regime which had governed Austria since the war and proceed along the authoritarian road taken in the interwar period.

In the elections held on May 10, 94% of the electorate participated, as compared with 96% in 1956. The results of the popular vote (1956 figures in parentheses) were as follows: Socialists, 1,953,935 (1,873,295); People's Party, 1,928,043 (1,999,986); Freedom Party, 336,110 (283,749); and Communists, 142,578 (192,438). Despite their larger popular vote the Socialists received one parliamentary seat less than the People's Party, and for the first time the Communists won no mandate. On May 12, Chancellor Raab submitted the resignation of his government, but the cabinet agreed, at President Adolf Schärf's request, to function as a caretaker government. Negotiations for the formation of a new cabinet were the most protracted in postwar history, and the president played a more important role than usual in bringing about the final coalition cabinet sworn in on July 16. (See also page 70, the section on *Government.*)

Relations with Italy were affected by the question of the South Tirol (Alto Adige). On February 11 the Italian government refused to permit several Austrian officials of the Province of Tirol to visit Bolzano (Bozen) in order to participate in festivities commemorating the 150th anniversary of the Tirolean uprising against Napoleon. The refusal led to *démarches* and counter *démarches* by the Italian and Austrian governments, which were the prelude to a series of protests and statements on both sides throughout the year. The Austrian government charged that Italy was not living up to the 1946 Austro-Italian agreement on the South Tirol. Particular grievances were that the German-speaking element was being crowded out by Italians, that it occupied almost none of the apartments built with public funds, and that administrative services and courts were staffed approximately 90% by Italian-speaking citizens. The Austrians, who favored autonomy for the Province of Bolzano, brought up the South Tirol question at the 10th anniversary meeting of the Council of Europe in April and during the general debate of the U.N. General Assembly on September 21. Speaking two days later, Italian Foreign Minister Guiseppe Pella rebuked Austria for attempting to raise a "domestic question" in the United Nations. Meanwhile, a large Tirolean protest parade was held in Innsbruck on September 13. (See also ITALY.)

A rally of 300,000 Sudeten Germans was held in Vienna on May 16–18. Both before and after the meeting, Czechoslovakia protested to the Austrian government that permitting the gathering on Austrian soil was an unfriendly act toward Czechoslovakia and one inconsistent with Austria's policy of neutrality. In its reply of June 7, Austria rejected the protest and charged that Czechoslovakia was attempting to intervene in its internal affairs. The Communist-sponsored International Youth Festival took place in Vienna on July 26–August 4 and, despite some open differences, went off without serious mishap.

Among visits by prominent Austrians during the year was that by Vice Chancellor Pittermann to the United States, on February 7–21. He was followed on June 2–19 by Franz Cardinal König, who was awarded an honorary degree by the University of Notre Dame. President Schärf paid a state visit to the USSR on October 5–15, and from October 17 to November 25 the Vienna Philhar-

monic Orchestra under the direction of Herbert von Karajan made a world tour.

E. C. HELMREICH,
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AUTO RACING. See SPORTS, GAMES, AND SHOWS.

AUTOMATION. See Index entry.

AUTOMOBILES. The year 1959 featured a big "turnabout" in the type of car produced by the automobile industry. Although sales of new cars showed a 32% gain during the first eight months of 1959, soaring small car registrations forced the big three makers to introduce smaller economy cars—the Chevrolet rear-engine Corvair, the Ford Falcon, and the Chrysler Valiant.

Ever since World War II, American automobiles have increased annually in length, width, and horsepower. Parking and road space became a growing problem, and initial costs of the cars rose steadily while mileage per gallon dropped and gasoline prices rose. Even as small imported cars grew in popularity, success of American Motors' Rambler and Studebaker-Packard's Lark presented a real challenge to the major manufacturers. Long-dormant plans for compact cars were dusted off, engineering work was rushed, and the big three's small, economy models were brought out at the start of the 1960 model season.

Initial success of the smaller cars seems assured, but it is expected that lack of sufficient productive capacity will not permit a real test in sales popularity of the compact models for at least a year. Meanwhile, the big three firms rushed plans for introduction of compact cars in their medium-priced lines during 1960.

Production.—While the number of cars on United States highways rose by 2.06% to 52,500,000, production of new cars fell to 4,244,021 in the calendar year 1958, a 30% drop and the lowest output since 1948. However, with start of production on 1959 models in the fall of 1958, output began a slow rise, and production of 1959 models totaled 5,566,527 cars, topping the 1958 model output by 32%. The biggest gains were shown by Rambler, Ford, Pontiac, and Lark, in that order.

However, due to the shortage of steel resulting from the effects of the steel strike in 1959, most automobile manufacturers were forced to curtail production in the fall of the year. General Motors closed down its passenger car production lines completely on November 19 for one month, and Chrysler Corporation and Ford Motor Company instituted short workweeks in their plants in the same period. The steel shortage, coupled with poor sales, caused Ford to discontinue production of its Edsel line on Nov. 19, 1959. Total output of Edsel cars and station wagons, which were first produced in 1957 and cost an estimated $250 million to develop, was 110,738.

The big three producers turned out 5,060,910 cars during the 1959 model year (July 1958 to September 1959), or 90.92% of the total output, compared with 93.92% in the previous year. General Motors divisions contributed 2,673,617 cars, or 48.03% of the total; Ford Motor Company, 1,683,937, or 30.25%; and Chrysler Corporation, 703,356, or 12.64%. In the previous model year, General Motors accounted for 50.37% of the total; Ford, 28.75%; and Chrysler, 15.80%. Chevrolet led Ford for the top spot in the 1959 model year by a narrow margin of about 19,000 cars, producing 1,481,071 to Ford's 1,462,140.

The so-called independents boosted their market penetration by 4 percentage points, American Motors accounting for 6.72% of the 1959 model output and Studebaker-Packard accounting for 2.36%.

Six-cylinder engines continued to make a comeback during the 1959 model year, accounting for 23.75% of all sales, a gain of 6.27 percentage points over the previous year. Eight-cylinder cars, however, maintained a wide lead by accounting for 76.25% of all cars produced. This picture should change radically during the 1960 model year with anticipated increased production of the big three's compact cars, all of which have six-cylinder engines.

While the public was exhibiting economy-mindedness in purchasing six-cylinder cars in 1959, customers were also buying optional equipment such as power steering, power brakes, and power seats at record-breaking levels.

U.S. PASSENGER CAR PRODUCTION, 1958–59

Company and make	1958 (Jan.–Sept.)	1959 (Jan.–Sept.)
American Motors Corporation		
Rambler	136,053	291,551
Chrysler Corporation		
Plymouth	272,889	323,049
Dodge	79,309	124,056
DeSoto	26,048	35,200
Chrysler	37,073	52,903
Imperial	8,724	15,292
Subtotal	424,043	550,500
Ford Motor Company		
Ford[1]	666,698	1,130,809
Mercury	84,949	114,231
Edsel	8,849	28,090
Lincoln	17,869	20,004
Subtotal	778,365	1,293,134
General Motors Corporation		
Chevrolet[2]	910,311	1,199,863
Pontiac	145,562	327,809
Oldsmobile	218,434	303,817
Buick	163,591	181,434
Cadillac	93,226	113,862
Subtotal	1,531,354	2,126,785
Studebaker-Packard Corporation		
Packard	1,745	...[3]
Studebaker	23,194	115,931
Subtotal	24,939	115,931
Checker Cab	2,970	2,151
Total U.S. production	2,896,905	4,380,871

[1] Includes Falcon. [2] Includes Corvair. [3] Discontinued. (Source: Automobile Manufacturers Association.)

Foreign Cars.—Heading for 1959 total sales of 600,000, imported car registrations had passed the 400,000 mark by September 1, with an overall penetration of 9.62% of the United States market. By the same date in 1958, foreign makes had recorded 377,548 sales in the United States, or 7.25% of the total market. Foreign car sales penetration passed 10% for the first time during 1959 in August, but was still below the record 11.96% penetration established in October 1958.

Another significant development in August 1959 was the fact that sales of the top three imported cars excluded the so-called "captive" makes for the first time. These captives are Opel, English Ford, Simca, and Vauxhall, which are produced abroad by the United States big three and distributed in the United States by big three dealers.

For the first eight months of 1959, Volkswagen led the foreign car field with 74,117 registrations in the United States, followed by Renault with 55,807, English Ford with 29,617, Opel with 26,474, and Fiat with 25,950.

There were more than one million foreign cars on American roads as of July 1, 1959, according to *Automotive News* estimates. The number of imported car franchised dealers totaled 23,172, compared with 20,344 in July 1958.

The 1959 Cars.—Studebaker-Packard entered the

compact car field with the introduction of its 108-inch wheelbase Lark series, while all General Motors divisions—Buick, Cadillac, Chevrolet, Pontiac, and Oldsmobile—offered completely new designs for 1959. Distinctive design changes were made by Chrysler Corporation, Ford Motor Company, and American Motors.

To cover a wider field, most makers offered more economical and more powerful engines. Some wheelbases were shortened, others were lengthened. More glass area was featured, with Ford, Mercury, Edsel, and the General Motors makes adopting the Chrysler-type wrap-over windshields. Fins were still prominent, and exterior finishes were improved through the use of new lacquers giving longer-lasting gloss. Chrysler cars offered swivel seats, which swing out to facilitate entry and exit. Rambler featured individually adjusted front seats and front-seat headrests.

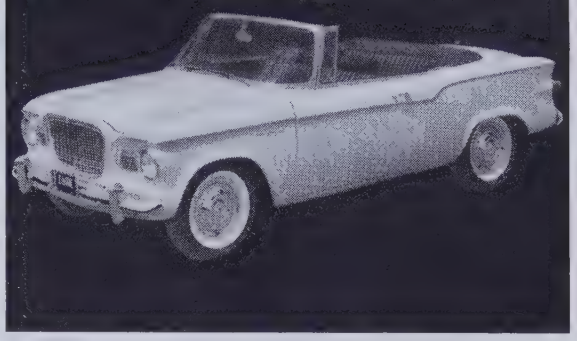
Prices were raised an average of 2.68% on 1959 models, which was well below the 3.35% boost on 1958 models and the 7.17% increase on 1957 cars.

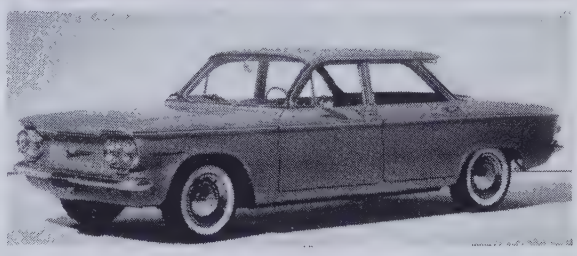
The number of models offered dropped to 237 in 1959 (Packard's entire line was abolished), compared with 267 models available in 1958. Station wagons headed the list with 52 selections. There were 48 four-door sedans, 44 four-door hardtops, 22 two-door sedans and coupes, and 31 convertibles available.

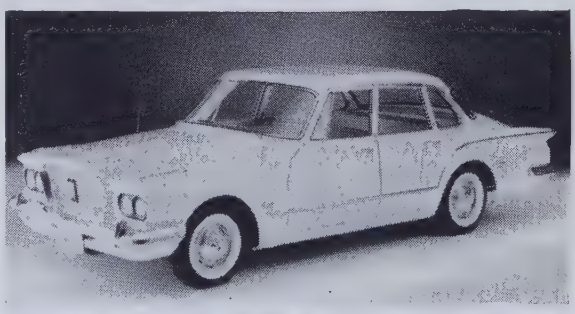
Engineering.—New engines and redesigned engines capable of increasing gasoline economy topped the list of engineering advancements on the 1959 models. Other economy measures included models that operated on regular gasoline, engines that required less oil or fewer oil changes, brakes that demanded less frequent relining, mufflers that needed less frequent replacement, paints that called for less polishing, and engines that required less coolant.

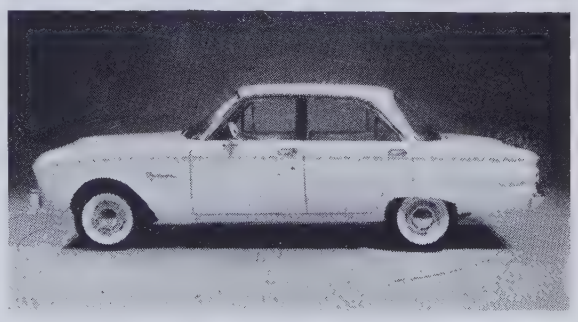
Chrysler offered a torsion-air suspension system, with automatic leveling of the car. Ford featured a nonslip differential and a new two-speed automatic transmission. Pontiac presented a wider tire tread to improve stability. Mercury reduced the size of its transmission tunnel by one half.

Air suspension, which had become a feature of









(Right) **New small American automobiles in 1959 were (top to bottom) Studebaker's Lark, Chevrolet's Corvair, Chrysler's Valiant, and Ford's Falcon. *(Below)* At dockside in Port Newark, N.J., some of the 600,000 European automobiles sold in the United States in 1959 await shipment.**

THE NEW YORK TIMES

several makes during the year, was put on the shelf by the end of the 1959 model year, and only Cadillac still offered it on its 1960 models. Lagging sales, high costs, and inability to furnish a better ride compared with steel springs were given as reasons for its discontinuance.

New seven-inch sealed-beam headlights were adopted during the year by all makers. First offered in 1939, the new sealed-beam lamp is said to provide greater seeing distance on low beam and better light at the side of the road.

WORLD MOTOR VEHICLE PRODUCTION, 1958

	Passenger cars	Trucks	Buses	Total
United States	4,247,427	870,803	3,039	5,121,269
Canada	298,349	60,857	571	359,777
Subtotal	4,545,776	931,660	3,610	5,481,046
Argentina	12,499	10,102	–	22,601
Australia	225,308[1]	16,056	–	241,364
Austria	14,494	4,224	448	19,166
Belgium	–	91	291	382
Brazil	5,119	57,227	361	62,707
Czechoslovakia	43,439	14,048	1,069	58,556
Finland	–	1,000	250	1,250
France	924,231	200,453	3,077	1,127,761
Germany, East	38,422	15,741	–	54,163
Germany, West	1,180,738	307,511	7,007	1,495,256
India	8,113	14,578	4,097	26,788
Italy	369,009	32,505	2,034	403,548
Japan	50,643	228,962[2]	7,594	287,199
Netherlands	–	1,332	254	1,586
Spain	22,150	8,900	–	31,050
Sweden	68,896	19,000	2,414	90,310
Switzerland	–	650	150	800
USSR	122,400	389,000	–	511,400
United Kingdom	1,051,551	303,010	9,846	1,364,407
Yugoslavia	2,936	4,089	671	7,696
Subtotal	4,139,948	1,628,479	39,563	5,807,990
World total	8,685,724	2,560,139	43,173	11,289,036

Note: The data shown above for some countries represent assemblies rather than production. To the extent that some of these assemblies were partly or wholly produced in another country, the world total will include some duplication.

[1] Includes utility vehicles under 1 ton. [2] Includes 98,896 three-wheeled vehicles. (Source: Automobile Manufacturers Association.)

World Motor Vehicle Registration.—The world's number of registered automobiles, trucks, and buses increased 4.64% in 1958 to total 113,024,224 as of Jan. 1, 1959. The United States accounted for 60.4% of the total. Registrations in Asia increased 21.8% during 1958 and represented the greatest regional gain. The table in the next column gives a breakdown of the world's motor vehicle registrations by principal areas.

Miscellany.—Chrysler Corporation merged its Plymouth and DeSoto divisions for sales purposes in 1959, but continued to produce both cars. All corporation divisions were given back their sales responsibilities, after several months of centralized control.

Ford Motor Company entered the automobile financing field after Congress failed to act on pleas of independent finance firms to bar car makers, such as General Motors Acceptance Corporation, from this field.

WORLD MOTOR VEHICLE REGISTRATION, Jan. 1, 1959

Area	Passenger cars	Trucks	Buses	Total
Canada	3,572,963	1,036,483	14,175	4,623,621
United States	56,870,684	11,158,561	270,163	68,299,408
Other Western Hemisphere countries	2,214,289	1,465,859	131,341	3,811,489
Europe	18,543,667	8,345,658	284,904	27,174,229
Asia	1,404,235	1,878,818	182,054	3,465,107
Oceania	2,420,154	905,902	4,066	3,330,122
Africa	1,597,449	691,948	30,851	2,320,248
World Total	86,623,441	25,483,229	917,554	113,024,224

(Source: U.S. Department of Commerce.)

The Automobile Information Disclosure Act, which went into effect on Oct. 1, 1958, and requires manufacturers to affix a tag showing the breakdown of a car's price on a rear window, was hailed on its first anniversary for its effect in restoring customer confidence and dealer integrity.

The National Automobile Dealers Association laid plans for a code of ethics for new-car dealers, covering advertising, merchandising, and service responsibilities of both dealers and makers.

General Motors realigned a number of its executives, giving Louis C. Goad, executive vice president, jurisdiction over all general staff activities. Two new executive vice presidents were named: Sherrod E. Skinner, who assumed Goad's former duties as head of automotive, body, and assembly divisions; and Cyrus R. Osborn, who heads the engine and appliance divisions.

Production of new cars by states during 1958 was distributed as follows: Michigan, 29.18% of the total; California, 9.58%; Wisconsin, 9.05%; Missouri, 8.67%; and New Jersey, 6.83%.

The number of new-car dealerships in the United States dropped from 37,620 in 1958 to 35,774 in 1959. In 1948 the number was 46,092.

PETE WEMHOFF,
Editor, Automotive News.

AVIATION. See AERONAUTICS.

AWARDS. See PRIZES AND AWARDS.

AZORES or **WESTERN ISLANDS.** A group of 9 main islands and several islets in the Atlantic about 800 miles off the Portuguese coast, comprising three districts of Portugal. Area, 890 square miles; pop. (1950 census), 317,409. Ponta Delgada (22,706), the chief city of the group, is on São Miguel Island, the largest of the islands. Agriculture is the chief occupation. Manufactures include wines, linens, woolen garments, and embroideries. The Azores serve as a transatlantic cable station and a stopping point for aviation. A United States–Portuguese agreement of 1957 extended to 1962 the United States right to use Lagens Airfield, on Terceira, as a communications base.

BACTERIOLOGY. Knowledge in this science increased in 1959 as a result of an estimated 3,000 to 4,000 research articles, books, reports, and educational films. Examples of findings and developments in major areas follow.

Agriculture.—Nitrogen-fixing bacteria of the soil were found to supply only about one half of the total nitrogen demands of legumes; thus the addition of nitrogen fertilizer will aid such crops. Decomposition of organic matter in soils by microorganisms is influenced by oxygen, but 5 per cent oxygen is almost as effective for this purpose as the 21 per cent which exists naturally in the air.

New information has become available on the mechanism of infection of sweet potato roots by molds, and of white potato tubers by the organism (actinomycete) causing scab. The spread and control of fungus diseases of plants, such as downy mildew of onion and powdery mildew of lettuce, have been studied.

Better understanding of virus diseases of plants

resulted from new assay methods for the alfalfa mosaic virus, correlation of woody decay of grape vines with a leaf virus, and demonstration that whiteflies transmit leaf crumple virus of cotton. Studies also were made on the viruses causing white tip disease of rice, necrosis of cherry leaves, latent infection in carnation, chlorosis in barley and cucumber, and tobacco and wheat streak diseases.

In ruminants, food is subjected to microbial fermentation in the rumen before it passes on to the true stomach. The bacteria responsible for feed-lot bloat have been discovered in the rumen of cattle.

Industry.—Microbiological studies in grain processing plants, bakeries, and other food manufacturing establishments have resulted in prevention of bacterial contamination of precooked frozen dinners, meat pies, frozen desserts, and related foods.

Bacteria play a useful role in the production of flavor in certain cured meats, and recently the specific reactions involved have been elucidated. The bacterium responsible for a malodorous fermentation of brines of olives used for making canned ripe olives has been identified, and steps have been taken to eliminate this fermentation. Also, new bactericidal and algicidal agents are available for use in swimming pools.

General Research.—Observations on ultrathin sections of microorganisms under the electron microscope have revealed new information on the basic structure of cells. (See also BOTANY.) For example, the capsules of virulent and avirulent anthrax bacilli appear to be different in that the capsule from pathogenic strains is electron-transparent and has a well-defined edge, whereas nonpathogenic strains have an electron-dense capsule with a poorly defined edge. The stages in the development of the spore wall during sporulation in bacteria, and during cell division, conjugation, and sporulation in yeasts, have been followed by observing sections of the organism under the electron microscope.

Microorganisms are excellent subjects for genetic studies because large populations can be handled and selective techniques applied for detection of mutants and recombinations. In 1959, hybrids were obtained from the conjugation of the colon bacillus (*Escherichia coli*) and the typhoid bacillus (*Salmonella typhi*). Analysis revealed one hybrid that exhibited most of the cultural and biochemical characteristics of the *E. coli* parent, but it reacted with antiserum to both *E. coli* and *S. typhi*. Genetically active material (deoxyribonucleic acid, or DNA) has been found extracellularly in the slime or capsule surrounding the meningococcus. Staphylococcal bacteriophages have been shown to transfer resistance to antibiotics from one staphylococcus culture to another. (See also GENETICS.)

For years interest has centered around the metabolic pathways followed in the utilization of carbohydrates by microorganisms. Such studies continued during the past year, but major emphasis was on the metabolism of nucleic acids and steroid hormones of the testosterone and progesterone series. Fundamental information on the microbial metabolism of hydrocarbons may eventually lead to the prevention of deterioration of numerous petroleum products.

Medical Bacteriology, Immunology, Virology.—Pathogenic activities of microorganisms have been observed generally in the past in laboratory animals. Recently, artificially cultured tissues have been used with great success for the study of organisms with fastidious requirements. In 1959 this technique was employed to determine the cytopathology of numerous bacteria, including the leprosy bacillus. The leprosy organism had not been cultured previously on artificial media; but when leprous tissues were introduced into human tissue culture preparations, the organism grew and could be studied for 60 days, although serial passage to fresh tissues was impossible.

Immunological methods, such as the fluorescent antibody and gel-diffusion techniques, have been used to demonstrate a variety of antigens in microorganisms. These methods will aid in more rapid diagnosis of such diseases as plague, mumps, spotted fever, and amebic dysentery.

Great progress has been made in the cultivation and identification of viruses, as well as in learning how these parasites invade host cells. Several viruses contain ribonucleic acid (RNA), and others, deoxyribonucleic acid (DNA); none is known to contain both. It appears that the nucleic acid of the virus particle initiates synthesis of new virus in a susceptible host cell. But recent results show that ribonucleic acid of the host cell also plays a role in multiplication of fastidious viruses which contain only deoxyribonucleic acid. Thus, certain strains of Type II polio virus multiply in fertile chicken eggs, whereas Type I polio virus does not. However, if Type I virus and ribonucleic acid (isolated from Type I virus) are both introduced, the eggs are then stimulated to produce this type of virus.

J. R. PORTER,
Chairman, Department of Bacteriology,
State University of Iowa.

BADMINTON. See SPORTS, GAMES, AND SHOWS.

BAGHDAD PACT. See MIDDLE EAST.

BAHAMAS. This archipelago (land area, 4,404 square miles), consisting of some 20 inhabited islands and 661 uninhabited coral keys, extends for nearly 700 nautical miles southeastward from the coast of Florida between Cuba and the open Atlantic. Though geographically part of the West Indies, the Bahamas remain a separate British colony and do not belong to The West Indies federation (q.v.). Their population (82% Negro) was estimated in 1958 at 136,220. Nassau (pop. est., 50,405 in 1958), chief port of the island of New Providence, is the capital. Other principal islands (with 1953 census populations) are Andros (7,136), Eleuthera (6,070), Grand Bahama (4,095), Long (3,755), Great Abaco (3,407), Cat (3,201), Exuma (2,919), and Acklin's (1,273). Joint naval and air bases and a research station are maintained by the United States and Great Britain.

Government.—The governor (Sir Oswald Raynor Arthur, sworn in on April 1 1957) is assisted by an 8-member Executive Council and a 9-member Legislative Council. Following an 18-day strike of Negro taxi drivers and hotel employees in 1958, universal male adult suffrage and other reforms affecting elections to the 29-member House of Assembly were promised. A property qualification for voters previously had effectively restricted to 6 the number of Negro representatives in the assembly. Prince Philip, Duke of Edinburgh, husband of Queen Elizabeth II, visited the colony on April 25, 1959, in the course of his 100-day global tour.

Finance.—Government revenue in 1958 was £5,198,975, falling short of preliminary estimates by £442,025; expenditure at £5,434,533 also was lower than the estimate (£5,679,903). British currency is legal tender, but United States and Canadian currencies also are in circulation.

Education.—Education is free and compulsory at the primary level. In 1958 there were 145 government schools (enrollment, 16,824) and 45 denominational and private schools (enrollment, 5,087 in 1957). Government expenditure on education totaled £356,946 in 1957.

Transportation and Communications.—There are no railways. On New Providence, 218 miles of public roads (141 miles asphalted) are open to motor traffic, and good roads are maintained on Eleuthera and Grand Bahama.

Overseas air service is furnished to the Nassau International Airport by Pan American World Airways (from Miami, Fla., and New York), Mackey Airlines (from four Florida cities), British Overseas Airways Corporation (from New York, London, Jamaica, and Bermuda), Eagle Airways (from New York), and Trans-Canada Air Lines (from Montreal and Toronto, Canada, and Kingston, Jamaica). Bahamas Airways provides scheduled service within the islands. Nassau, which is linked by radiotelephone to all major islands, had 8,685 telephones in use in 1958; six radiotelephone circuits with the United States furnish worldwide service.

Tourism and Foreign Trade.—Income from the tourist trade has exceeded $20 million in recent years but was somewhat lower in 1958 because of the strike on New Providence; 177,687 tourists visited the Bahamas, compared with 194,618 in 1957. In the first 6 months of 1959 there were 147,781 visitors. Two new major hotels, providing accommodations for over 4,500 visitors, were completed in 1958, and a third was opened in 1959.

Trade is chiefly with the United States. Imports, valued in 1958 at £16,489,394 (in 1957, £15,237,255), included apparel (£612,672), motor cars and trucks (£654,052), fresh meats (£611,148), machinery (£32,610), cement (25,600 tons), and nitrogenous fertilizers (562 tons). Exports, totaling £1,711,064 (in 1957, £1,376,863), were chiefly pit props and other lumber (£21,588), crayfish (rock lobster, £154,943), and salt (£156,021).

BAHRAIN. See ARABIA.

BAKING INDUSTRY. The baking industry in the United States ranks among the highest of the food industries in value of products, and had gross sales valued at nearly $6 billion in 1958. The nation's bakery foods are produced commercially by some 6,000 wholesale establishments and 12,000 retail bakeries. Retailers do about 20% of the total volume and the individual store has an average weekly gross of $1,600. The retail price of white bread averaged 19.6 cents per pound in 1959, compared with 19.1 cents in 1958. Bread volume in 1958 was 10% above the average for 1954, the last census year. The industry operates about 80,000 trucks, most of which are 1½ tons or less.

U.S. BAKED GOODS PRODUCTION[1]
(In thousands)

Category	Pounds (1954)	Value (1954)	Value (1958)
Bread and rolls	13,674,860	$2,198,441	$3,329,000
Sweet yeast goods	642,610	233,923	
Soft cakes	1,034,748	372,385	
Pastries	...	30,029	1,797,900
Pies	692,633	185,900	
Cookies	52,385	24,219	
Doughnuts (baking powder)	344,692[2]	120,834	

[1] Except by single retail shop bakeries. Sales by this branch of the baking industry were estimated to be $1,014,000,000 in 1959. [2] Dozens.

Employees number 320,000 persons, including 247,000 in the wholesale branch and 73,000 in retail. The average wage rate is over $2 per hour, plus fringe benefits which average 27% of payroll costs.

Bakers are the farmer's biggest customers, purchasing annually over $2 billion of raw materials. They use over one third of the nation's wheat crop in the form of flour, spending over $706,000,000 for this one item alone. Freezing of bakery foods continued to make rapid strides in 1959; sales have increased 240% during the four-year period, 1955–58.

The American Institute of Baking in Chicago is the scientific and educational center of the industry. It maintains research laboratories, test bakeries, a huge baking library, consumer and sanitation departments, and a school of baking. A number of vocational schools throughout the country also have courses in baking.

CLIFFORD W. WEBSTER,
Editor, "Bakers Review."

Outgoing Mayor Thomas D'Alesandro (r.) raises hand of Democrat J. Harold Grady after latter defeated ex-Governor Theodore R. McKeldin in Baltimore mayoralty contest, May 5.

WIDE WORLD

BALANCE OF PAYMENTS, U.S. See INTERNATIONAL TRADE.

BALEARIC ISLANDS. An archipelago in the Mediterranean Sea east of Spain, forming a Spanish province. Area, 1,936 square miles; pop. (1957), 433,347. The four largest islands are Mallorca, Menorca, Ibiza, and Formentera. Palma (146,461), the capital, is on Mallorca. Fruits, almonds, and olives are grown, and handicraft items are produced. A flourishing tourist trade, especially on Mallorca, provides an important source of income.

BALKAN STATES. The states of the Balkan Peninsula, which comprises the region of Europe south of the Danube and Sava rivers between the Black Sea and the Adriatic Sea. Politically, the Balkan States include Yugoslavia, Albania, Greece, European Turkey, Bulgaria, and Rumania. (See separate articles on the Balkan countries.)

BALLET. See DANCE.

BALTIC STATES. The states of Estonia, Latvia, and Lithuania, on the east coast of the Baltic Sea of northeastern Europe. The Baltic States were incorporated into the Soviet Union in 1940 as member republics. (See UNION OF SOVIET SOCIALIST REPUBLICS, and articles on each of the Baltic States.)

BALTIMORE. Maryland's dominant metropolis, Baltimore is the sixth most populous city in the United States. It has a land area of 78.7 square miles and in 1950 had a population of 949,708. Baltimore City is the center of a rapidly growing metropolitan area which includes Baltimore and Anne Arundel counties, totaling 1,106 square miles and having a 1950 census of 1,337,373. Population estimates at mid-1959 were 985,000 for the city and 1,615,200 for the metropolitan area.

The principal sources of Baltimore's economic strength come from the excellent port facilities and diversified manufacturing plants. Leading industries (in terms of value added by manufacture) are primary metals, transportation equipment, food and kindred products, fabricated metal products, and chemicals.

Data for Baltimore City in 1958: nonagricultural employment averaged 589,100 workers, 17,400 under the all-time peak of 1957. Department store sales index (1947–49 = 100), 124.7. Freight carloadings, 224,563, and vessel arrivals, 5,615. Output of electricity, 5,456,396,000 kw.-hr.,

and sales of gas, 35,507,700,000 cubic feet. Cost-of-living index, June 1959 (1947–49 = 100), 126.6.

The government of Baltimore City combines city and county functions. The city is governed by a mayor and 21-member City Council elected on a party basis for four-year terms. Additional elective officers include the comptroller and the City Council president. Mayor J. Harold Grady, Democrat, began serving his first term in 1959.

The net long-term debt (Jan. 1, 1959) was $309,545,800, representing an increase of 88% in a 13-year period. The property tax rate in 1959 was $3.34 per $100 on a total assessable basis of $3,550,254,778. The 1959 budget totaled $329,998,503 for current and capital expenses.

In the Democratic primary of March 3, Mayor Thomas D'Alesandro was defeated by a 33,000-vote margin by J. Harold Grady. D'Alesandro was making a bid for an unprecedented fourth straight term as mayor. In the general election on May 5, J. Harold Grady defeated former Gov. Theodore R. McKeldin, the Republican nominee for mayor. Grady received 154,786 votes to 73,229 for McKeldin. Dr. Walter Graham was re-elected comptroller, and Philip H. Goodman was elected president of the City Council. In the race for the City Council, the 20 successful Democratic candidates polled a total of 505,690 votes in the city's six councilmanic districts.

In order to meet the city's growing financial difficulties Mayor Grady proposed a 1% earnings tax on the incomes of both individuals working and businesses conducted within the city. The mayor asked Gov. J. Millard Tawes to call a special session of the General Assembly to act on the proposal, but the governor declined on the ground that the proposal would not pass without amendments.

Governor Tawes named 25 community leaders to the Permanent Commission on Municipal Courts. The commission's first objective is to help obtain a favorable vote on a constitutional amendment in 1960 which proposes to abandon the present appointive system for magistrates in favor of election of 11 judges for 10-year terms, after initial appointment by the governor.

The new Grady administration introduced an austerity program in the city's administration and indicated that the 1960 budget would be forced to reject almost all requests for expansion of city services until additional sources of revenue can be secured for the city.

MAURICE E. O'DONNELL,
Assistant Director, Bureau of Governmental Research, University of Maryland.

BANANAS. See FRUITS.

BANKING. United States.—The Federal Reserve banks in 1959 maintained a policy of credit restraint which had been adopted in a mild form at the start of business recovery in the second half of 1958.[1] This policy reflected a substantial increase in demand for credit by consumers, business, and government in an economy undergoing vigorous expansion—a change which threatened a resumption of inflationary price tendencies (see COST OF LIVING).

An indication of credit restraint was the increase in the discount rate, which the Federal Reserve banks charge on loans to commercial banks (Reserve members), from 2½% to 3% in March, to 3½% in May–June, and to 4% in September—the highest rate since early 1932. The Reserve banks' open-market transactions in government securities also reinforced the policy of credit restraint. Their purchase and holdings of such securities declined about $1 billion in the early part of 1959, and later increased only slightly above the level which obtained at the end of 1958.

These increases in security holdings usually offset only in part the drains of member banks' reserves resulting largely from expanded use of currency in trade and the export of gold to settle deficits in international transactions. Consequently, with the expansion of business loans (and deposits to the borrowers), member banks, in order to maintain their required reserve positions, increased substantially their borrowings at the Reserve banks. These on the average exceeded greatly the total of their excess reserves.[2] For instance, the borrowings of member banks at the Reserve banks in the June–August 1959 period averaged more than $900 million, or about $500 million more than their average excess reserves.

In the implementation of the policy of credit restraint the Board of Governors of the Federal Reserve System did not change the reserve requirements of the member banks. These remained at 18%, 16½%, and 11%, of demand deposits for central reserve city banks, reserve city banks, and country banks, respectively; and at 5% of time deposits for all member banks, the board's legal range of change for the latter being 3 to 6%.

Congressional legislation in July 1959, however, altered some features of the reserve requirements. The board was authorized to permit member banks to treat vault cash (almost $2½ billion in currency and coin at the end of June) as reserves—a permission which was likely to be granted on a gradual basis. It was also authorized to set reserve requirements in a range from 10 to 22% of demand deposits for member banks in central reserve cities and in reserve cities, instead of in the prior ranges of 13 to 26% for the former and 10 to 20% for the latter. Moreover, the board was authorized to permit a member bank located in a central reserve or reserve city to carry lower reserves than other banks in the same city, depending on the nature of the bank's business rather than, as previously, on its geographical location. Termination of the classification "central reserve city" was provided for at the end of three years. No change was made in the board's authority to set reserve requirements in a range from 7 to 14% of demand deposits for members classified as country banks. In the main, the new legislation was designed to enable the Board of Governors to develop more flexible and equitable arrangements for member banks, varying greatly in size and nature of business, to meet reserve requirements.

The combination of positive actions by the Reserve banks in restricting the availability of credit

[1] Statistics of banks in the United States are published monthly in the *Federal Reserve Bulletin* by the Board of Governors of the Federal Reserve System. The board, appointed by the president of the United States with the consent of the Senate, has extensive powers of control over the 12 (regional) Federal Reserve banks and the member banks. The Federal Reserve System, in its control of note issue (currency) and bank credit, operates virtually as a single central bank. Stock of Reserve banks is privately owned by member banks, but their functions are prescribed by federal law. As of January 1959 the total number of "all banks" was 14,030, consisting of 13,512 commercial banks (accepting deposits subject to check or withdrawal on demand) and 518 mutual savings banks. Of the total of "all commercial banks," nearly half (6,302) were members of the Federal Reserve System and accounted for about 85% of all commercial bank loans and investments.

[2] Member banks are required to maintain minimum deposits or balances at their respective Federal Reserve bank. These "required reserves balances" are measured as a percentage of the member bank's deposit liabilities to customers, and vary with the type of deposit (demand or time) and the nature of the bank's business and classification. "Excess reserve balances" are member bank deposits maintained at the Reserve banks in excess of the required minimum. "Borrowings" of member banks (usually in the form of advances by the Reserve banks against promissory notes of members secured by government securities) indicate the extent to which some banks, not holding excess reserves, have borrowed temporarily to meet minimum reserve requirements.

and increasing its cost to member banks, and of increasing demand for credit by business, government, and consumers, brought interest rates of leading commercial banks on prime loans from 4 to 4½% in May 1959, and to 5% in September. Such prime rates applied to the banks' biggest customers with the best credit rating; other commercial lending rates were scaled upward from the prime rate. The U.S. Treasury also borrowed at higher rates, the open-market yield on three-month Treasury bills rising from slightly less than 3% in the January–May period to about 4¼% in October —the highest level since the bank shutdown of 1933.

Appreciable changes occurred in commercial bank credit (loans and investments of all commercial banks). It declined in the first part of 1959, as is usual following the peak of selling during the Christmas season. Although banks increased their loans substantially, they reduced their investments in federal government securities in meeting loan demands; nonbank holdings of government securities increased. Later, commercial bank credit expanded and at the end of the third quarter was about $2.6 billion greater than at the beginning of the year. In the fourth quarter of 1959, commercial bank credit was expected to expand moderately without any appreciable increase in the level of interest rates.

Loans.—Total loans of commercial banks increased about $5 billion in the first half of 1959, slightly more than in the comparable period of any other postwar year. In the first quarter seasonal repayments of business and security loans approximately offset expansion in other types of loans, so that the total increase occurred entirely in the second quarter when renewed business-loan expansion was added to record increases in real estate and consumer loans. At midyear, business loans showed an increase of about $1.7 billion; real estate loans, about $1.5 billion; and consumer loans, nearly $1.5 billion. This general pattern of increase continued in the third quarter, when total loans of commercial banks expanded about $3.4 billion—a level approximately $9.6 billion higher than at the beginning of the year.

Investments.—Total investments of commercial banks decreased about $7.0 billion in the first three quarters of 1959. Practically all of the reduction occurred in holdings of United States government securities—a heavy proportion of commercial banks' investments since the great growth in the federal government's debt during World War II. Other security holdings (for example, corporate, state, and local government securities) increased only slightly. The reduction in investments, particularly in government securities, as earning assets of the commercial banks was made in order to expand the more profitable assets of commercial loans. Since the loan expansion tended to increase demand deposits (the form in which a bank loan is usually extended), and hence the amount of required reserves, the sale of investments increased the banks' reserves and loan capacity.

ASSETS AND LIABILITIES OF ALL BANKS IN THE UNITED STATES

(In millions of dollars)

Item	Aug. 27, 1958	Aug. 26, 1959
Assets		
Loans and investments:		
Loans	$116,390	$131,970
U.S. government obligations	73,510	67,570
Other securities	25,840	26,240
Total loans and investments	$215,740	$225,780
Cash assets	42,110	42,150
Other assets	4,850	5,080
Total assets	$262,700	$273,010
Liabilities and Capital		
Deposits:		
Interbank	$ 16,530	$ 14,810
Demand:		
United States government	5,490	6,020
Other	116,830	121,490
Time	96,090	100,230
Total deposits	$234,940	$242,550
Other liabilities	6,220	7,760
Total capital accounts	21,540	22,700
Total liabilities and capital	$262,700	$273,010

(Source: Board of Governors of the Federal Reserve System.)

Deposits and Currency.—Demand deposits (adjusted) and currency outside banks (held by businesses and individuals) declined less than the usual seasonal amount in the first half of 1959. On a seasonally adjusted basis, this active money supply increased approximately $1.5 billion in the first half, and reached a total at the end of the third quarter about $1.1 billion greater than at the beginning of the year. Demand deposits, comprising about 80% of the active money supply, accounted for $0.9 billion of the increase in the first three quarters. In the same period the annual rate of turnover of demand deposits (seasonally adjusted), as indicated by 337 reporting centers in leading cities other than the seven largest financial centers, showed an appreciable increase—a change reflecting substantial recovery in business operations. In general, holders of money balances used them more actively.

Time deposits in the first three quarters of 1959 increased about $3.2 billion, a moderate increase as compared with the similar period of 1958. The bulk of the increase ($2.5 billion) was accounted for by commercial banks—holders of about 65% of time deposits. Mutual savings banks' deposits increased very moderately ($0.8 billion), and the relatively small deposits of the Postal Savings System declined slightly ($0.1 billion), as in previous years.

Insurance of Bank Deposits.—The Federal Deposit Insurance Corporation (FDIC)[3] made small disbursements in the first half of 1959 to protect depositors (about 1,450) in two insured banks. The FDIC made the insured deposits immediately available when the banks were placed in liquidation by the state banking authorities. The deposit claims amounted to approximately $1 million, and it is estimated that $0.7 million will be recovered by the FDIC. At the end of June 1959, the FDIC's assets totaled $2,172.2 million; the liabilities, $145.5 million; and the insurance fund (excess of assets over liabilities), $2,026.7 million.

Canada.—The acceleration of economic recovery in Canada in 1959 increased the demand for commercial bank credit, but its expansion was very moderate (about $102 million in the first three quarters) because of the restrictive credit policy of the Bank of Canada—the government-owned central bank.[4] Although loans of the commercial or chartered banks (9 large banks with about 3,900 branch offices under central bank control) expanded substantially, their investments were reduced in order to meet reserve requirements. In general, the Bank of Canada did not assist the banks in meeting these requirements by open-market purchase of government securities. At the end of September 1959, the Bank of Canada's holdings of government obligations showed little change from the beginning of the year; holdings of Treasury bills increased about $261.3 million, and those of other Canadian government securities decreased about $211.8 million.

In these circumstances, the price of government securities declined and the open-market yield (or interest

[3] The FDIC is owned jointly by the U.S. Treasury and the Federal Reserve banks. All Federal Reserve member banks are required to insure deposits; other banks may participate. An insurance fund is provided by annually assessing each insured bank at the rate of 1/12 of 1% of its total deposits. Individual deposits in an insured bank are insured up to $10,000. In mid-1959 more than 95% of all banks (13,102 commercial banks and 251 mutual savings banks) in the United States were insured by the FDIC, and approximately 57% of their total deposits was insured.

[4] Statistics of banks in Canada are published monthly in the *Bank of Canada Statistical Summary*.

return) rose. For instance, the yields on three-month Treasury bills offered weekly by the government increased from approximately 3.5% at the beginning of 1959 to 6.16% in mid-August—the highest level in 30 years. Also, in the same period, the Bank of Canada's discount rate (the interest charged on its loans to the chartered banks), which is automatically set at 0.25% above the bill rate, rose from 3.75 to 6.41%.

Since the maximum interest rate which the chartered banks may charge on loans to customers is legally established at 6%, there was very little borrowing from the Bank of Canada as the discount rate approached and exceeded this legal maximum lending rate. The chartered banks early in March 1959 raised their prime lending rates from 5¼ to 5½%, and therefore in the subsequent expansion of loans there remained only a moderate inducement in the form of higher interest rates.

At the beginning of 1959 the chartered banks' ratio of cash reserves (deposits with the Bank of Canada, and Bank of Canada notes) to deposit liabilities averaged 8.3%, the required minimum being 8%; and their ratio of liquid assets (cash reserves, day-to-day loans, and Treasury bills) to deposit liabilities averaged 16.7%, the agreed minimum being 15%.

As the banks increased their loans about $853 million in the first three quarters, they reduced their investments (mostly government securities) about $751 million in order to avoid any appreciable increase in their deposit liabilities. The slight increase in such liabilities which did occur, and the banks' inability to increase their cash reserves because of the central bank's restrictive policy in open-market purchases and discount rates kept the banks' average cash reserve ratio near the 8% minimum. Also, the banks' liquid asset ratio declined to 15.6% in April 1959 (the lowest level since the 15% minimum became effective in mid-1956), increased for a few months, and then declined again to 15.8% in August. No appreciable change in commercial bank credit and interest rates was expected in the fourth quarter of 1959.

United Kingdom.—A moderate increase in demand for bank loans in the United Kingdom in 1959, reflecting a continuation of economic expansion, was met without appreciable change in credit policy. In 1958 the government-owned Bank of England, the central bank which controls in various ways the privately owned commercial banks, reduced its discount rate from 7 to 4% and continued the latter rate in 1959.[5] Frequently, the Bank of England made small, temporary discounts and advances to assist the discount houses (about 12 in London) which act as intermediaries between the bank and the commercial banks, but the total amount of such borrowings declined slightly during the first three quarters of 1959. In the same period, the Bank of England altered only slightly its holdings of government securities (an increase of about £82 million) in order to assist the commercial banks in meeting their reserve requirements.

The London clearing banks, consisting of five large commercial banks with numerous branches which account for about three fourths of the banking resources in the United Kingdom, and six smaller commercial banks having more than a thousand branches, increased their extension of credit only by about £36 million at the end of the first three quarters of 1959. During this period their discount rates and interest returns on three-month Treasury bills rose from 3.16 to 3.5%, and their rates on fine trade bills remained approximately at 4¼ to 5¼%. The clearing banks increased their loans about £380 million and decreased their investments about £344 million. Approximately half of the increase in loans was for financing consumer purchases—that is, loans to the personal and professional group, to hire purchase (installment credit) finance houses, and to the retail trade.

This development reflected largely the improvement in 1958 of banking facilities for extending consumer installment credit and personal loans, and the end of special restrictions on such loans. The other half of the increase in the banks' loans was accounted for by agricultural and business borrowers. The decrease in the banks' investments, mostly by selling bonds and gilt-edged stocks rather than bills, enabled them to expand loans without any great increase in deposit liabilities and to meet reserve requirements without appreciable difficulty.

Aggregate net deposit liabilities (deposits minus balances and cheques in collection) of the clearing banks did not increase until the third quarter of 1959, and at the end of this quarter were only about £38 million greater than at the beginning of the year. The banks' cash ratio (cash or till money and deposits at the Bank of England to deposit liabilities) was generally maintained at or fractionally above the traditional and agreed ratio of 8%. Also, their liquidity ratio (cash, call loans, Treasury bills, and commercial bills to deposit liabilities) declined only slightly, from 34.6 to 33.2%, and was maintained during the first three quarters, except for March and May, at a comfortable margin above the agreed minimum of 30%.

[5] Statistics of banks in the United Kingdom are published in the *Weekly Bank Return* of the Bank of England, in the *Monthly Statement of Balances of London Clearing Banks*, and in the *Quarterly Analysis of Advances* by the British Bankers' Association.

(For additional information, see the Index entry, *Banking.*)

CLIFFORD L. JAMES,
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BAPTIST CHURCHES. The 27 autonomous Baptist congregations in the United States reported for 1958 (in the *Yearbook of American Churches*, 1960 ed.) a total membership of 20,493,381 and an aggregate of 90,487 churches. Baptists continue to comprise the largest single communion and represent nearly one third of all Protestants in the country.

Of the 27 Baptist bodies, the Southern Baptist Convention (see below) is the largest. The National Baptist Convention, U.S.A., Inc., a Negro group, ranks second, with an estimated 5 million members reported for 1958. Ranking third is the National Baptist Convention of America, an "unincorporated" Negro denomination, with 2,668,799 members in 1956; and fourth, the American Baptist Convention (see below). Membership figures for other large Baptist bodies are given in the article CHURCH MEMBERSHIP, U.S.

SOUTHERN BAPTIST CONVENTION

This largest of Baptist bodies, organized in Augusta, Ga., in 1845, reported 31,498 churches in 1958 with a membership of 9,206,758 and 1,111 associations in 27 states.

The 71 Southern Baptist educational institutions reported 67,509 students in 1958–59, with 6,561 in the six seminaries located at Louisville, Ky., New Orleans, La., Fort Worth, Texas, Mill Valley, Calif., Wake Forest, N.C., and Kansas City, Mo. There were 74 students in the American Baptist Theological Seminary for Negroes located at Nashville, Tenn. The educational institutions reported endowments of $74,103,029 and property valued at $207,395,946. The 39 Baptist hospitals reported property valued at $147,721,740, and 413,187 patients during 1958. The 30 children's homes reported 5,055 children, and property valued at $30,080,447. The denomination supports 1,341 foreign missionaries and 1,386 home missionaries. Gifts amounted to $45.58 per capita in 1958, with $8.12 per capita going to missions and benevolences. The Relief and Annuity Board reported 18,678 active members, with assets totaling $63.5 million.

The publishing division of the convention is the Baptist Sunday School Board, located in Nashville, Tenn. In 1958 it distributed 77,364,840 copies of periodicals and published 4,263,910 books. Dr. Ramsey Pollard, pastor of Broadway Baptist Church, Knoxville, Tenn., was elected president of the 1959 convention held in Louisville, Ky. The office of the Southern Baptist Convention Executive Committee is located at 127 Ninth Avenue, North, Nashville 3, Tenn.

PORTER W. ROUTH,
Executive Secretary, Executive Committee,
Southern Baptist Convention.

AMERICAN BAPTIST CONVENTION

The American Baptist Convention, formerly known as the Northern Baptist Convention, received its name in 1950, thus securing a uniformity of nomenclature with national societies such as the American Baptist Foreign Mission Society and the American Baptist Home Mission Society, which participated in the organization of the convention and cooperate in its work.

In 1959 the convention, representing the cooperative interest of 6,245 churches in 34 Northern

WIDE WORLD

Ethel Barrymore, with her brothers, the late Lionel (left) and John, at a reunion in 1932 of the first family of the American theater. Miss Barrymore died in Hollywood, June 18.

and Western states, had a total membership of 1,563,593. Its program of missionary and benevolent work is carried on in the United States, Africa, Asia, Europe, and several Latin American countries by 7 national societies and boards, 34 state conventions, and 15 city societies. It is supported by contributions from churches to a unified budget, representing the interests of all agencies. The approved budget for 1960 is $10.5 million. This amount, plus about $2 million of nondonation income, provides approximately $12.5 million per year for the support of the missionary enterprises of the American Baptist Convention. The raising of the budget is primarily the responsibility of the Council on Missionary Cooperation. The convention is affiliated with the Baptist World Alliance, the National Council of Churches of Christ in U.S.A., and the World Council of Churches.

In 1959, at Des Moines, Iowa, Dr. Herbert J. Gezork of Newton Centre, Mass., was elected president of the convention for 1959–60. Dr. Edwin H. Tuller was elected general secretary for the term 1959–62.

EDWIN H. TULLER,
General Secretary, American Baptist Convention.

BARBADOS. See WEST INDIES FEDERATION.
BARITE. See MINERAL PRODUCTION.
BARLEY. See GRAINS.

BARRYMORE, Ethel (79), American actress: b. Philadelphia, Pa., Aug. 15, 1879; d. Beverly Hills, Calif., June 18, 1959. Regarded in her later years as the *grande dame* of the American stage, Ethel Barrymore had an acting career that spanned more than half a century. She was the last member of the ruling triumvirate of Broadway's "royal family," which, besides herself, included her brothers Lionel (1878–1954) and John (1882–1942).[1] In 1928 a New York theater was named in her honor —an encomium now enjoyed by only two other actresses, Helen Hayes and Lynn Fontanne.

Ethel Barrymore was educated at the Convent of Notre Dame in Philadelphia, where her grandmother, Louisa Lane Drew, was manager of the Arch Street Theatre. At the age of 14 she joined the venerable Mrs. Drew, famous for her portrayal of Mrs. Malaprop, in a production of *The Rivals* in Montreal. Miss Barrymore's first New York appearance was on Jan. 25, 1894, also in *The Rivals*. For the next several years she played a number of minor roles, working with such theater greats as Sir Henry Irving, W. H. Gillette, and Elsie de Wolfe. She became a star on Feb. 4, 1901, when she was featured as Madame Trentoni in Charles Frohman's production of *Captain Jinks of the Horse Marines*.

Now a recognized leading lady (as well as a great beauty), Miss Barrymore was seen either in New York or London during almost every theater season for the next four decades. Her appearances included roles in *Trelawny of the Wells* (1911), *The Twelve Pound Look* (1911), *Our Mrs. McChesney* (1915), *The Lady of the Camelias* (1917), *Déclassée* (1919), *Rose Bernd* (1922), *Romeo and Juliet* (1922), *The School for Scandal* (1923), *The Second Mrs. Tanqueray* (1924), *Hamlet* (1925), *The Merchant of Venice* (1925), *The Constant Wife* (1926), *The Kingdom of God* (with which she opened the Ethel Barrymore Theatre, 1928), *Scarlet Sister Mary* (1930), *L'Aiglon* (1934), and *Whiteoaks* (1938). Her most famous role was undertaken toward the end of her stage career, when in 1940 she opened in New York as Miss Moffat in Emlyn Williams' tender play, *The Corn Is Green*. She continued on Broadway and on the road for three years as Mr. Williams' wise and gentle Welsh schoolmarm, giving what one critic described as her "most heartwarming performance."

Miss Barrymore was also frequently seen in motion pictures, beginning in 1914. One of the highlights of her film career was her appearance in 1932 with her two brothers, John and Lionel, in *Rasputin and the Empress*. In 1944 she received the Academy Award as the year's best supporting actress for her performance in *None But the Lonely Heart*. Her final acting engagement, in television, was in 1956.

Miss Barrymore was married to Russell Griswold Colt, son of financier Samuel Pomeroy Colt, in 1909 (divorced in 1923). Her autobiography, *Memories*, was published in 1955.

BASEBALL. See SPORTS, GAMES, AND SHOWS.
BASES, U.S. See Index entry.
BASKETBALL. See SPORTS, GAMES, AND SHOWS.

BASUTOLAND. A mountainous enclave situated within the Union of South Africa, this British-protected territory is one of three High Commission Territories (the others being Bechuanaland Protectorate and Swaziland, qq.v.). Area, 11,716 square miles; population (1956 census), 641,674, including 638,857 native Africans (largely Basuto) and 1,926 Europeans.

Under a high commissioner (Sir John Maud, who assumed office in January 1959), Basutoland is administered by a resident commissioner (A. G. T. Chaplin, appointed in 1956) from his seat at Maseru (pop., 5,739). Executive and judicial authority is exercised by a paramount chief (since 1941, Bereng, a minor whose regent is Ma'Ntsebo, senior widow of Chief Seeiso Griffith). According to a new constitution agreed to by representatives of Basutoland and Britain on Aug. 22, 1959, an 80-member Legislative Assembly (including 76 Africans) is to be elected by district councils in early 1960, and an Executive Council will be established to advise the high commissioner and the paramount chief.

Revenues for 1958–59 were estimated at £1,529,921; expenditures, £1,934,835. Of the territory's 1,024 schools and institutions, 1,008 are mission schools, most of which receive government assistance. Primary school enrollment in 1957 was

[1] *The Royal Family* (1927), a play by Edna Ferber and George S. Kaufman, was reputedly based on the Barrymore family. The Barrymores were the children of successful actors—Maurice Barrymore (1847–1905), whose real name was Herbert Blythe, and Georgianna Emma Drew Barrymore (1856–93), a sister of John Drew (1853–1927), one of the leading actors of his day.

114,276. There are 17 secondary schools (with 1,326 students), 24 technical and vocational schools, and 7 teacher-training centers.

Basutoland's economy is largely agricultural; principal subsistence crops are wheat, corn, and sorghums. Exports in 1957 totaled £2,038,316; imports, £3,012,954. Chief exports and 1957 values are: wool, £1,204,050; mohair, £348,149; wheat and wheat meal, £107,570; and beans and peas, £119,586. The road system aggregates about 900 miles, including 560 miles of main roads. Maseru is connected by rail with Marseilles, Orange Free State.

BAUXITE. According to data supplied by the U.S. Bureau of Mines, in 1958 the United States produced 1,311,000 long tons (on a dried-equivalent basis) of bauxite—a 7% decrease from the 1,416,000 tons produced in 1957. Domestic consumption of bauxite in 1958 was 7,033,898 long tons, a decrease of 8% as compared with 1957. In the first half of 1959, production was 778,587 long tons. Imports in 1958 reached a new high of 7,919,000 long tons, compared with 7,098,000 tons in 1957. According to the U.S. Census Bureau, imports from Jamaica were 4,933,000 tons; from Surinam, 2,425,000 tons; from Haiti, 336,000 tons; and from British Guiana, 225,000 tons, a decline from the 391,000 tons imported in 1957. United States exports of bauxite concentrates in 1958 totaled 11,868 tons, a sharp drop from the 60,993 tons exported in 1957. Shipments to Canada were 80% of the total exports. World production in 1958 increased only 3%, or a total of 20,700,000 tons. Jamaica (the leading producer) supplied 28% of the world total, increasing its output 23% in 1958. It was followed by Surinam, USSR (on the basis of estimated production), West Germany, British Guiana, Hungary, and the United States. (See MINERAL PRODUCTION for the output of major producing countries.)

BEANS. See VEGETABLES.

BECHUANALAND PROTECTORATE. Bounded on the north and northeast by British East Africa, on the south and southeast by the Union of South Africa, and on the west by South West Africa, this British protectorate is the largest of three High Commission Territories administered through the United Kingdom Commonwealth Relations Office, the others being Basutoland and Swaziland (qq.v.). Area, 275,000 square miles; population (mid-1958 est.), 334,000, which is predominantly African.

Under a high commissioner, Bechuanaland is administered from Mafeking, Cape Province, Union of South Africa, by a resident commissioner (Robert Peter Fawcus) who presides over joint meetings of African and European advisory councils. African chiefs exercise local rule through eight tribal administrations, the largest being the Bamangwato (1946 census pop., 100,987), whose capital is Serowe (15,935).

Revenue in 1957–58 was £1,886,972, including a United Kingdom grant-in-aid of £480,000, and expenditure totaled £2,086,192. In 1958 there were 169 African primary schools with 29,924 pupils, and 6 African secondary schools, 9 European schools, and 5 schools for mixed races.

The pastoral economy is dependent on cattle-raising and dairying. In 1958, exports were valued at £2,599,088; imports, £3,503,647. Chief exports and 1958 values are: cattle carcasses, £1,473,699; hides, £162,535; live cattle, £167,079; sorghum, £66,200; and sheep and goats, £8,229. Main imports are wheat, textiles, and vehicles.

The government-owned Southern Rhodesia Railways operates some 394 miles of single track. Main roads aggregate 550 miles. Airfields are located at Francistown, Serowe, and ten other towns. The government operates an extensive radio network.

On June 2, 1959, leaders of the Bamangwato tribe signed an agreement permitting a Rhodesian company to explore for minerals in 40,000 square miles of tribal territory.

BEEF. See MEAT INDUSTRY.
BEER. See BREWING INDUSTRY.
BEETS. See VEGETABLES.

BELGIAN CONGO. A Belgian colony in equatorial Africa. Area, 905,378 square miles; pop. (est. July 1, 1958), 13,559,000, including about 110,000 whites, mainly Belgians. Chief cities and populations (Jan. 1, 1957): Léopoldville, the capital, 366,819; Elisabethville, 169,985; Jadotville, 76,877; and Stanleyville, 71,284.

The People.—The natives are mainly Bantu and Sudanese tribesmen, with some Nilotics, Pygmies, and Hamites. There are 4 main language divisions, each including numerous dialects. About 2.6 million natives live outside tribal areas and are subject to certain restrictions on movement. Native wage workers number about 1.2 million. The tribal population is engaged predominantly in subsistence agriculture. Government-sponsored *paysonnats* or farm settlements have some 150,000 native families.

Government.—Legislation is by decree of the Belgian monarch, countersigned by the minister for the colonies. The governor general of the Belgian Congo is appointed in Brussels and is responsible to the minister for the colonies, but has unrestricted powers in the Congo. He is aided by 6 governors who head the administration of the provinces. Appointive advisory councils exist on the national and provincial levels, but exercise only advisory functions. Elections for borough councils in Léopoldville, Elisabethville, and Jadotville on Dec. 8, 1957, marked the first step toward popular government. On Jan. 13, 1959, the Belgian government outlined a program for the gradual attainment of self-rule in the Congo. (See below *Principal Events, 1959.*)

Education and Religion.—Over 40% of the native school-age population attends school (one of the highest proportions in Africa), but relatively few natives go beyond the primary level. In 1957 there were 111 state schools for Africans, with 36,650 pupils; 869,977 attended schools subsidized and regulated by the state; 376,019 attended nonsubsidized schools maintained by missions and private companies; and 13,214 attended vocational and technical schools. The colony has 2 universities: the University of Lovanium (365 students in 1959, including 247 Africans); and the Belgian Congo and Ruanda-Urundi State University (141 students in 1957, including 17 Africans). The first nuclear reactor in Africa was opened at the University of Lovanium on June 7, 1959. Roman Catholics number about 4 million; Protestants, 750,000; and Moslems, 90,000.

Finance.—The estimated ordinary budget for 1958 was: revenue, 12,471 million francs; expenditure, 12,438 million. Extraordinary expenditure is mainly under the 10-year development plans. The first 10-year plan (1950–59) involved outlays of over $1 billion in transportation, agriculture, education, housing, hydroelectric power, and other fields. The second 10-year plan (1960–69) will invest an estimated $1.1 billion, with stress on agriculture and road-building. The Belgian Congo franc equals U.S.$0.02.

Transportation and Communications.—The Congo River and its tributaries, providing over 8,000 miles of navigable waterways, form the backbone of the colony's transportation system. Roads total 87,360 miles (1957), including 20,878 miles of main roads; paved roads, however, exist only in and around the chief cities and aggregate a few hundred miles. Public railways total 3,170 miles (1957). The colony has 9 international airports and many secondary and local fields. Passenger cars numbered 37,841 in 1958; telephones (including Ruanda-Urundi), 22,370.

Production.—The Belgian Congo is an important producer of minerals and cash crops, but about three-fourths of the native population remains engaged in primitive tillage. Chief native food staples are manioc, maize (corn), sweet potatoes, rice, sorghum, peanuts, and bananas. Many natives are employed on the European-owned rubber, coffee, and palm-tree plantations. Cotton, a major cash crop, is grown by Africans but processed and sold by Europeans (1958–59 output, including Ruanda-Urundi, 225,000 bales of 500

pounds each). Forest products include hardwoods, cinchona bark, ivory, derris, and skins. The processing of agricultural products and minerals constitutes the colony's chief manufacturing activities, although there has been considerable recent development of local-consumer-goods industries, including foodstuffs, building materials, chemicals, soap, textiles, leather, footwear, and glassware. Installed electric capacity in 1957 totaled 695,900 kw. (89% hydroelectric), a rise of 43% over 1956. Aided by high prices for its exports, the colony expanded its gross national product to an estimated 61,150 million francs in 1956, up 81.5% over 1950.

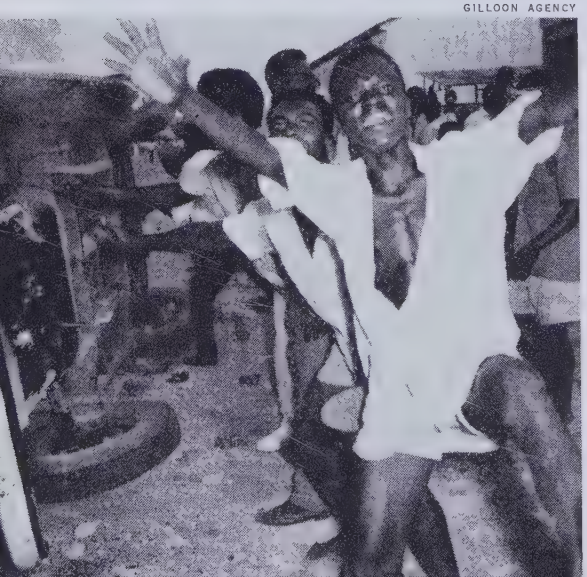
The Belgian Congo is the world's largest supplier of industrial diamonds and cobalt, and an important producer of copper and other minerals. Output of industrial diamonds in 1957 totaled 15,015,807 carats; cobalt ore (Co content), 8,115 metric tons; and copper ore (Cu content), 242,200 metric tons. Other mineral products include manganese ore, zinc ore, tin concentrates, tungsten ore, and coal. Production of uranium oxide (which is shipped mainly to the United States and Great Britain) approximated 1,000 tons in 1958, and the colony's reserves of this strategic mineral were estimated at 10 million tons.

Foreign Trade.—Exports from the Belgian Congo and Ruanda-Urundi in 1958 (exclusive of fissionable materials) totaled 20,207 million francs, down about 15% from 1957 because of the drop in world prices for the colony's products; imports, 17,985 million, down about 18%. Chief exports, quantities (in tons), and values (in millions of francs) in 1958 were: copper, 241,341 tons (5,401 million francs); coffee, 70,603 (2,815); palm oil, 164,586 (1,676); industrial diamonds, 14,383,000 carats (1,474); cobalt, 7,182 (1,176); and cotton, 34,410 (1,066). Imports are mainly iron and steel products, machinery, textiles, and foodstuffs. Belgium took 21.5% of 1958 exports by value, and provided 35.2% of imports. The United States took 22.1% of exports and supplied 14.3% of imports.

Principal Events, 1959.—For many years the Belgian Congo had been noted as the showpiece of European paternalism in Africa. While yielding high profits to the Belgian colonialists, the colony enjoyed a higher living standard than most African areas, exercised virtually no political rights, and seemed to have been bypassed by the nationalist movements sweeping the rest of the continent. In 1959, however, African nationalism erupted in the Congo in a manner anticipated by few observers.

Frenzied natives overturn car during rioting in Leopoldville, Belgian Congo, in January. Scores were killed in the violence, which had its roots in nationalistic fervor.

GILLOON AGENCY



On January 4, following the banning of a meeting in Léopoldville of the Abako (Association of the Lower Congo), native crowds demanding independence rioted for more than two days, with police action resulting in the deaths of 47 Africans (unofficial reports put the toll considerably higher). In succeeding weeks, riotous demonstrations took place at Matadi, again at Léopoldville, and in other towns. On October 30–31, following the dispersion by troops of a banned meeting of the Congo National Movement, fighting in the Stanleyville area resulted in over 70 natives killed. In mid-October and early December, scores of natives were killed in warfare between Baluba and Lulua tribesmen in the Luluabourg area.

The Belgian government, which had avoided a decision on its colonial policy as long as its colony seemed immune from African nationalism, on January 13 announced a program for the gradual attainment of self-rule in the Belgian Congo. The program, as shaped during succeeding months and outlined by Minister for the Congo Auguste de Schryver on October 16, called for the election by universal male suffrage of rural and municipal councils in late December. These councils in early 1960 would choose members of provincial councils. Later in 1960, two chambers would be constituted on the national level and a ministry would be appointed by the Belgian king. After four years, the Belgian Congo and Belgium would jointly decide on their future relationship.

Joseph Kasavubu, leader of the Abako, and other spokesmen for the main nationalist groups rejected the Belgian program, and Kasavubu urged a boycott of the forthcoming local elections. The boycott proved strikingly effective. In the elections on December 20, only about 31% of the eligible Congolese voters went to the polls in Léopoldville. Elsewhere the Congolese Nationalist Movement, led by Patrice Lumumba, showed considerable strength, obtaining about 80% of the vote in Stanleyville. Meanwhile, King Baudouin I, who arrived in the Belgian Congo on December 17 on a two-week tour, was greeted everywhere with demands for independence. At a meeting of five nationalist parties in Kisantu on December 24–27, resolutions were adopted calling for immediate independence. As a result of these developments, the Brussels government altered its program and moved to grant the Belgian Congo independence in the year 1960.

M. J. G.

BELGIUM. A constitutional monarchy on the northwestern coast of Europe. Area, 11,779 square miles; pop. (est. July 1, 1958), 9,053,000. Chief cities and populations (est. Dec. 31, 1957): Brussels, the capital, 993,766, with suburbs (without suburbs, 1956: 172,009); Antwerp, 256,126; Ghent, 161,382; and Liége, 156,612. French is spoken by the Walloons in the south and east; Flemish, by the Flemings in the north and west.

Government.—King Baudouin I (b. 1930; acceded 1951) is the hereditary constitutional monarch. The bicameral Belgian Parliament is elected for a 4-year term. The Chamber of Deputies (212 members) is elected directly by compulsory vote. Of the Senate's 175 members, 106 are directly elected by popular vote, 46 are elected by provincial councils, and these senators then choose the remaining 23. Following the elections of June 1, 1958, party alignment in the Chamber of Deputies was: Social Christian, 104; Socialist, 84; Liberal, 21; Communist, 2; independent (Catholic), 1. Premier Gaston Eyskens (Social Christian) heads a Social Christian-Liberal coalition government which was appointed on Nov. 6, 1958.

Education and Religion.—More than half of all school children attend Roman Catholic schools, which are partly subsidized by the government. Illiteracy is almost nonexistent (3% of persons over 15 years in 1947). In the 1956–57 school year, primary schools numbered 9,047 (945,486 pupils); and infant schools, 4,539 (352,741). On the secondary level there are several hundred free higher-grade schools, state and communal middle schools, and royal athenaeums and *lycées*. There are also numerous teacher-training schools, and agricultural, technical, commercial, and professional schools. Belgium's principal universities are at Brussels (4,056 students in 1957–58), Ghent (3,635), Liége (4,200), and Louvain (11,014). The majority of the population is Roman Catholic; there are small Protestant and Jewish minorities.

Finance.—The revised ordinary budget for 1958 set expenditure at 105.1 billion francs, and revenue at 95.5 billion, for an anticipated deficit of 9.6 billion (compared with an anticipated surplus of 5.1 billion in the original 1958 budget). Extraordinary expenditure (revised) was estimated at 20 billion francs; revenue, 0.8 billion. Belgium's public debt in November 1958 totaled 344.3 billion francs (323.6 billion in December 1957). The Belgian franc equals U.S.$0.02.

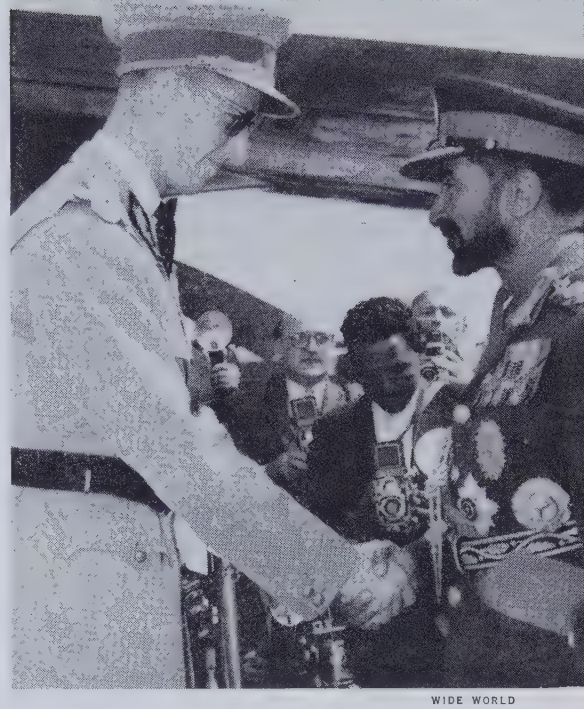
Transportation and Communications.—Belgium's railroad network, the densest in Europe, includes 3,004 miles (17.5% electrified) operated by the Belgian National Railway Company (1957), and over 3,000 miles of narrow-gauge track operated by the National Interurban Railway Company. The road network included 14,190 miles of principal roads in 1957. Inland waterways (1,130 miles in 1957) serve most of the industrial areas. Belgium's merchant fleet at the beginning of 1958 comprised 91 vessels aggregating 531,187 gross registered tons. Sabena Belgian World Airlines, a semiprivate company controlled by the government, has a monopoly of scheduled air transport. Automobiles in 1957 numbered 615,630; telephones, 986,953; radio receiver licenses, 2,307,184; and television receivers, 250,000 (July 1957).

Production.—The Belgian economy is characterized by a high degree of industrialization and dependence on foreign markets and raw materials. Of the labor force of 3,448,500 in 1956, 1,239,400 were engaged in industry and 353,100 in agriculture, forestry, and fishing. In 1958, a year of recession and slow recovery, overall industrial output was about 6.5% below 1957. Production of crude steel approximated 6 million metric tons (down about 4% from 1957); pig iron and ferroalloys, 5.5 million (down 1%); and coal, 27.1 million (7% below 1957 and the lowest in 10 years). Electricity output averaged 1,043 million kw.-hr. monthly, about equal to the 1957 level. Other important Belgian industries are textiles, chemicals, construction materials, paper, leather, ceramics, foodstuffs, tobacco products, footwear, and diamond-cutting (an important dollar earner). National income in 1958 was estimated at 404 billion francs, down 2.0% from 1957.

Belgian agriculture is featured by small, high-yield farms. Livestock raising is important, and Belgium is self-sufficient in butter, milk, and eggs, and almost self-sufficient in meat. Output of most major crops in 1958 continued at the bumper levels of the previous year; yields of principal crops in 1958, in thousands of bushels, were: wheat, 28,600; rye, 7,870; barley, 14,600; oats, 30,515; and flaxseed, 562. Production of potatoes in 1958 totaled 1,914,000 metric tons; sugar beets (1958–59), 3,122,000 short tons.

Foreign Trade.—Exports of the Belgium-Luxembourg Economic Union totaled 152,267 million francs (down 4.4% from 1957); imports, 156,447 million (down 8.8%). Belgium's chief exports are steel and metal products, textiles and clothing, nonferrous metals, chemicals, and diamonds; imports: machinery and electrical equipment, textile fibers, base metals, metallic ores, fuels, and foodstuffs. Netherlands took 21% of Belgium-Luxembourg exports in 1958; West Germany, 12%; and France, 11%. West Germany provided 17% of 1958 imports; Netherlands, 16%; and France, 12%.

Principal Events, 1959.—On February 10 it was announced in Brussels that eight coal mines in the Borinage region of southern Belgium would be shut down. For several years the Borinage mines had operated on the basis of subsidies because of their high costs of output. Their closing, however, meant the loss of some 6,000 miners' jobs, and the miners of the affected area went on strike. On February 18 the Socialist Trade Union Federation called out all the nation's miners in protest against the government's plan. At the height of the strike, some 100,000 miners were out, and some minor acts of violence, mainly disruption of local communications, took place. The strike was settled on February 24, when the unions accepted a mine-owners' guarantee of the government plan for resettling miners of mines to be closed later in the year.



WIDE WORLD

King Baudouin I (left) of Belgium welcomes Ethiopian Emperor Haile Selassie on his arrival July 17 for state visit.

Under a plan agreed upon in August by the Belgian government and the High Authority of the European Coal and Steel Community, the closing of noncompetitive Belgian mines was to proceed over a period of about four years until Belgian coal output had been reduced by some 5.5 million tons to an annual level of 23.4 million. Costs required for the readaptation of an estimated 17,500 miners were to be shared by the Belgian government and the High Authority, with the High Authority setting aside $4 million to the end of 1959 and $7.5 million to June 30, 1962.

For the economy as a whole, 1959 was a year of recovery from recession, although the pace of recovery was slow. The percentage of unemployed, which had averaged 8.6% of the labor force in 1958 (5.5% in 1957), declined only slightly to 7.8% by June 1959. The government sought to speed recovery by public works outlays, rationalization of the coal industry, and encouragement of investment through tax relief, cheapening of credit, and, in some cases, direct grants for investment in fixed assets. Particular efforts were made to channel investment into distressed areas and to attract foreign capital.

The long-standing controversy over government support for church schools was allayed in 1959, following the adoption of an agreement by the three major parties on Nov. 6, 1958. Legislation passed by the Belgian Parliament in May 1959

provided that when a sufficient number of parents in a district submitted requests, either a state school would be opened or a private school be given subsidies; that church schools would be given the same subsidies as schools operated by provincial or local authorities; and that parents would be free to choose which type of school their children would attend. Other provisions raised the school-leaving age above the prevailing 14 years, abolished fees for secondary education, and authorized the setting up of a special fund to make up for the shortage of state schools.

King Baudouin I, accompanied by Foreign Minister Pierre Wigny, arrived in Washington on May 11, on a three-week tour of the United States. Following criticism from certain circles in Belgium that former King Leopold was exercising undue influence in public affairs through his son, the king, Leopold agreed to leave his residence with Baudouin at Laeken and remove to the Chateau d'Argenteuil, on the outskirts of Brussels. Maurice van Hemelrijck, minister for the Belgian Congo who favored speedy implementation of the government's plan of January 13 for the democratization of the Belgian Congo, resigned on September 3, when a majority of the cabinet indicated they favored gradualness. He was succeeded by August de Schryver. (See also BELGIAN CONGO.)

M. J. G.

BENELUX ECONOMIC UNION. A projected union of the economies of Belgium, the Netherlands, and Luxembourg, initiated in 1948 as a customs union for goods from non-Benelux nations. Further steps toward union have included the gradual removal of restrictions on some 98% of goods traded among members, reduction of tax differences, elimination of restrictions on the movement of capital and labor, and the signing of Benelux trade treaties with other nations. In 1958 the three nations signed a 50-year Benelux Economic Union Treaty, codifying results thus far achieved and paving the way toward full economic integration (the treaty had not yet been ratified by 1959). The union's chief institutions are a nine-member Committee of Ministers, an Inter-Parliamentary Advisory Council of 49 members, and a secretariat general with headquarters at Brussels.

Italian Renaissance art expert Bernard Berenson, shown here at his villa near Florence, Italy, died on October 6.

DAVID LEES —LIFE © 1959 TIME, INC.

BENSON, Ezra Taft, U.S. secretary of agriculture: b. Whitney, Idaho, Aug. 4, 1899. A graduate of Brigham Young University in 1926, Benson operated a farm in Whitney until 1929, served as an economist at the University of Idaho until 1938, and then functioned as secretary of the National Council of Farmer Cooperatives from 1939 to 1944. He took office as secretary of agriculture in President Eisenhower's cabinet in January 1953.

The problem of farm surpluses—particularly of wheat—continued to haunt the secretary in 1959, complicated by growing political pressures upon him as the 1960 elections loomed closer. Persistent efforts to adjust price supports downward met congressional and farm-state resistance, even within his own party. Benson has often been used as the "whipping boy" or political target for opponents of administration farm policy.

For the secretary the year 1959 was marred by a wrangle over interest rates for government rural power loans through the Rural Electrification Administration (q.v.), a unit of the Department of Agriculture. Benson's proposal in February to increase the rates led to congressional protest in the form of a bill to give the REA director, rather than the secretary, authority over loan applications. The president vetoed the bill on April 27. The Senate overrode the veto, but the House of Representatives upheld it by just four votes on April 30.

Benson stood firm throughout 1959 on his farm policies and proposals. On November 10 he announced that the administration planned to submit a "sound" program to Congress calling for a voluntary plan to retire land from crop production in surplus areas; a "vigorous" food-for-peace plan to use surpluses to feed the world's hungry and help the development of backward areas; and "a realistic price support program." On December 14, recovering from a successful gall bladder operation, Benson said: "Our policy is right. If anything is right, it ought to be done—and it will prove to be good politics."

Benson, who heads the administration's Food for Peace Program, led a May meeting in Washington, D.C., with representatives of four other wheat-exporting nations, to discuss plans to implement the program.

In late September 1959 the secretary undertook a 16-day tour of northern and eastern Europe to promote good will and trade relations. A Mormon apostle (minister), he preached a sermon in Moscow's Central Baptist Church on October 1 to a Russian audience estimated at 1,500.

BERENSON, Bernard (94), American expert on Italian Renaissance art: b. Vilna, Lithuania, June 26, 1865; d. Settignano, near Florence, Italy, Oct. 6, 1959.

Born of a rabbinical family which moved to Boston when Berenson was 10, he was sent to the Boston Latin School and then to Harvard College with the help of the wealthy art patroness, Mrs. Jack (Isabella Stewart) Gardner, whose art collection he helped her to assemble some years later. He settled in Italy in 1888. During the next 12 years he published four books on Italian paintings of the Renaissance (later issued as *Italian Painters of the Renaissance,* rev. ed. 1930), which established him as an authority without peer on paintings of the period. By 1900 he had also amassed

enough of a fortune by advising collectors and dealers—as he later advised the art dealer, Lord Joseph Duveen—to buy an 18th century villa, I Tatti, in the hills of Settignano overlooking Florence. He remained there for the rest of his life, collecting art objects and a library of more than 55,000 books on art, as well as writing art criticism and history.

The method he followed of establishing the authorship and authenticity of paintings was to discover what characteristic each artist had that was not shared by any other. Although he arrived at conclusions by this method that were later successfully challenged, sometimes by himself, he corrected so many erroneous attributions of paintings that for a half a century the opinion of "B.B." was sought on almost every major transaction and collection involving works of the Italian Renaissance. Later in his life he spoke of regretting the time he had squandered on giving critical advice that he could have used in broadening his experience and learning.

During World War II, Berenson, a convert to Roman Catholicism, took refuge at times with friends to escape persecution by the Fascists for his Jewish origin. His wife, the sister of the American essayist Logan Pearsall Smith, died in 1945. After World War II he continued to entertain artists, scholars, and connoisseurs at I Tatti, regaling them with his opinions on art, which could be scathingly critical whenever modern nonrepresentational painting was discussed. He published an autobiographical triology in his last years: *Aesthetics and History* (1948), *Sketch for a Self-Portrait* (1949), *Rumor and Reflection* (1952). *The Passionate Sightseer* was scheduled for release in 1960. He left his library, art collection, and villa to Harvard.

BERLIN. See GERMANY.

BERMUDA. First settled in 1609, this group of 300 islands in the Atlantic Ocean (20 inhabited) lies some 580 miles east-southeast of Cape Hatteras, North Carolina; it forms a British crown colony with a land area of 20.59 square miles. The population (37,403 in 1950) had increased by 1958 to 43,480 (est., including 27,443 colored), making this the seventh most densely populated land unit in the world. On Main Island is located Hamilton, the capital (founded 1790; pop. est., 3,000 in 1957); other important islands are St. George's, St. David's, Somerset, and Ireland.

Government.—On April 6, 1959, Maj. Gen. Sir Julian Alvery Gascoigne was named governor and commander in chief, to succeed Lt. Gen. Sir John Dane Woodall in October. The governor is assisted by a 7-member Executive Council, an 11-member Legislative Council, and a 36-member elected House of Assembly (the oldest British colonial parliament), to which 9 new members were returned at elections held in 1958.

Finance.—In 1958 revenue was £3,861,226; expenditure, £3,885,226, including £493,907 for trade development, £484,386 for education, and £458,498 for public works.

Education.—Education is compulsory between the ages of 7 and 13. In 1958 there were 66 schools (10,068 pupils), including 44 primary schools (aggregate enrollment, 8,307). Vocational and technical students totaled 282.

Transportation and Communications.—Direct flights are made between New York and Bermuda by British Overseas Airways Corporation, Eastern Air Lines, Eagle Airways, and Pan American World Airways. Other principal air services link the colony with Canada, the West Indies, Cuba, Colombia, Venezuela, and Europe. Twelve shipping lines supply service between Bermuda and North American and European ports. Visitors arriving by air numbered 92,479 in 1958; by ship, 38,528 (including 22,382 cruise passengers). United States citizens are not required to have passports. A large airfield forms part of a United States leased naval and air base. The National Aeronautics and Space Administration announced in August 1959 that there would be built in Bermuda a key station in the system which is being set up to track the first manned United States satellite.

Foreign Trade.—In 1958 imports, totaling £17,146,958 from 60 countries, came principally from the United States (£8,534,908). They included gasoline, 16,440,993 gallons, valued at £1,252,312; cotton clothing, £471,674; electrical supplies, £364,449; hardware, £213,909; and television receivers, 2,674, valued at £17,940. Exports totaled £7,673,191, including reexports of bunkers and ship stores, £2,295,265; and drugs and medicines, £2,395,265.

Principal Events, 1959.—On April 28–29, Prince Philip, Duke of Edinburgh, visited Bermuda and took part in ceremonies marking the 350th anniversary of the settlement of the colony. Continuing throughout the year, a series of commemorative events included historical plays, naval visits, the issuance of special coinage and postage stamps, and, on July 28, a parade recalling the date in 1609 on which the *Sea Venture*, flagship of a fleet bringing supplies to the colonists in Virginia, was wrecked in the Bermudas. Its commander, Admiral Sir George Somers, survived and founded the colony.

BERYLLIUM. World output of beryl, the only commercial ore of beryllium, declined from 11,900 short tons in 1957 to 7,000 tons in 1958. Production (mine shipments) of beryl in the United States in 1958 totaled 463 short tons, compared with 521 tons in 1957. The Belgian Congo, Brazil, Argentina, Union of South Africa, and India supplied the major part of the 4,599 tons imported by the United States in 1958. In the United States, 175 operators in 9 states produced quantities of beryl ranging from a few pounds to 114 tons. South Dakota produced about 52% of the total domestic beryl; Colorado, 2%; New Mexico, 6%; and six other states, 13%. Plants in Pennsylvania and Ohio produced beryllium metal, beryllium-copper master alloy and other beryllium-copper alloys, beryllium-aluminum, beryllium-nickel, and beryllium oxide. (See MINERAL PRODUCTION for the output of major producing countries.)

BEST SELLERS. See BOOK PUBLISHING AND SALES.
BETTING. See Index entry, *Gambling*.

BHUTAN. Closely related by race and religion to Tibet, this autonomous Himalayan state (area, about 18,000 square miles; pop., est. mid-1958, 650,000) lies south of that country and north of India, whose government under a 1949 treaty is responsible for Bhutan's external relations. Its maximum length is 190 miles. On the northern border are Kula Kangri (24,780 feet) and other famous peaks. Thimbu is the present (1959) capital[1] and residence of the hereditary ruler, Maharaja Jigme Dorji Wangchuk (installed on Oct. 27, 1952). Among other leading towns are Bumthang, Punakha, Tongsa, and Paro. The religion of the dominant Bhotias (descendants of a Tibetan Mongolian stock) is Buddhism in the form prevalent in Tibet. Tashi Chho is the largest of many defended lamaseries.

Rice, corn, and millet are the principal subsistence crops. The northern forests provide valuable hardwoods for export. In addition, stock raising is an important industry, and iron and silver are mined for use in the manufacture of swords and muzzle-loading guns.

In 1959, Bhutan, in common with adjoining Sikkim and other Indian border states, was menaced increasingly by Communist China, which, according to an Indian government white paper,

[1] There is no fixed capital, the maharaja's current residence serving as the seat of government. Punakha has served as the winter capital, and Bumthang as the summer capital.

claims the Tashigong area together with a considerable part of northwestern Bhutan. Prime Minister Jigme P. Dorji visited New Delhi in August to discuss with Prime Minister Jawaharlal Nehru the strengthening of Bhutan's northern border. It was announced in September that, in order to make Bhutan accessible from the south, India would immediately begin construction of five roads, of which four would furnish direct links with Indian states, including a road from Jalgaon, West Bengal, to Paro and Thimbu. The sum of 150 million rupees was allocated to this project. In addition, the annual Bhutan subsidy was to be increased by 700,000 rupees for 1959–60. Under a second agreement, announced November 2, the Indian state of West Bengal will build an 18,000-kw. Jaldhaka River hydroelectric project on the Bhutan-Indian boundary. Free power will go to Bhutan, and West Bengal will pay Bhutan 8 rupees per kw. per year for power used in India.

BICYCLING. See Sports, Games, and Shows—*Cycling*.

BILLIARDS. See Sports, Games, and Shows.

BIOCHEMISTRY. **Coenzyme Q.**—Coenzyme Q, a new coenzyme with a quinone structure, has been isolated from the lipids of mitochondria, the small rod-like, enzyme-rich structures present in the cytoplasm of the cell. The length of the isoprenoid side chain in its formula varies with the source of the coenzyme being 6 for yeast and 10 for material isolated from the bovine and human species. Coenzyme Q is important for electron transfer, since it can accept an electron and be reduced to a semiquinone, after which it can react with inorganic phosphate to produce a semiquinone phosphate. The latter compound can then release its electron and simultaneously decompose to the original quinone and an organic phosphate, such as adenosine triphosphate.

Serum Protein Groups.—The fact that the red blood cells of all humans are not identical has long been the basis for blood grouping, necessary for identification purposes and for transfusions. The serum proteins, however, have been considered to be identical in all individuals; and the lack of (or very minimal nature of) transfusion reactions when cell-free blood has been employed has seemed to substantiate this view. That there is individuality of serum proteins as well as blood cells, however, has now been authenticated.

More than 20 years ago it was found that the peroxidase or peroxide-splitting activity of hemoglobin was markedly enhanced by serum protein; the protein responsible for this activity was called haptoglobin. Recently, intensive study has revealed that there is more than one haptoglobin and that their presence or absence is genetically controlled, resulting in haptoglobin serum groups, much as the red cells are divided into genetically controlled groups. There appear to be four serum groups, one of which is due to the complete absence of haptoglobins. While people in all parts of the world thus far examined have haptoglobin groups, the percentage of each group varies in different populations; group 0–0, those displaying an absence of haptoglobins, has thus far been found only in certain Negro populations.

Another system of inherited serum groups is called the "Gm system." There appear to be two factors in this system: Gm^a and Gm^b. Very little work has been done with these groups, and their world distribution is currently unknown. Serum groups have also been found in rabbits and probably occur in other animal species.

Fatty Acid Synthesis.—The synthesis of fatty acids has been thought to result from the condensation of two carbon units, in a manner analogous to the degradation of these substances. A three-carbon intermediate, malonic acid has now been isolated, thus requiring the formulation of a new synthetic scheme; this, furthermore, points up the fact that synthesis is not merely the reverse of degradation. According to the new theory, fatty acids are synthesized in the following way: A biotin-containing enzyme mediates the addition of carbon dioxide to acetyl coenzyme A, yielding malonyl coenzyme A. The next steps have not been proved, but undoubtedly they involve repeated condensations of malonyl coenzyme A with itself and coenzyme A, with the elimination of carbon dioxide after each condensation, until fatty acids such as palmitic are produced.

Deuterium Oxide and Sterility.—Deuterium oxide, or heavy water, is a substance identical with ordinary water except that the hydrogen atoms are replaced by an isotope of hydrogen called deuterium. When this compound is added to the drinking water of male mice in a concentration of 30 per cent, the animals gradually become sterile; fertility returns one to three months following removal of the heavy water from the diet. Since the loss of fertility coincides with the spermatogenic cycle of the mice, it has been inferred that the substitution of the heavy isotope for the ordinary hydrogen isotope interferes with the formation of normal chromosomes, possibly through a change in the type of hydrogen bonding in the chromosomal nucleoproteins. Since nucleoproteins are the substances that carry genetic traits, a change in their structure would lead to the production of lethal mutations. These experiments may help to shed new light on the structure of nucleoproteins.

Hemoglobin.—A new theory has been proposed to account for an old riddle about the mode of action of hemoglobin, a substance made up of four iron-containing heme atoms for every globin or protein molecule. The iron in hemoglobin is in the reduced state and remains unchanged during the reversible cycle of absorption and release of oxygen. When the globin is removed from the heme, the latter becomes oxidized and the oxygen can no longer be released. To explain the role of the globin, it is now postulated that in aqueous solution the heme molecules are partly exposed and partly covered by the globin. A structure of this type would result in a lowered dielectric constant around the binding sites, a condition that would retard oxidation of the iron but would not inhibit the reversible binding and release of oxygen.

The globin portion of hemoglobin is composed of two chains called alpha and beta; the synthesis of each chain is governed by a separate gene. In studying the difference between adult and fetal hemoglobin, it was found that the alpha chain is identical in each and, therefore, is produced under the control of the same gene. The entire difference, consequently, is in the constitution of the beta chain; the nature of this difference is not known.

The difference between normal and sickle cell hemoglobin (the latter occurs in the red cells of individuals with sickle cell anemia) also resides in the beta chain. This disparity lies in the substitution of a single amino acid (valine) in the sickle cell hemoglobin for glutamic acid, which occurs in the normal hemoglobin.

Harold Baer,
Associate Professor of Bacteriology, School of Medicine, Tulane University.

BIOGRAPHY. See Index entry, *Literature;* also biographical articles in their alphabetical order.

BIOLOGY. See BOTANY; GENETICS; MARINE BIOLOGY; ZOOLOGY.

BIRDS. See Index entry.

BIRTH STATISTICS. See Index entry.

BISMUTH. The U.S. Bureau of Mines does not publish figures on domestic output of bismuth. In 1958, domestic consumption of bismuth metal was 1,242,700 pounds, a decline of 23% from the 1,615,100 pounds consumed in 1957. The decrease was attributed to the lower level of industrial activity in the first nine months of the year and to larger imports of bismuth in the form of intermediate smelter products. Refined metal from foreign sources was 751,800 pounds in 1958, a decline of 11 per cent as compared with 849,000 pounds in 1957. Peru supplied about two thirds of this quantity; Mexico, over 24%; and Yugoslavia, the remainder. In the first nine months of 1959, United States consumption was 975,245 pounds, and general imports were 349,107 pounds of bismuth metal. (See MINERAL PRODUCTION for output by major countries.)

BLINDNESS. See OPHTHALMOLOGY and the Index entry, *Blind, Aid to the.*

BLOCH, Ernest (78), Swiss-American composer: b. Geneva, Switzerland, July 24, 1880; d. Portland, Oreg., July 15, 1959. Although most renowned as the creator of specifically Hebraic music of Biblical inspiration and clangorous, rhapsodic character, Bloch began his long career as a definitely European musician abreast of musical developments after 1900 and closed it with more abstract works of neoclassical texture. Although active for a time as a teacher, he never founded a school of composition, and was too personal and idiosyncratic a composer to have real disciples. He became and remained a unique, lonely presence on the 20th century musical scene.

After early studies in Geneva with Émile Jaques-Dalcroze and in Brussels with Eugène Ysaÿe and François Rasse, Block took composition lessons from Iwan Knorr in Frankfurt am Main and from Ludwig Thuille in Munich; then lived for a time in Paris. Back in Switzerland, he lectured at the Geneva Conservatory, conducted orchestras (1909–10) in Lausanne and Neuchâtel, and from 1911 to 1915 was professor of composition and aesthetics at the conservatory. In 1916 he went to the United States (he became a citizen in 1924). From 1917 to 1919 he was on the faculty of the Mannes School of Music in New York City and simultaneously conducted his compositions with American orchestras. He served as first director of the Cleveland Institute of Music from 1920 to 1925 and directed the San Francisco Conservatory from 1925 until 1930, when he went back to Europe for some years of composing. Having returned to the United States in 1939, he taught at the University of California for several summers but later devoted his time to composing at his home in Agate Beach, Oreg.

Bloch was awarded the Elizabeth Sprague Coolidge Prize in 1919 for his Suite for Viola and Piano; in 1927 his *America* won a prize offered by the magazine *Musical America;* and in 1942 he was given a Gold Medal by the American Academy of Arts and Letters. The New York Music Critics Circle's 1947 award for chamber music went to his Second String Quartet, and the Circle gave him two of their awards for 1953, citing his Third String Quartet as the best chamber work of the season and his Concerto Grosso No. 2 as the best orchestral piece.

Bloch's works (with dates of first performance) include an opera, *Macbeth* (1910); a ritual Hebrew Sacred Service (1934); many orchestral pieces—Symphony in C Sharp Minor (1910), *Hiver—Printemps* (1917), *Trois poèmes juifs* (1917), *Schelomo,* for cello and orchestra (1917), Concerto Grosso No. 1, for strings and piano (1925), *America* (1928), *Helvetia* (1933), *Voice in the Wilderness* (1937), *Evocations* (1938), a violin concerto (1938), *Suite hébraïque,* for viola and orchestra (1953), *Sinfonia breve* (1953), Concerto Grosso No. 2, for strings (1953), and Symphony in E Flat (1956). His other works include numerous compositions for voice and orchestra—*Poèmes d'automne* (1906), *Israel* (1917); a large body of chamber music—Quintet for Piano and Strings, including use of quarter tones (1923), four string quartets (1916, 1946, 1951, 1953), Suite for Viola and Piano (1919), two violin sonatas (1920, 1924), the second entitled *Poème mystique, Baal Shem,* for violin and piano (1923), a piano sonata (1953); and many other pieces for piano solo, violin and piano, cello and piano, and small chamber ensembles.

HERBERT WEINSTOCK,
Music Editor and Reviewer; Author of "Music as an Art" and other works.

BLOOD DISEASES. See Index entry, *Blood.*

BOATING. See SPORTS, GAMES, AND SHOWS.

BOBSLEDDING. See SPORTS, GAMES, AND SHOWS.

BOLIVIA. A landlocked South American republic, Bolivia borders Chile and Peru on the west, Brazil on the north and east, and Paraguay and Argentina on the south. No exact area figure has been determined, but Bolivia claimed 424,052 square miles in 1958.

Population.—In 1958, Bolivia had a population of 3,310,712, representing an increase of 291,681 over 1950, date of the last official census. The density is 7.8 persons per square mile. About 1,013,350 persons are classified as urban population, of which 65% live in the eight main cities. They are La Paz, the administrative capital, situated at an altitude of 11,909 feet (1957 est, pop., 339,279); Sucre, the legal capital (53,825); Cochabamba (87,159); Oruro (75,468); Santa Cruz (58,272); Potosí (51,065); Tarija (19,089); and Trinidad (12,807). The population increase in the urban areas was about 20% in the last two decades, while the rural population has decreased slightly.

The larger part of the population, about 63%, are Indians or follow an Indian way of life. Bolivia has about 87,000 nomadic forest Indians removed from all civilization and not included in census figures. Negroes and Asians together account for less than 0.5%. The rest of the population is European. Spanish is the official language, but Quechua, Aymara, and Guaraní are more widely spoken.

Government.—Bolivia is a unitarian republic with nine departments headed by prefects appointed by the president. The 12th constitution, adopted in 1938, revised in 1945 and amended in 1947, provides for executive, legislative and judicial branches. The president is elected every four years and cannot succeed himself; he can legislate by executive decree. (Hernán Siles Zuazo was elected president in 1956.) Congress is composed of 18 senators elected for 6-year terms and 68 deputies elected for 4-year terms. It convenes every year in August. Suffrage is obligatory. The Supreme Court has 10 justices appointed for 10 years by the president and approved by Congress.

Education and Religion.—About 69% of all persons over 6 years old are illiterate. Bolivia has 21,000 college graduates, 93,000 persons with high school diplomas, and 527,000 who have finished grammar school. In 1958 there were 698 primary schools with 165,598 pupils, and 138 high schools with 31,546 students. The 35 vocational schools have about 5,000 students; 40 kindergartens enroll 7,500 children. An additional 120,000 individuals receive partial education in the expanding rural school system. But 50% of school-age children fail to receive schooling, although the school population has increased at the rate of 12% to 15% each year. Seven universities enroll about 12,000 students. Roman Catholicism is the state religion, but freedom of worship is a constitutional right.

Finance.—The 1959 budget estimated expenditures at 368,875,821,000 bolivianos (Bs.), compared with Bs.-307,489,900,370 in 1958. (Bs.11,885 = U.S.$1.) Major expenditures are: education, Bs.43.9 billion; defense, Bs.-30.5 billion; foreign affairs, Bs.10.6 billion; and government and agrarian reform program, Bs.18.9 billion. Income from taxes is calculated at Bs.225.5 billion. United States aid is calculated to make up the budget deficit. The official foreign debt in 1958 was U.S.$61.9 million, but recent loans bring it unofficially to U.S.$100.3 million. The internal debt was Bs.427.7 billion. The amount of money in circulation in September 1958 was Bs.360.9 billion, as compared with Bs.363.5 billion in December 1957.

Transportation and Communications.—Bolivia has 9,806 miles of highways, but only 621 miles are all-weather roads. Of the 1,486 miles of railroad, 910 miles are privately owned. In February 1959 the Bolivian Railway Company, a British enterprise which had operated the

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(Left) **Bolivian President Hernán Siles Zuazo tries to calm anti-United States mob in La Paz on March 2. Demonstrators were angered by an article in *Time* magazine which alleged that an anonymous United States embassy official had said the country should be "abolished." *(Right)* During violence, students in La Paz carry sign reading "Death to the Yankees."**

main trunk lines in Bolivia for 55 years, abandoned its investments after the government had constantly refused to grant rate increases and reductions in the number of employees. The government took over operating control of the railway on February 19. The national airline is Lloyd Aereo Boliviano (LAB), which in 1958 flew 145,875 passengers and carried 286,057,310 pounds of freight. Five foreign airlines serve Bolivia. The country's 40 radio stations serve 200,000 receivers. In 1957 there were 23,200 telephones, 11,236 passenger cars, 12,736 trucks, and 1,520 buses.

Economic Developments.—Bolivia continues to have the highest rate of inflation in the world. In June 1959 the cost-of-living index (1953 = 100) was 3,745, as compared with 3,304 in June 1958. The economic situation deteriorated further in 1959 due to a decrease in mineral exports, strikes, money shortage, expanding bureaucracy, confusion over United States aid, and grave political problems.

United States aid from 1953 to 1959 amounted to $137.3 million, including $20.4 million in 1959 and $22.5 million in 1958. These funds (and the Bolivian counterpart funds) were used for a variety of programs affecting the whole Bolivian economy. Part of the aid was earmarked for financing the Bolivian budget to reduce the grave fiscal deficit. Charges have been made that the United States financed up to 50% of the Bolivian budget. Anti-American riots in 1959 brought a temporary stop to United States aid. Later charges of waste, mismanagement, and confusion in the aid program brought a United States Senate investigation. The Soviet Union's offer of $60 million in aid to develop the Bolivian petroleum industry produced, in August 1959, much left-wing criticism of the government for not accepting the offer.

Mining.—Still the main source of income, mining production in 1958, especially of tin, declined dangerously. Average tin prices reached $1.0234 per pound in 1958, however, as compared with $0.9617 in 1957. The State Mining Agency (COMIBOL) operated at a $7 million loss in 1958.

BOLIVIA'S MINERAL OUTPUT, 1957–58

	1957		1958[1]	
	Metric tons	$U.S.	Metric tons	$U.S.
Tin	28,242	57,389,000	18,012	36,355,000
Lead	26,261	8,441,000	22,408	5,941,000
Zinc	19,666	5,407,000	14,220	3,227,000
Antimony	6,374	1,668,000	5,253	1,258,000
Copper	3,919	2,557,000	2,873	1,524,000
Tungsten	2,618	6,387,000	1,337	1,208,000
Silver	167	4,785,000	188	5,284,000
Gold	1,460[2]	1,643,000	593[2]	663,000
Petroleum	3,575,638[3]	...	3,455,610[3]	...

[1] Preliminary. [2] Fine kilograms. [3] Barrels.

Furthermore, petroleum production, which had shown considerable increase in recent years, in 1958 declined 3.9% from 1957. But three new foreign private oil companies began drilling in 1958. Bolivia in 1958 earned only $55,727,978 gross from the sale of all minerals, as compared with the annual average of $101,671,000 for the period 1953–57.

Agriculture.—Crop production in 1958 showed little gain from previous years, although Bolivia is doing its utmost to increase output. Chief crops and production figures (in metric tons) for 1958 are: rice, 10,000; barley, 55,000; corn, 110,000; potatoes, 155,000; wheat, 12,000; yucca, 60,000; and sugarcane, 500,000. Beef production has declined because of the often illegal entry of cheaper but better Argentine beef. Sheep raising has increased, and mutton production rose from 17,000 metric tons in 1957 to 25,000 in 1958. Although 65% of all Bolivians are engaged in agriculture, the value of agricultural output accounts for only 27% of the gross national product.

Manufacturing.—In 1958, Bolivian industry consisted of 1,200 factories with a capital investment of U.S.$130,000,000 and a work force of 21,000. Principal products are textiles, flour, glass, matches, cement, and cigarettes. In recent years the majority of the factories have operated on deficit financing. In November 1958 the government set up an industrial rehabilitation fund and an industrial credit fund. Total electrical generating capacity in 1958 was 124,833 kilowatts, including 90,833 kilowatts of hydroelectric power.

Foreign Trade.—Bolivia's exports in 1958 were valued at $63.1 million, representing a decrease of nearly 34% from the exported value in 1957; imports totaled $59.8 million, or a decline of 35%. About 90% of exports are minerals; major imports are manufactured goods and foodstuffs. Bolivia's chief customers are Great Britain, which in 1957 took 53% of the country's total exports; the United States, which received 34%; Argentina, 5%; and West Germany, 3%. Principal suppliers are the United States, which provided 47% of Bolivia's 1957 imports; and West Germany, which supplied 11%.

Principal Events, 1959.—The year was one of the most agitated in Bolivia's 134 years of stormy history. In the first five months over 500 strikes took place. By January 1959 the level of national production was only 36% of that in January 1958. A 27% salary increase for the whole labor force in January reactivated the galloping inflation, and the boliviano fell in value from Bs.9,145 per U.S.$1

in December 1958 to Bs.12,200 in July 1959. Strikes continued all through the year, even paralyzing the schools.

Bloody riots erupted in La Paz on March 2–3 and in Cochabamba and Oruro on March 4 in protest against the publication of an article in the Latin American edition (March 2) of *Time* magazine, which quoted an alleged statement by an unnamed United States embassy official that Bolivia should be "abolished" and divided up among its neighbors. The United States embassy and associated offices were attacked and suffered damages estimated at $70,000; embassy employees had to be evacuated to safer places. Violent strikes in the tin mines protesting the scheduled abolishment of state-subsidized discounts of 40% on commissary prices further aggravated the tense situation.

In February many opposition leaders of the Bolivian Socialist Falange (FSB) were imprisoned. In April an unsuccessful counterrevolution of the FSB broke out in La Paz, and its leader, Oscar Unzaga de la Vega, lost his life. On June 26 a violent and unsuccessful uprising in Santa Cruz showed secessionist tendencies when members of government peasant unions from the mountains invaded the town and committed some atrocities. A peasant uprising also occurred in Tarija, which was isolated from the republic for some time.

In the meantime the governing National Revolutionary Movement (MNR) approached the presidential elections of 1960 with divided ranks. The party convention scheduled to meet in mid-1959 was postponed several times because of a serious split in the party between leftist and rightist elements. Ex-President Victor Paz Estenssoro (1952–56) had the tacit support of the left wing, while Walter Guevara Arce led the right wing.

Bolivia achieved international cultural recognition when 17-year-old violinist Jaime Laredo won the Belgium International Music competition in 1959.

CHARLES W. ARNADE,
Department of History, University of Florida.

BONDS. See STOCKS AND BONDS; and, for savings bonds, see TREASURY DEPARTMENT, U.S.

BOOK PUBLISHING AND SALES. One of the most noteworthy events of the 1959 book-publishing year occurred in the field of censorship, following the publication of an unexpurgated edition of *Lady Chatterley's Lover.* The United States postal authorities banned the book from the mails as obscene, whereupon U.S. District Judge Frederick vanPelt Bryan in New York took his place in literary legal history alongside Judge John M. Woolsey (granter of customs entry and freedom of sale to James Joyce's *Ulysses*) when he reversed the postmaster general's exclusion of the D. H. Lawrence book from the mails. *Lady Chatterley's Lover* went immediately to the top or near top of all best-seller lists throughout the country. This new-won freedom of distribution, enjoyed for the first time since the book was published in the mid-1920's, led several paper-back book publishers to rush into print with over a million copies of competing "unexpurgated" editions. (See also CENSORSHIP.)

In 1959 many distinguished books achieved record-breaking sales and comparatively long life on such best-seller lists as those of the New York *Times Book Review* and *Publishers' Weekly,* the leading trade journal of the industry. It might be noted in passing that there seemed to be a tendency in fiction toward longer books, and hence toward higher prices for them, although retail prices generally remained unchanged.

At the end of January 1959, the fiction best-seller list continued to be dominated by a hold-over from the year before, Boris Pasternak's *Doctor Zhivago,* with Vladimir Nabokov's *Lolita* still very much in evidence. The extraordinarily long-lived *Exodus* by Leon Uris, and *The Ugly American* by William J. Lederer and Eugene L. Burdick were among the first six in the New York *Times'* list in January, and they were still there in December. Allen Drury's *Advise and Consent,* John Hersey's *The War Lover,* and Taylor Caldwell's *Dear and Glorious Physician* were worthy of note; and as the year came to a close, novels by William Faulkner (*The Mansion*) and James Michener (*Hawaii*) were climbing fast on the best-seller lists.

In nonfiction or general literature, Harry Golden's name appeared on all lists both at the beginning and end of the year. His *Only in America* led the field in the early months of 1959, to be replaced by his second best-seller, *For 2¢ Plain,* which was published in midyear and which remained among the top six. Harry and Bonaro Overstreet's *What We Must Know About Communism* and Alexander King's *Mine Enemy Grows Older* figured prominently on the nonfiction list for many weeks at midyear, the sale of the latter helped by the author's television appearance. Both Vance Packard's *The Status Seekers* and *Act One* by the American playwright, Moss Hart, were immediate best-sellers. D. C. Jarvis's *Folk Medicine* and William Nickerson's *How I Turned One Thousand Dollars into a Million in Real Estate—in My Spare Time* had wide appeal, the former establishing itself as a best-seller after half a year of steadily rising sales.

On the international scene the American and Soviet national exhibitions in Moscow and New York brought Americans and Russians into direct contact with each other's book production for the first time. The original supply of books sent to Moscow by the United States was so avidly examined that it had to be replaced by a duplicate shipment of books donated by private American citizens and dramatically flown to Moscow just before the closing of the fair. Other international book fairs, such as those at Leipzig, Frankfurt, and Tokyo, helped American book exports to increase 5% over the year before, reaching an estimated $48 million.

In 1959 the National Book Committee and the American Library Association (q.v.) again sponsored National Library Week, April 12–17, enlisting the support of communities throughout the country and using television, the lecture platform, newspapers, and magazines to put across its message, "Wake Up and Read," and to restore books to their rightful place as familiar household objects. The National Book Committee agreed to administer the National Book Awards for 1960, thus serving as a clearinghouse for the bookseller-publisher-printer sponsors.

The dollar sales volume of books in the United States continued to climb in 1959 by an estimated 3% over 1958—a year in which book sales showed a remarkably strong rise in spite of the recession. Paper-back books were still further integrated in regular bookstore selling, and publishers continued to foster this trend by offering some of their better backlist titles in the so-called "quality" lines, in attractive paper-cover format at attractive prices. Backlist titles that formerly enjoyed sales of 2,000 to 3,000 a year now found 10,000 to 20,000 purchasers.

The number of titles published in the United States in 1959 totaled 14,876, as compared with 13,462 in 1958. Numbers of titles, by category

(with comparative totals for 1958 in parentheses), were as follows: fiction, 2,437 (2,235); philosophy and ethics, 454 (447); religion, 1,125 (1,050); technical, 736 (548); juvenile, 1,647 (1,522); and general literature and criticism, 836 (626). The total dollar figure for book distribution in all branches of the book industry was estimated at over $1 billion.

(See also AMERICAN LITERATURE.)

JOSEPH A. DUFFY,
Executive Director,
American Booksellers Association, Inc.

BORNEO. Largest island of the Malay Archipelago and third largest in the world, Borneo (area, 286,916 square miles) lies on the equator north of Java. Kalimantan (former Netherlands Borneo) became part of Indonesia in 1949 and occupies 208,232 square miles of southern Borneo. The remainder (78,684 square miles) constitutes British Borneo, which in turn comprises Sarawak, the protected sultanate of Brunei, and North Borneo. The last named includes Labuan (area, 35 square miles; pop., 8,784 in 1951) with its capital, Victoria (2,526), and smaller islands. Sarawak divides Brunei into two enclaves on the northwest coast.

The areas, populations, and capitals of the components of British Borneo are as follows:

	Area (sq. mi.)	Population	Capital
North Borneo[1]	29,387	416,436[2]	Jesselton (11,704)[3]
Sarawak	47,071	654,656[4]	Kuching (60,000)[5]
Brunei	2,226	74,646[6]	Brunei (16,000)[7]
Total	78,684[8]	1,145,738	

[1] Includes Labuan. [2] Dec. 31, 1958. [3] 1955. [4] Est. mid-1958. [5] Est. mid-1956. [6] Dec. 31, 1957. [7] Est. 1955. [8] Excludes tidelands.

A standing conference of the three territories, established in 1953, is presided over by the commissioner general for Southeast Asia (Sir Robert Heatlie Scott).

The Malayan dollar (M$) equals 32.6667 U.S. cents.

NORTH BORNEO

The administration is under a governor (Sir Roland Evelyn Turnbull; assumed office on March 4, 1954), who is assisted by a 9-member Executive Council and a 22-member Legislative Council. Ordinary revenue in 1958 was M$37,583,797; ordinary expenditure, M$36,659,851. Revenue under the development budget totaled M$25,364,744; expenditure, M$25,361,848, financed by Colonial Development and Welfare funds, loan proceeds, and colony funds.

There are 88 government and 224 grant-aided primary schools, and 4 government and 20 grant-aided secondary schools; 18 of the grant-aided schools are maintained by local authorities, which in 1958 raised M$153,895 toward their maintenance. The government also maintains a trade school and a teacher-training college and conducts adult evening classes in science and languages. Primary education is provided in Malay, Chinese, English, and, to some extent, in Kadayan, the language of the largest indigenous community; secondary education is provided principally in English and Chinese. In 1958 the enrollment in primary schools was: Malay, 12,158; Chinese, 13,903; and English, 11,515. There were 2,257 pupils in English secondary schools and 762 in Chinese secondary schools. Expenditure on education from colony funds was M$2,092,326 in 1958.

More than 23,600 square miles are forested; in 1958 26,300,000 cubic feet of timber, valued at M$36,400,000, were exported. Domestic production of paddy was 46,591 tons, equivalent to 28,886 tons of rice, valued at M$9,785,000. Imports of rice totaled 21,900 tons, valued at M$11,700,000. In 1958 rubber production reached 29,790,400 pounds; 20,235 tons, worth M$32,623,867, were exported. Other products were coconuts, 60,515,000 pounds (67,542 tons, valued at M$35,317,427, exported, including re-exports of copra amounting to 54,617 tons); and manila hemp, 7,091,000 pounds (2,400 tons, valued at M$2,423,000, exported). Total exports in 1958 amounted to M$130,441,075; imports, to M$128,490,413.

A 116-mile railway connects Jesselton with Melalap by way of Beaufort, and a branch line extends from Beaufort to Weston on Brunei Bay. In 1958 there were 295 miles of metal roads and 427 miles of earth roads. Malayan Airways makes daily flights between Singapore and North Borneo and also provides internal air service. Qantas Empire Airways links North Borneo and Labuan with Hong Kong and with Sydney, Australia; Cathay Pacific Airways operates weekly service to and from Hong Kong and Manila. The principal towns, situated on or near the coast include Sandakan, the largest city (1951 pop., 14,499); Jesselton, the capital; Labuan; and Tawau (1955 pop., 4,282).

BRUNEI

Under the written constitution promulgated for the sultanate on Sept. 29, 1959, the post of British resident is abolished, his powers devolving on a *menteri besar* (chief minister). Defense and external relations, however, are the responsibility of a resident British high commissioner. The chief minister is scheduled to preside over an enlarged Legislative Assembly of 33 members, of whom 16 are elected. Supreme authority is vested in the sultan, Sir Omar Ali Saifuddin (acceded on June 6, 1950), sitting as president of the 15-member Executive Council, which comprises ex-officio, official, and nominated members.

Revenue for 1959 was estimated at M$126,596,630 (principally from petroleum revenues); expenditure, at M$75,851,967.

At the end of 1958 the aggregate enrollment in 65 schools, including 47 Malay vernacular, 8 Chinese vernacular, 6 private, and 3 government English schools and 1 trade school, was 15,236. The first girls' school to be completed in Brunei was opened in 1957.

Brunei depends primarily on its oil industry, which employs three fourths of the working population; makes possible liberal social benefits, including pensions to all citizens at 60; and finances, a 5-year, M$100 million development program. Production of crude oil by the Brunei Shell Petroleum Company at Seria (the largest oilfields in the British Commonwealth) averages 110,000 barrels a day.

At the end of 1958 there were 260 miles of state roads and 67 miles of oil company roads. Malayan Airways provides service to North Borneo, Sarawak, Singapore, and Malaya; Borneo Airways operates a feeder service to North Borneo and Sarawak. Facilities at the Brunei Airport are the most modern in Borneo; its runway of 5,325 feet receives an average of 280 flights a month.

SARAWAK

As of June 30, 1958, Sarawak's population of 654,656 included 200,110 Sea Dayaks, 200,692 Chinese, 160,369 Malays and Melanaus, and 51,011 Land Dayaks and other indigenous persons; Europeans numbered 2,372.

A governor (Sir Alexander Waddell; scheduled to succeed Sir Anthony Foster Abell late in 1959) is assisted by a Supreme Council consisting of 3 ex-officio members, 2 nominated members, and 5 other members elected by the Council Negri. The latter body is legislative in function and comprises 45 members (24 elected).

Recurrent budget estimates for 1959 were: revenue, M$52,236,500 (M$50,201,000 in 1958); expenditure, M$51,519,100 (M$50,121,000 in 1958).

In September 1958 there were 794 primary and secondary schools with 90,932 pupils in attendance. These comprised 723 government and government-aided primary schools, which enrolled 80,302 pupils; 34 unaided primary schools, with 1,914 pupils; and 37 secondary schools (2 unaided), with 8,716 students. There were also 3 teacher-training schools with 405 students. Expenditure on education was estimated at M$9,892,832 in 1959.

The cultivation of rubber is increasingly important, but oil refining remains the only major industry; production at the Sarawak Shell Oilfields, Ltd., in Miri totaled 57,840 metric tons in 1958. The mining of bauxite ore was begun in April 1958; by the end of that year, 100,000 tons of ore had been exported. The colony's forests produced M$15,734,178 in timber export revenue in 1958.

In 1958 total exports were valued at M$463,736,226, including petroleum (mostly reshipped from Brunei), M$347,498,004; rubber (38,542 tons), M$60,430,509; and pepper, M$15,143,620. Imports were valued at M$433,786,897, including foodstuffs, M$33,607,460; petroleum, M$301,186,780; and manufactured goods, M$20,521,108. Rice imports totaled 38,275 tons.

The colony has no railways, communication being principally by sea and on numerous rivers. In 1957 there were 557 miles of roads (220 miles surfaced). Scheduled domestic and international air services use Kuching, Sibu, and four other airports. There are also a number of small airports for internal use on nonscheduled flights.

DONOVAN ROWSE,
Author and Publicist.

BOSTON. Chief metropolis of New England and most populous capital city in the United States, Boston, Mass., is one of the smallest in area (47.8 square miles) of any large American city. Its population is 724,702 (1955 state census), and that of the Boston metropolitan area is 2,369,986 (1950 federal census).

The city charter provides for a mayor elected for a four-year term and for a City Council of 9 members elected at large and without party designation for two-year terms. The city's School Committee of 5 members elected for two-year terms has absolute control of the school department. Its budget must be approved by the mayor, but he may not reduce it.

The city budget for 1958 provided for the expenditure of $106,711,678. Tax rate (1958): $93 per $1,000 on assessed valuation of $1,475,608,000. Gross debt (Oct. 1, 1958): $174,531,500; net debt: $112,474,196. Tax rate (1959): $101.20 per $1,000.

Average enrollment in public schools in September 1959: 88,786 (elementary and junior high, 58,945; senior high, 19,728; kindergarten, 9,494; and special schools, 619). Enrollment in the schools of the Archdiocese of Boston: 117,768 elementary and 30,205 high school pupils.

Shipments through the Port of Boston (July 1958-June 1959): 5,678,022 import tons and 418,396 export tons. Value of products manufactured in 1957: in city, $1,352,407,117; in Greater Boston, $3,104,502,794. Employed production workers (August 1959) in Boston area: 294,900 (average weekly earnings, $86.58). Consumer price index (July 1959): 125.6 on a 1953 base of 100.

Economic highlights in the Greater Boston area in 1959 included the recovery of the wholesale and retail trade industries from the previous year's slump; the accelerated expansion of industrial and commercial construction, especially of electronic plant and research facilities; and, in downtown Boston, continued acceleration of varied new construction projects.

The $100 million Prudential Center in the Back Bay area was started in April. Plans call for the center, scheduled for completion in 1963, to include a 52-story tower office building, six 25-floor apartment houses, a 25-story hotel, commercial buildings, a civic auditorium, and a 3,500-car garage.

A new $12 million *Herald-Traveler* Building in the industrial redevelopment of the 16-acre South End tract was occupied in July. Included in plans for this area are several multistory office buildings and a number of light industrial and commercial plants. A contract for lease of a $30 million, 16-story state office building to be built in the new government center in the Scollay Square section was signed in September. Other units include a $20 million city hall and a $30 million federal building. In the West End section, demolition was under way in preparation for the establishment of a beautifully integrated 45-acre community which is to feature apartment dwellings.

City officials hope that Boston's great era of building and rebuilding will stem the population exodus to the suburbs, help push the city's valuation to a sound base and thereby halt the rising tax rate, and relieve the city of the costly problems connected with urban blight.

The annual Boston Arts Festival (June 5–21) featured productions of ballet, opera, and drama, and numbered among its arts and crafts exhibits an invitational exhibition of photography and a group of notable European sculptures. The festival's $1,000 grand prize was awarded to Gilbert Franklin's *Beach Figure*, a bronze sculpture.

On July 9 the tent theater of the newly established nonprofit Metropolitan Boston Arts Center opened its first season. The center, built along the Charles River in Brighton by the Metropolitan District Commission, also includes an art gallery, and a 3,500-seat opera house is planned as one of its permanent facilities.

Educational institutions in the Boston area continued to undergo physical expansion in 1959. Under construction were a $3 million research building for Boston University and a $1 million, three-unit center for the social sciences at Brandeis University. Northeastern University dedicated its $1.5 million graduate center on September 8, the same day that its third president, Dr. Asa S. Knowles, was inaugurated. Massachusetts Institute of Technology inaugurated its 11th president, Dr. Julius Stratton, on June 15. The institute has launched an extensive program for the exchange of technical data with Russian libraries and has become the New England depository for translations of Russian scientific and technical journals. Along with Harvard University, it received a National Science Foundation grant for the study of the ionosphere and problems it presents for space travel.

The Old Colony division of the New York, New Haven and Hartford Railroad ceased operations on July 1. Thousands of South Shore commuters were without adequate mass transportation facilities to Boston. (See also MASSACHUSETTS—*Legislature.*)

John B. Hynes, mayor for a decade, did not seek re-election in 1959. Democrats John E. Powers, president of the state Senate, and John F. Collins, register of probate for Suffolk County, won nominations from a field of five in the September primary, preparatory to the nonpartisan election of November 3. The surprise election victory of Collins, by a margin of 114,210 to 90,142, despite the backing of his opponent by most of the state's powerful political leaders, was interpreted partly as a taxpayers' revolt and partly as a rejection of machine politics.

DENNIS A. DOOLEY,
Massachusetts State Librarian.

BOTANY. By consulting the *Proceedings* of the Ninth International Botanical Congress, volumes 2 and 2A (Montreal 1959), the scope and depth of botanical research in the last year may be readily appreciated and measured.[1] Botanists throughout the world attended the congress and presented and discussed some 1,200 papers in 14 sections, covering nomenclature, systematics, phycology, mycology, phytopathology, bryology, microbiology, morphology and anatomy, taxonomy, paleobotany, physiology, ecology, cytology and genetics, and forest botany.

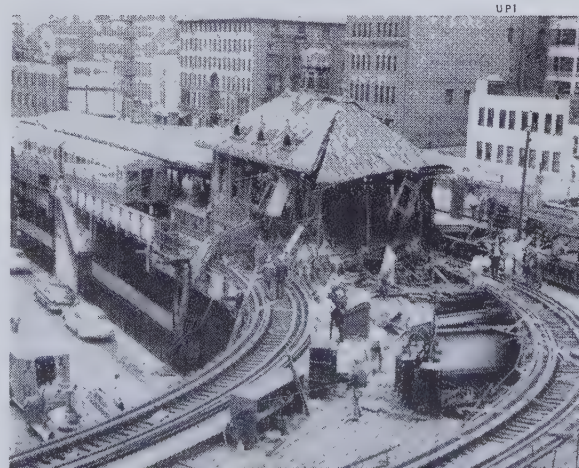
Electron Microscopy.—Prior to 1959 much had been discovered about the fine structure of the cell wall and protoplast in plant and animal cells. In plants, the cellulose architecture of the wall consists of a meshwork of microfibrils arranged in a variety of patterns, while the cytoplasm contains mitochondria, plastid initials or protoplastids, Golgi bodies, and a complex platelike endoplastic reticulum which may be attached to the nucleus. New techniques devised for use with the electron microscope have given rise to a new field of biological study known as submicroscopic morphogenesis. Some of the discoveries reported at the abovementioned congress will be described briefly.

For example, pores in the nuclear membrane are not built into the membrane as are windows in a brick wall, but are shown to develop after the membrane is completely formed (K. R. Porter). Cell organelles are remarkably similar in their early stages of development; mitochondria, plastid initials, Golgi bodies, and the endoplastic reticulum begin growth through the invagination of the surface membrane. Also, when analogous organelles appear in animal and plant cells, their structure

[1] Research reported at the congress forms the basis for this article; for further details consult the *Proceedings* under names of the authors cited in the text.

Bomb placed in a locker of elevated railroad station in Boston exploded on June 11, injuring 36 and wrecking platform.

UPI



and development are more or less the same (K. Mühlenthaler).

Chloroplasts, the seat of photosynthesis, pass through three stages of development from undifferentiated protoplastids to lamellated plastids and finally to multilamellated plastids containing piles of chlorophyll-bearing grana (A. Frey-Wyssling).

The primary wall appears to grow through the deposition of cellulose microfibrils near the inner surface of the wall; these are oriented transversely to the long axis of the cell but later are reoriented, often in a spiral pattern. The problem here is to discover the physiological basis for deposition in a transverse rather than in a longitudinal direction and also for subsequent reorientation (P. B. Green).

Electron microscopy has so advanced our knowledge of cell organelles that it is believed that in some parts of the plant kingdom they may be employed very effectively for purposes of classification (Irene Manton).

Physiology.—The discovery of the submicroscopic structure of the cell has made necessary a revision of the classic concepts of the factors responsible for coordination of metabolic activities within the cell. Mitochondria, protoplastids, the endoplastic reticulum, and other organelles are the seat of individual enzymes and enzymatic systems which influence each other and the activity of the surrounding cytoplasm. Likewise, as might be expected, changes within the fine structure of these organelles are reflected in the activity of cells and tissues. Only a beginning has been made in understanding the role of fine structure of the cell in the utilization and release of chemical energy (G. G. Laties).

Photosynthesis.—Plant physiologists have new evidence from recent experiments with isolated chloroplasts which indicates that the energy conversion process during photosynthesis takes place through two photochemical reactions in cyclic and noncyclic photophosphorylation. Adenosinetriphosphate (ATP), reduced triphosphopyridine nucleotide ($TPNH_2$), and oxygen are the products of these reactions. The assimilation of carbon dioxide to the level of carbohydrate requires both ATP and $TPNH_2$, which are richly stored with the energy of sunlight. This is a major step in solving the key problem in the transfer of light energy into chemical energy (D. I. Arnon).

Root-Grafts.—These have been known since the time of Theophrastus (d. about 287 B.C.), but only now has their full significance been appreciated in plant succession, competition, and composition of plant communities. Apparently forest trees are commonly interconnected through root-grafts, and stumps and root systems of cut trees remain alive through food obtained from living trees by way of root-grafts. Large trees may be more successful in obtaining material from the root-graft complex than smaller ones, which suffer perhaps not only from competing roots of other species or from reduction of light in the forest, but from competition within the closed root-graft system of individuals of the same species (F. H. Bormann).

Classification.—Taxonomists, who are largely concerned with classification and the evolutionary history of plants, have been frequently criticized for limiting their studies to morphological (structural) characters seen through a hand lens or the microscope. One of the highlights of the Ninth International Botanical Congress was a series of meetings sponsored by grass specialists for devising a natural classification of grasses which would more nearly reflect the interrelationships of the family than the system now in use.

An evaluation and synthesis of evidence was attempted from morphological, physiological, geographical, and biochemical investigations. In placing species and genera within the grass family, an assessment was made of embryo structure and development, seedling form, leaf development and anatomy, caryopsis (fruit) form, epidermal and flower structure, chromosomal characteristics, polyploidy, reaction of germinating seeds to herbicides, and serological correspondence of seed proteins. Unsolved problems accruing from the mass of available data are to be studied further during 1959–60, after which the new classification will be issued. This is the first time within the history of classification in which evidence from such a broad spectrum of research has been focused on the possible evolutionary history of such a large and important family.

(See also AGRICULTURAL RESEARCH SERVICE; HORTICULTURE.)

M. A. JOHNSON,
Professor of Botany and Dean of the Graduate School, Rutgers University.

BOWLING. See SPORTS, GAMES, AND SHOWS.

BOXING. See SPORTS, GAMES, AND SHOWS.

BRAZIL. Although its 3,287,195 square miles of territory occupy nearly half (47.3%) of South America and its borders touch those of all but 2 of the other 12 countries and colonies on the continent, Brazil looks to the sea. Most of the nation's 64,678,709 people (est. July 1, 1959) live close to its 4,603-mile Atlantic coastline, in such great cities (from north to south) as Belém (pop., 1958 est., 302,800), Fortaleza (375,600), Recife (733,900), Salvador (551,500), Belo Horizonte (535,000), Rio de Janeiro (the capital until April 1960, 3,030,600), São Paulo (3,515,600), and Pôrto Alegre (532,600). Brasília, the capital from April 1960, had a population of 65,288 in 1959.

Government.—Brazil is a federal republic of 20 states, 5 federal territories, and the Federal District of Rio de Janeiro. Heading the executive branch of the government are President Juscelino Kubitschek de Oliveira and Vice President João Goulart, who began their 5-year terms on Jan. 31, 1956, and are ineligible for re-election to consecutive terms. The National Congress is composed of a 63-member Senate (3 senators from each state and the Federal District) and a Chamber of Deputies whose 326 members are elected under a system of proportional representation; they serve 8- and 4-year terms, respectively. The federal judiciary is composed of a Supreme Court, the Federal Court of Appeals, and the usual minor courts.

Religion and Education.—Most Brazilians (93% in 1950) profess the Roman Catholic faith, but freedom of worship is allowed to all.

Primary education is free and compulsory between the ages of 7 and 14, but many Brazilians seem to have ignored the law: only 5,406,251 pupils were enrolled in elementary schools in 1957. Other enrollment figures of that year include 903,559 students in secondary (including industrial, commercial, and normal) schools, and 79,505 in institutions of higher learning.

Finance.—The deficit in the government budget for 1958 was 34.4 billion cruzeiros. Revenue was 117.8 billion; expenditure, 152.2 billion. The 1959 budget anticipated revenue of 147,671,328,000 cruzeiros, expenditure of 156,226,544,000, and a deficit of 8,555,216,241, to which would have to be added the additional expenditures resulting from wage readjustments granted to civil servants and the military. The income tax collected in 1958 totaled 33.5 billion cruzeiros; paying the tax were only 369,101 individuals and 248,749 firms, of which only 353 admitted earnings of more than 3 million cruzeiros.

Inflation continued to be a serious problem in 1959. By November 5, currency in circulation had risen to 140 billion cruzeiros, and the value of the free cruzeiro had declined to a record low of 193 to U.S.$1. Talks with officials of the International Monetary Fund were discontinued in June because of Brazilian reluctance to adopt anti-inflationary measures. Although no new loans were received to help cover the deficit in the balance of payments, repayment of earlier loans was postponed by the United States.

Transportation and Communications.—Although Brazil's 22,989 miles (1956) of railways are concentrated in the four states of São Paulo, Rio de Janeiro, Minas Gerais, and Rio Grande do Sul, because of the poor condition of both track and equipment the federal railway program for 1959 was still one of renewals and improvement of the present

network. Similarly, the main emphasis of the road program is on keeping passable the roads already in use and in opening new dirt roads. In 1956, Brazil had 290,458 miles of roads, to which 1,253 miles were added in 1957, when 349 miles were also paved. The most important single construction project started in 1958 was the 1,367-mile highway between Belém and the new capital, Brasília. On Feb. 1, 1959, crews which had been working from each end met to complete the work of cutting through the road, which was scheduled for completion in April 1960. Next in importance in the 1959 program was completion of the 357-mile highway between Belo Horizonte and São Paulo. At the end of 1958 there were 808,000 motor vehicles in Brazil.

Maritime and river traffic in 1958 involved 35,861 landings with an aggregate tonnage of 56,375,000, of which 14,000,000 tons were handled at Santos and 13,000,000 at Rio de Janeiro. To ease the immediate shortage of shipping, foreign vessels were authorized to engage in coastal trade through 1959, while Brazil awaited the delivery of 14 ships ordered in 1958 from Poland.

With its great distances and poor surface transportation facilities, Brazil has been a pioneer developer of air transport. Its VARIG line is one of the largest in the world; among other leading lines of some 30 domestic and foreign companies operating in Brazil are Real-Aerovias-Nacional, Panair do Brasil, and Cruzeiro.

In 1958, Brazil had 869,800 telephones. There were 7 television stations—3 in São Paulo, 2 in Rio de Janeiro, and 1 each in Belo Horizonte and Santos—while the first station in the south went into operation in Pôrto Alegre in 1959.

Agriculture.—The year 1958 was marked by sharply increased coffee production and softening prices, a serious drought in the northeastern states, and wheat production setbacks resulting from weather and disease. Not only did the drought cause financial losses, but the crops that were poor were such basic food items as rice, corn, and beans. The wheat crop amounted to only 15 million bushels, that of potatoes to 980,000 metric tons, and that of rice (1958–59) to 8,200 million pounds. In April 1959, there were disastrous floods which destroyed 15% of the rice crop and caused heavy losses of cattle in Rio Grande do Sul in addition to the loss of 1.5 million to 2 million sheep. Coffee, on the other hand, was in too plentiful supply in 1958–59, with an exportable production of 26 million bags of 132.276 pounds each; despite a Latin American export control agreement, prices were down, and the export quota set for Brazil meant withholding 40% of its output from the world market. The 1959–60 exportable crop was estimated at 30 million bags. Three other export crops in abundant supply were cacao, sugar, and bananas. In 1958–59, 383 million pounds of cacao and 4,060,000 short tons of sugar were produced, and the 1958 banana harvest was a record 13,480,244 stems. Production of cotton increased from 1,350,000 bales in 1957 to 1,400,000 in 1958.

Industry.—Brazilian industry made good gains in 1958 despite shortages of such materials as rubber, steel, and cement. Production amounted to over 500 billion cruzeiros, and gross profits to 90 billion; the number of factories was placed at 160,000, with a labor force of more than 2 million and wages totaling about 350 billion cruzeiros. The textile industry recovered from the crisis of 1957, motor vehicle production exceeded 60,000 units, electric power capacity reached 3,850,000 kw., and the steel output was up to 1,500,000 metric tons.

Industrial output rose by 8% in the first half of 1959. In the first 4 months an average of 104 new firms were established monthly, with invested capital of 1,441 million cruzeiros, and 27 billion cruzeiros in new stock offerings were issued. About three fourths of the total represented capital increases of expanding firms.

Among important power developments underway with large financial grants in 1959 were the Furnas and Peixoto projects on the Rio Grande, Três Marias on the upper reaches of the São Francisco, and the São Paulo state development program. A loan of $11.6 million for improvement of facilities was received by the Canadian-owned Brazilian Traction, Light and Power Company from the International Bank for Reconstruction and Development. The Cachoeira Dourada project completed its first stage, whose 29,500-kw. capacity was to be used in Minas Gerais and Goiás, notably for Brasília. One subsidiary of the American and Foreign Power Company, in Minas Gerais, decided to install 10 diesel generators when presented with the alternative either of an improved power supply or of expropriation by the state government—a fate which had befallen the subsidiary in Rio Grande do Sul.

UPI

Ferry terminal at Niterói, Brazil, across the bay from Rio de Janeiro, is burned by enraged commuters on May 22 after disruption of ferry service because of a strike.

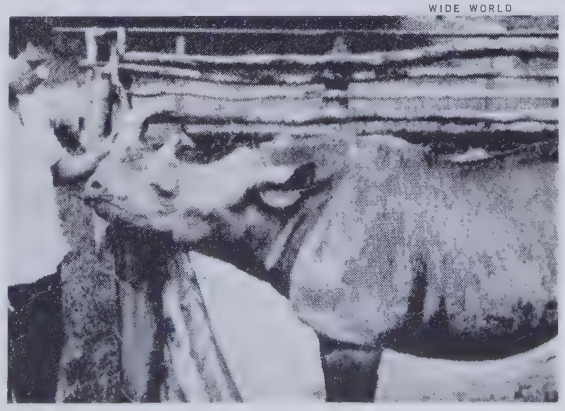
In 1958 the Volta Redonda plant of the National Steel Company contributed 811,491 metric tons of steel ingots to the national total; among its other products were 507,822 tons of coke, 645,809 tons of pig iron, and 621,741 tons of metal plates and sheets. The 1959 total national steel production was forecast at 1,750,000 metric tons.

Newest and fastest growing (a phenomenal 99.1% in 1958) of Brazil's industries is the automotive industry, which turned out 62,707 units, including 35,369 trucks, 361 buses, 14,216 jeeps, 5,119 passenger cars, and 7,642 utility vehicles, in 1958. Inaugurated during the year were 297 auto parts firms. In the first 6 months of 1959, 45,711 units were produced, and by July 100 jeeps a month were being exported to Chile.

Among other industries, in 1958 there were 23 cement factories (with 4 under construction) which produced 3,769,168 metric tons of cement. Production of pulp rose to 336,000 metric tons, and that of paper to 380,537 tons. The nation's appliance industry, which scarcely existed in 1955, turned out 21,000 vacuum cleaners, 50,000 washing machines, 135,000 floor waxers, 150,000 tel-

This rhinoceros, Cacareco, won the São Paulo municipal elections by a landslide. Her write-in victory in the October 4 voting was seen as a popular protest against politicians, but Cacareco was disqualified as a nonresident.

WIDE WORLD



evision sets, 200,000 refrigerators, 300,000 electric mixers, 631,000 sewing machines, and 660,000 radios. In support of the rubber industry, which suffers from its dependence on imports for materials, a quota of 36,000 tons of raw rubber to be acquired in 1959 by manufacturers was exempted from import duties. The replacement of stocks was not possible, however, because of the demands of the automobile industry, which produced 1,985,000 tires for trucks and cars in 1958.

Mineral Products.—Because of reduced demand from the United States and increased availability from other sources, exports of iron and manganese declined in 1958. The Companhia Vale do Rio Doce, which produces over half of Brazil's iron ore and which in 1957 exported 2,966,260 metric tons of hematite, exported only 2,240,000 tons in 1958, when its sales to the United States fell to 691,000 tons from the 1,140,000-ton high of 1957. Similarly, the 1958 manganese exports from Amapá, supplying three fourths of Brazil's production, brought in only $35 million in 1958, when shipments to the United States declined to 852.1 million pounds (valued at $20.6 million) from the 1,327.5 million pounds ($28.7 million) of 1957.

Three new ore deposits were found or confirmed in 1959: lead and copper, both in Rio Grande do Sul; and bituminous coal, at Curiúva in Paraná. About 65% of the coal now produced in Brazil comes from Santa Catarina's 70 mines, but the quality is poor. Zinc reserves, too, are known in Brazil, but it has not been commercially feasible to develop them, and the country has imported its annual needs of 35,000 metric tons. In 1959 plans were made for the nation's first zinc industry, to be financed by the National Economic Development Bank.

Oil is Brazil's great mineral need, and in 1958 the country spent an estimated $346 million on oil imports to supplement the 18,922,738 barrels produced in Bahia. For 1959 the country needed 86.5 million barrels, of which the government agency, Petróleos Brasileiros, S.A. (Petrobras), was expected to supply 25 million, with the remainder to come from Venezuela and Kuwait. In the first half of the year the output in Bahia was 10,355,408 barrels, and $131.4 million worth of oil was imported.

Foreign Trade.—Because of reduced shipments, with lower prices, of coffee, and declines in raw cotton, iron and manganese ore, and pine lumber, Brazil's exports decreased in value in 1958 to $1,243 million; imports, valued at $1,353 million, left a negative balance of trade of $110 million. Among the imports, those from the United States, valued at $537.6 million, included industrial machinery ($142,650,000), electrical machinery ($33,777,000), railway transportation equipment ($43,140,000), automobiles and parts ($18,906,000), iron and steel mill items ($17,148,000), and industrial chemicals ($8,125,000).

In the first 6 months of 1959 exports were valued at $577 million; imports, at $712.5 million. Though coffee prices fell, a 28.7% increase in the volume of sales (7,462,000 bags) yielded $321 million; sugar earnings totaled $26 million; and petroleum shipments expanded to $15 million. The most significant decreases occurred in the earnings from cotton (down from $16.4 million in the first 6 months of 1958 to $0.5 million) and ores (manganese shipments declined from $14.9 million to $10 million).

Principal Events, 1959.—Abroad, Brazil was represented in 1959 at a series of meetings held in Washington that led on April 8 to the initialing of the charter of the new Inter-American Development Bank; in the conferences (April 27–May 8) of the Committee of 21 held at Buenos Aires to consider plans for the amelioration of Latin American economic problems; in a series of meetings for the establishment of a free trade market in South America; and in the Washington meetings that led to a new coffee export limitation agreement (September 24). Brazilian tennis star Maria Esther Bueno won the women's singles title at Wimbledon, England, on July 4, and on September 13 she also became the women's champion of the United States at Forest Hills, N.Y.; and Brazilians competed with distinction in the Pan American games held at Chicago on August 27–September 7.

At home, Brazilians were preoccupied with labor difficulties and politics. The first occurred from March to May and in September. The strikes which on April 8 were described as having plagued the nation at the rate of one a day for the past month centered in Bahia and Pernambuco, where there were short walkouts by transport workers and dockers, but there were also strikes in the south —the strike of employees on the Paulista railroad (April 15–28) and dock strikes at Santos—as well as riots at Niterói in May over the sudden halt in ferry service to Rio de Janeiro across the bay. In September, labor unrest over food shortages and high prices led to the new wage demands by 280,000 workers in the Federal District and by many more in the São Paulo area.

The year's political interest centered on the announcement of candidates for the 1960 presidential election: Janio Quadros, former governor of São Paulo, for the National Democratic Union; Vice President João Goulart, for the Brazilian Labor Party; and Marshal Henrique Teixeira Lott, for the Social Democratic Party. Brazilians also noted with chivalrous regret the resignation on May 1 of Clare Boothe Luce from her designated post as United States ambassador to their country. They gave exuberant expression of their opinion of politicians when, in an October 4 election for seats on the Municipal Council of São Paulo, they concluded that Cacareco, a rhinoceros that had visited the city from the Rio de Janeiro zoo, would be an improvement over any of the listed candidates. She promptly was made a write-in candidate, winning an enthusiastic 102,620 votes, far more than her closest competitor, only to be disqualified as a nonresident. Her election was a typically Brazilian gesture and was noted with sympathy in other lands. Political dissatisfaction also found a more sober expression in the abortive December 3–4 rebellion of a few air force officers, who charged that graft and communism were prevalent in the government.

(See also ARGENTINA; INTER-AMERICAN AFFAIRS.)

MADALINE W. NICHOLS,
Specialist in Latin American Affairs.

BREWING INDUSTRY. Beer sales for the fiscal year 1959 in the United States totaled 85 638.270 barrels, representing an increase of 1,689,734 barrels, or 2%, over the 1958 total and the fourth highest figure for any fiscal year (the record was 86,992.795 barrels in 1948). This gain was registered despite curtailment of malt beverage production as a result of temporary work stoppages in several important brewing centers during 1958.

The trend toward packaged beer, which has been maintained over the past decade, continued in 1959. Packaged beer, in the fiscal year 1959, accounted for 79.9% of total sales—a new high. By contrast, packaged beer accounted for 25% of total sales in 1934 and approximately 10% in 1914, when per capita consumption hit the peak of 21

gallons (15 gallons in 1958). Of the 67,169,838 barrels of packaged beer sold in the calendar year 1958, 38%—a record high—was distributed in cans, 56.4% in returnable bottles, and 5.6% in one-way (no-deposit) bottles.

In the fiscal year 1959, brewers paid $387 million for cans, bottles, and crowns, plus some $250 million for brewing ingredients, $465 million for wages and salaries, and many more millions for other goods and services.

For the sixth consecutive year, beer was a billion-dollar producer of public revenue in 1958, including (besides local taxes) $767,939,000 in federal and $233,366,000 in state revenue. State taxes, which had a weighted average of $2.61 per barrel in 1958, running the range from 62 cents in three states to a high of $16.53 per barrel in one state, continued to exert an influence on local sales. Wisconsin, Nevada, New Jersey, Michigan, and Pennsylvania, each with a relatively low state tax, led in per capita consumption in 1958. Mississippi, North Carolina, Alabama, and Georgia, each with a comparatively high state tax, reported a relatively low per capita consumption.

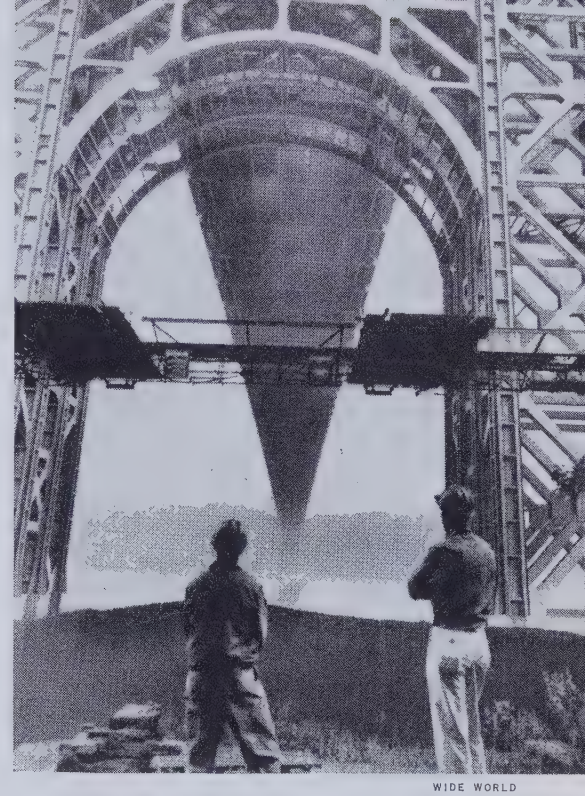
EDWARD V. LAHEY,
Chairman and President,
United States Brewers Foundation.

BRIDGE, Contract. See SPORTS, GAMES, AND SHOWS.

BRIDGES. The Narrows Bridge.—What is now called the Verrazano-Narrows Bridge[1] finally was ready for construction at the end of 1959 as contractors bid on its tower foundations. Preliminary foundation explorations were completed in the deep bedrock on either side of the waterway that this massive structure will cross with its record-breaking 4,260-foot main span. The bridge will connect New York City's boroughs of Brooklyn and Richmond (Staten Island) across the Narrows between upper and lower New York bays. It will form a vital link in a highway system planned to let travelers from Long Island and New England bypass congested Manhattan in traveling south into New Jersey. Its secondary effect will be to open up Staten Island—now connected directly to other New York City boroughs only by ferries—for extensive residential and industrial real estate development. The bridge will carry a six-lane roadway and will have provision for a second such roadway on an upper deck that can be built when needed. The initial cost of the project—complete with extensive approach roads over which local interests argued long and strenuously—is estimated at $350 million. The Port of New York Authority is building the bridge, and the Triborough Bridge and Tunnel Authority will operate it.

George Washington Bridge.—Until the Narrows Bridge is finished, the George Washington Bridge over the Hudson River will remain the greatest in the New York City area. And it is being made even greater now as constructors erect the lower deck for which provisions were made in 1931 when the bridge was built. This $183 million project to increase the traffic-carrying capacity of the bridge beyond its present 40 million vehicles per year includes very extensive modifications of approach roads at its New York and New Jersey ends, in addition to the difficult job of working from platforms hung beneath the present roadway to install the second roadway some 200 feet above the river. Approach modifications at the New York end of the bridge involve cutting a wide slot completely across the north end of Manhattan island to accommodate new roadways and commuter bus facilities.

[1] The question of what to name the bridge engendered considerable controversy and was still unresolved by late 1959. The official brochure at groundbreaking ceremonies on August 14 listed it as the Verrazano-Narrows Bridge, in honor of Giovanni da Verrazano (or Verrazzano), a Florentine navigator who visisted these water in 1524. A Staten Island group, however, continued its efforts to have the bridge named the Staten Island Bridge, and still another group favored, simply, the Narrows Bridge.



WIDE WORLD

Huge work platform is installed for construction of a lower deck on the George Washington Bridge, New York City.

Throgs Neck Bridge.—Also in New York City, where much of United States bridge construction was concentrated in 1959, the steel towers were completed for Throgs Neck Bridge, which will connect Queens and Bronx boroughs, as does the Bronx-Whitestone Bridge about a mile away. In 1960 the cables should be spun for its suspension spans. Extensive approach spans will give the structure a total length of 12,310 feet. It will carry six lanes of traffic and cost some $90 million.

Arthur Kill Bridge.—Another bridge of considerable note in the New York metropolitan area is the Baltimore and Ohio Railroad's lift-span bridge over Arthur Kill, which separates Staten Island from Elizabeth, N.J. The record-breaking 558-foot movable span was floated into position and placed on its towers on May 31. The new facility's movable span exceeds the former record 544-foot Buzzards Bay Bridge over Cape Cod Canal.

New York State Highway Bridges.—Another length record was broken as New York State built two highway crossings with 320-foot spans of prestressed concrete near Syracuse, N.Y. These spans are about twice as long as those of Philadelphia's Walnut Lane Bridge, the first bridge of prestressed concrete to be built in the United States. (Prestressed concrete is put in compression when steel under tension is embedded in it; and concrete beams or slabs under such prestress can carry greater loads.)

New Haven Bridge.—In New Haven, Conn., the nation's second longest steel box-girder span—378 feet 9 inches—was erected over railroad tracks to connect city streets with the Connecticut Turnpike. It will carry eight lanes of traffic. A similar bridge

at New Haven Harbor, opened in 1958, is the only longer box-girder type in the United States.

Hood Canal Bridge.—Concrete pontoons, on which a bridge is to float across Hood Canal (an arm of Puget Sound) in the State of Washington, gave their constructors trouble by sinking while under construction on Dec. 27, 1958. The $17.5 million bridge project was delayed through 1959 as a $750,000 salvage job had to be done on the two big pontoons, which are 50 feet wide, 360 feet long, and 14 feet deep. In all, 23 of them will be built, towed to the site, and put in place to carry a 6,470-foot crossing of the waterway.

Fort Pitt Bridge.—In Pittsburgh, the city of bridges, a novel two-level arch bridge was opened to traffic in 1959. The 750-foot structure is notable for having relatively slim girders for its arch and a relatively deep truss, carrying the roadways, as a tie for that arch. This $16 million structure spans the Monongahela River to replace an old structure at Pittsburgh's redeveloped Point Park, where the Monongahela and Allegheny rivers join to form the Ohio. A similar but shorter bridge was started to accomplish the same sort of replacement for a new crossing of the Allegheny River at the other side of the Point Park.

Corpus Christi Bridge.—An arched cantilever span of considerable significance for its traffic relief was finished in 1959 in Corpus Christi, Texas, at a cost of about $9 million. It spans the entrance to the city's port at a high level and replaces a low-level bascule bridge which was a bottleneck. Total length of the bridge is 5,862 feet; it is to carry six lanes of traffic.

Iowa-Illinois Memorial Bridge.—A new Mississippi River suspension bridge, built alongside a similar 24-year-old crossing, was virtually completed in 1959. The 5,017-foot structure has a 1,480-foot main span. The two-lane bridge is the 39th highway crossing of the Mississippi between St. Paul, Minn., and New Orleans at the Gulf of Mexico.

Louisville–New Albany Bridge.—This Kentucky-Indiana crossing of the Ohio River is a two-arch bridge started in 1958 and due for completion in 1961. The $11 million structure will have two identical 800-foot tied arches and will carry two decks of traffic, three lanes on each.

Frankland Bridge.—Connecting the twin cities of Florida's west coast, Tampa and St. Petersburg, the Frankland Bridge across Old Tampa Bay was ready to open early in 1960. The four-lane crossing extends over 6.6 miles of the bay, including about 3.6 miles of causeway, and cost $16 million.

Biscayne Bay Bridge.—The 36th Street Causeway, under construction in 1959 to connect Miami, Fla., with Miami Beach, is a $10 million six-lane structure, 3.2 miles long, crossing Biscayne Bay. It includes two shipping-lane bridges totaling 3,288 feet in length.

Carquinez Strait Bridge.—Carquinez Strait, the arm of California's San Francisco Bay over which a major new crossing was completed late in 1958, is now to have still another connection, from Benicia to Martinez. This 6,215-foot, steel-truss structure was started in 1959 and is scheduled for completion in 1962.

Aluminum Bridges.—Structural aluminum, which was used in Des Moines, Iowa, in 1958, in its first major application in a highway bridge, had another such use in 1959 when a minor highway overpass was erected of aluminum girders on the Long Island Expressway in New York. The use of sheet aluminum in fabricated forms as girders for highway bridges was delayed in 1959 as laboratory tests continued. Plans to build the first such bridge on a highway in Alabama were changed when tests equivalent to 35 to 40 years' use did not satisfy the aluminum company which is developing this particular sheet-aluminum bridge. However, at the end of 1959, New York State was planning a bridge of this type, also for Long Island.

Canada.—In 1959, Canada was involved in reconstruction at two major bridges where structural collapses had occurred. At the Second Narrows Bridge in Vancouver, B.C., concrete piers were replaced after being pushed out of line by two spans that dropped during construction when a foundation for temporary falsework gave way in 1958. The cantilever-type steel bridge will have a 1,100-foot main span and will cost $20 million (instead of the $16 million estimated before the accident) when finally completed. On Peace River, also in British Columbia, a $6 million truss bridge was under construction to replace the suspension bridge that slipped an anchorage and collapsed in 1957.

At Sault Ste. Marie a new international bridge to the United States is to be built by 1961 at a cost of about $18 million. Some 12,000 feet of bridge and approaches are planned to span the St. Mary's River and the busy locks connecting Lake Huron and Lake Superior. It is a Michigan-Ontario venture.

Canal Zone.—A new high-level steel arch crossing of the Panama Canal was under construction in 1959. The $23 million bridge at Balboa will clear the canal by 201 feet, and its arch will span 1,120 feet.

Venezuela.—The 5½-mile crossing of the mouth of Lake Maracaibo in Venezuela was still under construction in 1959. A specially designed work tower that will stand in the lake and carry erection cranes was prepared to help build the $99 million structure's unusual prestressed concrete main spans.

France.—The 2,000-foot main span (longest in Europe) of the suspension bridge at Tancarville (near Le Havre) was opened to traffic on July 3, 1959.

Germany.—Crossing the Rhine at Cologne, the St. Severinus Bridge was dedicated in November 1959. So as not to conflict with the twin spires of Cologne Cathedral, the bridge was designed with only one tower, and is said to be the longest single-tower suspension bridge in the world. Its 996-foot center span is supported by a 255-foot pylon near the right bank of the river, resulting in an asymmetrical design.

Scotland.—Foundations for what will be Europe's longest bridge span, the 3,300-foot main span of the new Firth of Forth Bridge in Scotland, were under construction in 1959. The bridge, which will parallel the famous old Firth of Forth Bridge, will cost over $46 million.

Turkey.—Work continued on bridging the Bosporus at Istanbul with a suspension bridge which has a 2,215-foot main span.

India.—A $33.6 million road-and-rail bridge over the Ganges at Mokameh, Bihar, was opened in April 1959. Its 14 main spans, each 397 feet long, rest on piers which were sunk 200 feet deep, and its overall length is 6,074 feet. An upper roadway for vehicles has pedestrian sidewalks, also, and a lower roadway carries a broad-gauge rail track.

Pakistan.—A steel-arch bridge with span of 806 feet 9 inches is planned to cross the Indus River near Sukkur, to carry rail traffic.

Italy.—Financing is sought for the long-dreamed-of Strait of Messina Bridge to connect Sicily and Italy. This would be a double-decked suspension bridge that could cost over $200 million.

(For additional references, see the Index entry, *Bridges.*)

ARTHUR J. FOX, JR.,
Senior Staff Editor, "Engineering News-Record."

BRITISH BORNEO. See BORNEO.

BRITISH CAMEROONS (Cameroons under British Administration). A narrow strip of territory in west-central Africa bordered by Nigeria, French Cameroons, and the Gulf of Guinea, this trust territory of the United Nations was administered in 1959 by Britain as an integral part of the Federation of Nigeria (see BRITISH WEST AFRICA). Area, 34,081 square miles; population (mid-1958 est.), 1,591,000, comprising a diversity of African tribes. Main towns are Buea, the capital of Southern Cameroons, and the seaports of Bota and Victoria.

Government.—Southern Cameroons (area, 16,581 sq. mi.) is administered by the federal government of Nigeria; Northern Cameroons (17,500 sq. mi.) comprises parts of Adamawa, Borno, and Benue provinces of the Northern Region of Nigeria. The electorate of Northern Cameroons voted in a plebiscite on Nov. 7, 1959, to continue the British trusteeship for the territory (see below, *Principal Events*). As a result of the electorate's decision not to federate with Nigeria, the territory's government and ad-

ministration are to be separated from those of Nigeria's Northern Region.

The governor general of Nigeria (Sir James Robertson, who assumed office in 1958) acts as high commissioner for Southern Cameroons. The office of prime minister and a ministerial system were introduced in 1958. Parliament consists of a 20-member House of Chiefs and a 32-member House of Assembly. In elections to the assembly on Jan. 24, 1959, which were the first to be based on universal adult suffrage, the National Democratic Party, which favors union with French Cameroons, won 14 of the 26 contested seats.

Finance.—No separate budget is prepared for Northern Cameroons. The budget for Southern Cameroons for 1958–59 estimated revenues at £1,066,580 (including grants from Nigeria and Britain), and expenditures at £1,278,965.

Education.—In 1957, British Cameroons had 459 schools, including 444 primary, 3 secondary, 8 teacher-training, and 4 trade schools. Total enrollment in all schools was 52,206 pupils, most of whom were in Southern Cameroons.

Transportation.—There are 1,084 miles of motor roads (in 1956); road development is financed by both the territory and the Nigerian federal government. There are airfields at Tiko (all season) and Mamfe (dry season).

Economy.—Agriculture is the principal industry. Chief crops for export are bananas, cocoa, rubber, and palm kernels; subsistence crops include coco yams, plaintains, beans, casaba, corn, and rice. Other industries are food processing, tanning hides and skins, and making palm oil and sheet rubber. Total exports from Southern Cameroons in 1957 were valued at £5,351,053; imports, at £2,370,380. Principal exports and 1957 values are bananas, £2,799,000; cocoa, £996,000; rubber, £313,000; and palm kernels, £62,000. Imports include textiles, iron and steel products, machinery, vehicles, fertilizers, and cement.

Principal Events, 1959.—In compliance with a resolution of March 13 by the U.N. General Assembly to hold a plebiscite as a first step toward the territory's independence, the largely illiterate electorate of Northern Cameroons exercised the secret ballot for the first time on November 7. Of 113,198 votes cast, 70,401 favored continuing the trusteeship for the time being and 42,797 were for integration of the territory with Nigeria. The plebiscite was supervised by a team of United Nations officials headed by the Iranian delegate, Dr. Djalai Abdoh. The majority vote for continuation of the trusteeship was surprising in view of the fact that a United Nations mission had reported in January that popular sentiment in Northern Cameroons was overwhelmingly in favor of federation with Nigeria.

As the result of another resolution approved by the U.N. General Assembly on October 16, a plebiscite is to be held in Southern Cameroons between September 1960 and March 1961 to determine whether the territory will attain independence by federating with Nigeria or with French Cameroons.

W. R. F.

BRITISH COLUMBIA. The third largest and most westerly of the Canadian provinces, British Columbia has an area of 366,255 square miles. Forming a part of the province are the Queen Charlotte Islands (3,866 square miles) and Vancouver Island (12,408 square miles). The population was estimated at 1,570,000 as of June 1, 1959 (1956 census, 1,398,464). A large part of the population is concentrated in and around the southern coastal areas of metropolitan Vancouver (1956 census, 665,017) and metropolitan Victoria, the capital (125,447). Other chief urban centers and their 1956 census populations include: Nanaimo, 12,705; Penticton, 11,894; Trail, 11,395; and Prince George, 10,563.

Government.—British Columbia is represented in the Canadian Parliament by 6 senators (appointed for life) and 22 members of the House of Commons. The provincial government is administered by a lieutenant-governor (Frank Mackenzie Ross) and a Legislative Assembly of 52 members. The Social Credit Government headed by Premier W. A. C. Bennett was re-elected in the general election held on Sept. 19, 1956. At the end of 1959, party standings in the Legislative Assembly were: Social Credit, 38; Cooperative Commonwealth Federation, 10; Liberal, 3; and Labour, 1.

Education.—Education is compulsory for children between the ages of 7 and 15. During the school year 1957–58, there were 277,070 pupils enrolled in 1,145 public schools and instructed by 10,171 teachers. In addition, there are a number of private institutions modeled on the English public school system. Higher education is offered by the University of British Columbia at Vancouver, which in 1957–58 had an enrollment of 9,433 full-time undergraduates; and by its affiliated college located in Victoria, with an enrollment of 835. A College of Education on the university campus at Vancouver provides additional teacher training.

Finance.—Estimated current revenue for 1959–60 was $287,775,423; estimated current expenditure, $300,401,394. Capital expenditure out of income included in the expenditure figure was $69,493,000 (including $12,250,000 for debt reduction).

Transportation and Communications.—The province is crossed from east to west by two transcontinental railways, the Canadian Pacific Railway and the Canadian National Railway. The Pacific Great Eastern, a provincially owned railway, operates a line running north and south from Vancouver to Fort St. John and Dawson Creek. Railroad mileage as of Dec. 31, 1958, was 6,147, including 4,749 miles of main-line track. As of March 31, 1958, there were, exclusive of urban streets, 23,165 miles of highway in the province. Trans-Canada Air Lines and the Canadian Pacific Airlines operate international air routes. Shipping lines reach out from British Columbia to the major ports of the world.

Industries.—British Columbia's four major industries yielded the following returns in 1958: forestry, $542,787,427; mining, $146,840,000; agriculture, $119,238,000; and fisheries, $98,224,000. The value of manufacturing was $1,785,298,750. The fishing catch, consisting chiefly of salmon, herring, and halibut, totaled 490,187,000 pounds in 1957. The forest industry yielded 4.99 billion feet of sawn lumber in 1958. As of June 30, 1959, housing units under construction numbered 11,156; building permits issued in 1958 were valued at $264,214,000. Crude petroleum production increased 50% in 1958 to 512,359 barrels, from 340,945 in 1957. Electric power generated in 1958 was 11,682,152,000 kw.-hr. As of January 1959, total hydro and thermal electric capacity of utility and industrial power plants was 2,728,390 kilowatts.

Trade.—Retail sales in British Columbia were valued at $1,615,997,000 in 1958. Exports through provincial customs ports in 1958 totaled $811,162,000; imports, $420,078,000.

Principal Events, 1959.—The visit of Queen Elizabeth II and Prince Philip to British Columbia in mid-July was the first by a reigning monarch since 1939. (See also VANCOUVER.) On July 15, the queen officially opened the Deas Island Tunnel, which crosses the south arm of the Fraser River and is a basic link in the new freeway leading from Vancouver to the United States border at Blaine. The 4,400-foot tunnel, the first of its kind in North America, consists of a series of prefabricated concrete shells lowered into a trench dredged in the bottom of the river.

The provincial government is building mainland docking facilities and two fast car ferries for service beginning in 1960 between the Vancouver area and Victoria. The Wenner-Gren B.C. Development Company completed its summary of the potential water power in the Rocky Mountain Trench district and found the Peace River to have a potential of 4 million horsepower at a site near Hudson Hope. The company proposes to start construction in 1960 on a $600 million power development project that in its first stage will cost $375 million and produce 805,000 kilowatts by 1966.

Celgar Ltd. is building a $50 million pulp mill near Castlegar in the Arrow Lakes area which will have a capacity of 500 tons annually and will be in production by early 1961. The first iron and steel

smelter in western Canada is being built at Kimberley by the Consolidated Mining and Smelting Co., Ltd.; electric furnaces will be used and planned production of pig iron and steel ingots is 100,000 tons per year.

(See also BRIDGES.)

M. GLOVER,
Director, Bureau of Economics and Statistics.

BRITISH COMMONWEALTH. See COMMONWEALTH OF NATIONS.

BRITISH EAST AFRICA. Situated in east-central Africa and bordering on the Indian Ocean, British East Africa consists of three mainland territories and two islands comprising (1) the crown colony and protectorate of Kenya, (2) the territory of Tanganyika (a United Nations trusteeship), (3) the protectorate of Uganda, and (4) the protectorate of Zanzibar, which includes the islands of Zanzibar and Pemba. Total area, 681,761 square miles; population (1958 est.), 21,333,111.

BRITISH EAST AFRICA

Territory	Area (sq. mi.)	Population	Capital
Kenya Colony and Protectorate	224,960[1]	6,351,000[2]	Nairobi (233,800)[2]
Tanganyika Territory	361,800[3]	8,916,000[2]	Dar es Salaam (128,742)[4]
Uganda Protectorate	93,981[5]	5,767,000[2]	Entebbe (11,039)[5]
Zanzibar Protectorate	1,020[7]	299,111[8]	Zanzibar (57,923)[8]
Total	681,761	21,333,111	

[1] Land area, 219,780 sq. mi. [2] Est. mid-1958. [3] Land area, 341,150 sq. mi. [4] 1957 census. [5] Land area, 80,292 sq. mi. [6] 1958. [7] Zanzibar, 640 sq. mi.; Pemba, 380 sq. mi. [8] 1958 census.

The East African High Commission (administrator, E. B. David), consisting of the governors of Kenya, Tanganyika, and Uganda, is assisted by a 34-member Central Legislative Assembly in providing common services such as railways, customs, posts and telegraphs, civil aviation, and naval defense (the Royal East African Navy). Other defense is provided by the East African Land Forces Organization based at Nairobi, Kenya.

Principal organs of the High Commission are the East African Railways and Harbors Administration (railways aggregate 3,375 miles) and the East African Posts and Telecommunications Administration. Other services include numerous scientific, medical, industrial, and agricultural research organizations.

Revenue of the High Commission in 1957–58 was £4,959,534, of which £3,514,331 was contributed by the three mainland territories and Zanzibar. The common currency is regulated by the East African Currency Board; the East African shilling equals U.S.$0.14. Virtually free trade exists between the East African territories. Exclusive of Zanzibar, exports in 1958 were valued at £116 million; imports, at £121 million.

Tom Mboya (extreme left), a leader in Kenya's drive for independence, is welcomed by followers at Nairobi airport on his return in May from a tour of the United States.

WIDE WORLD

KENYA

Kenya Colony and Protectorate is situated on Africa's eastern coast between the Indian Ocean and Victoria and Rudolf lakes. Area, 224,960 square miles, including 5,230 square miles of lake area. The population of 6,351,000 (mid-1958 est.) includes 6,080,000 Africans, 84,500 Asians, 35,500 Arabs, and 22,000 Europeans. The protectorate consists of the mainland dominions of the sultan of Zanzibar, who is paid a yearly rent of £10,000. Principal cities are Nairobi, the capital (1957 est., 221,700) and Mombasa, chief port in East Africa.

Government and Political Events, 1959.—On October 23, Sir Patrick Muir Renison was sworn in as governor of Kenya (succeeding Sir Evelyn Baring, who retired). The governor is assisted by a Council of Ministers and a Legislative Council, which consists of 36 directly elected members (14 Africans, 14 Europeans, 6 Asians, and 2 Arabs) and 12 special members (4 Africans, 4 Asians, and 4 Europeans) chosen by the elected members. In addition, a Council of State, composed of 10 members nominated by the governor, is an independent body charged with the sole duty of protecting Kenya's racial communities against discriminatory legislation.

The non-European members of the Legislative Council ended their 5-month boycott of the council on April 29 after Colonial Secretary Alan Lennox-Boyd announced that the government would convene a conference to revise Kenya's constitution in preparation for self-government. Three new political organizations were formed during the year. On April 2, Michael Bludell, minister of agriculture, resigned from the cabinet in order to head a new party called the New Kenya Group, consisting of moderates advocating a multiracial policy designed to further self-government for Kenya. The formation of the Kenya National Party, announced on July 24, was backed by eight of the 14 elected African members of the Legislative Council who favor common voters' rolls, integrated schools, and equality of economic opportunity. Similar to this party but more extreme in its demands is the Kenya Independence Movement, founded in August by Tom Mboya, general secretary of the Kenya Federation of Labor. The three parties have the same goal—self-government—but they differ widely as to the best means for achieving that goal.

Of the 80,000 persons detained as a result of the Mau Mau rebellion which began in 1952, fewer than 1,000 remained under detention by mid-1959. The alleged leader of the rebellion, Jomo Kenyatta, was released on April 15 and deported with four other released Mau Mau convicts to Lodwar in the Northern Province. One of the prosecution's witnesses at Kenyatta's trial was found guilty on April 5 of swearing falsely that he had lied at the prosecution's behest during that trial. Following a coroner's ruling on May 6 that 11 Mau Mau convicts had died as the result of beatings administered by African guards at the Hola detention camp, the government suspended from duty the camp commandant and his deputy.

A proposal to open the White Highlands to nonwhite settlers met with opposition from the white farmers in that restricted area, but it was expected that the proposal would become law.

Finance.—For the fiscal year ending June 30, 1959, expenditure was estimated at £40,320,157; revenue, at £40,058,921. Revised estimates for the fiscal year 1958 showed a deficit of £1,179,588. Expenditure under the 3-year development plan begun in 1957 was estimated at £8.8 million for fiscal 1959.

Education.—In 1958, facilities for African education included 3,879 primary schools (8 government, 3,107 government-aided, 764 unaided) with 530,335 pupils; 28 secondary schools (10 government, 12 government-aided, 6 unaided) with 3,928 pupils; and 42 teacher-training centers (6 government, 33 government-aided, 3 unaided) with 3,545 students. European education consisted of 46 primary schools (18 government, 16 government-aided, 12 unaided) with 8,497 pupils, and 14 secondary schools (5 government, 1 government-aided, 8 unaided) with 2,949 students. For

Asians and Arabs, there were 129 primary schools with 41,841 pupils, and 36 secondary schools with 7,314 students. Five government technical and trade schools for Africans had 1,114 students in 1958. The Royal Technical College of East Africa at Nairobi had 270 students.

Production.—Kenya's diversified economy places productive emphasis on agriculture, mining, and forestry. Principal cash crops are coffee and tea; minor crops include cotton, sisal, wheat, sugar, and pyrethrum, which are grown mainly in the highlands and Nyanza province. In 1958, production of coffee for export was 49.2 million pounds (up 12% over 1957); tea, 18.2 million (up 13%); and cotton, 4.9 million (an increase of 58% over the poor crop year of 1957). Output of wheat in 1958 was estimated at 100,000 tons; barley, 16,100; and sugar, 27,900 (up 34% over 1957). The forestry industry produces sawn timber (232,000 cubic feet in 1958) and wattle bark (2,950 tons) for export. Livestock is important; Kenya exported 4,134 tons of hides and skins in 1957. Minerals include gold (10,300 troy ounces exported in 1958), copper, cement, soda ash, and salt.

Foreign Trade.—Total exports in 1958 were valued at £33.2 million; imports, at £60.8 million. Coffee accounts for about one third of total export value, followed by tea, sisal, wattle bark, pyrethrum, and hides and skins. Principal imports are manufactures (valued at £16.3 million in 1958), machinery (£14.6 million), mineral fuels (£8.3 million), textile yarn (£6.9 million), chemicals (£4.4 million), and food (£4.0 million). Kenya's chief trading partners are the United Kingdom and other Commonwealth nations, West Germany, and the United States.

Transportation and Communications.—Kenya's public highway system totals 24,500 miles, of which 453 miles are bitumen-surfaced, 3,710 miles comprise other all-weather roads, and 5,114 miles are secondary roads. Railways aggregate 1,336 miles, including 871 miles of main lines. Air services within the colony and to the other East African territories are provided by the East African Airways Corporation. The new Nairobi Airport was opened in 1958. There is a radio station at Nairobi. In 1958, Kenya had 34,410 telephones.

Tanganyika

Administered since 1921 by Great Britain (as a United Nations trusteeship after 1946; before that, as a League of Nations mandate) and formerly a German colony, Tanganyika has a coastline of about 450 miles on the Indian Ocean and extends inland to Victoria and Tanganyika lakes. Area, 361,800 square miles, including 20,650 square miles of lake regions. At the 1957 census the population was 8,788,466 (mid-1958 est., 8,916,000), composed of some 120 tribes predominantly of Bantu origin who constitute the great majority, together with 71,660 Indians and Pakistani, 20,598 Europeans, and 19,088 Arabs. The territory is divided into 10 provinces, each having a capital city. The territorial capital and principal port is Dar es Salaam (1957 pop., 128,742).

Government and Political Events, 1959.—The governor (Sir Richard Turnbull assumed office in 1958) is assisted by a Council of Ministers, consisting (from July 1, 1959) of 5 elected members (3 Africans, 1 Asian, and 1 European) and 7 nominated officials, and an Executive Council, composed of the Council of Ministers and a number (5 in 1959) of nominated nonofficial members. The Legislative Council comprises a speaker, 34 government members, and 33 representative members, including 30 who are elected on the basis of 1 African, 1 European, and 1 Asian member for each of ten constituencies. The first elections to the Legislative Council occurred in five constituencies in September 1958 and in the remaining five in February 1959. The results were an overwhelming victory for the Tanganyika African National Union, which had supported 28 of the 30 winning candidates. This multiracial party advocates independence for Tanganyika through moderate and nonviolent means. Its leader, Julius Nyerere, visited London in June and presented proposals for increased self-government for Tanganyika to British colonial officials. On December 15 the governor announced that Tanganyika will receive internal self-government in 1960.

Finance.—In 1959–60, expenditure (including development) was estimated at £25,348,457; revenue, at £24,013,629. For the ten years ending in June 1958, expenditure for the development of natural resources totaled £17,957,000.

Education.—The government maintains separate schools for Africans, Asians, and Europeans, and also subsidizes separate schools administered by local authorities and voluntary agencies. Government expenditure for education in 1958–59 totaled £3,906,910, including £2,427,513 for African education. Facilities for African pupils in 1958 included 2,660 primary schools (366,690 pupils); 293 middle, 21 district, and 1 presecondary schools (aggregating 36,611 pupils); 28 secondary schools (3,499 pupils), and 31 teacher-training centers (1,784 students). For European education there were 8 government primary schools (1,224 pupils) and 24 private schools. Asian education consisted of 146 grant-aided schools (16,921 pupils) and 8 government schools (6,120 pupils). A report by the Working Party on Higher Education in East Africa has recommended that a University College of Tanganyika be established at Morogoro by 1965–66.

Production and Trade.—Tanganyika is the world's leading producer of sisal; exports in 1958 totaled 198,130 tons. Other crops produced primarily for export are coffee (22,225 tons exported in 1958), cotton (32,062 tons), and tea (2,339 tons). Secondary agricultural production includes sugar (21,000 tons produced in 1958), wattle bark (866 tons exported in 1958), wood and timber (535,000 cubic feet exported), beans, pulses, and other subsistence crops. Hides and skins exported in 1958 totaled 4,839 tons. Principal minerals are diamonds (515,000 metric carats exported in 1958), gold (56,299 fine troy ounces), lead, and mica. Total exports in 1958 were valued at £41,707,000 (up £2,276,000 over 1957); imports, £28,630,000 (down about £6 million). Sisal accounts for about one fourth of total export value; imports include cement, cotton piece goods, iron and steel, and manufactures. The territory's chief trading partner is the United Kingdom.

Transportation and Communications.—Tanganyika's highway system in 1958 aggregated 20,000 miles, including 3,600 miles of territorial main highways and 4,500 miles of local main roads. Tanganyika Central and Northern Railways operate 1,300 miles of main lines and over 300 miles of principal branch lines. Some 50 airports and landing strips maintain internal, interterritorial, and international air services. British Overseas Airways operates regular flights between Dar es Salaam and London. Telephones numbered 12,507 in 1957.

Uganda

This British protectorate, established in 1894, is situated in the interior of eastern Africa and is bounded by Kenya on the east, Tanganyika on the south, the Belgian Congo on the west, and the Sudan on the north. Its total area of 93,981 square miles includes parts of Lake Victoria and other lakes, aggregating 13,689 square miles. The population (est. mid-1958) of 5,767,000 includes 5,695,000 Africans. Uganda is divided into four administrative provinces: Buganda (the principal native kingdom), Eastern, Western, and Northern. The seat of government is Entebbe; the commercial center is Kampala.

Government and Political Events, 1959.—Uganda is administered by a governor (Sir Frederick Crawford, appointed in 1956), who is assisted by a 12-member Executive Council, of whom 7 members are officials and 5 (including 3 Africans) are selected from the public. The 62-member Legislative Council consists of 30 representative members (18 Africans, 6 Asians, and 6 Europeans) and 32 government members (including 16 Africans). The Buganda parliament, which has not permitted the kingdom's 5 representatives to participate in the Uganda Legislative Council, requested early in the year that the Buganda agreement be terminated and the British protection over Uganda be ended. The request was denied, but the governor set up a constitutional committee to consider the next steps to be taken toward self-government. However, the Buganda parliament refused to nominate representatives to the committee. In May the government banned a newly formed organization called the Uganda National Movement on account of its support for an African boycott of non-African stores that had led to clashes between demonstrators and police in Kampala. On July 7, the governor ordered six alleged leaders of the boycott movement deported to remote areas of Uganda.

Finance.—Government expenditure for the fiscal year 1958–59 was £20,383,241; revenue, £19,871,598. Expenditure for the 1959–60 budget is estimated at £20,503,303; revenue, £19,836,567. Allocations for development expenditure in the 3-year period 1958–61 include education (£973,000), railway extension (£860,000), African housing (£850,000), agriculture (£525,000), and local government (£635,000).

Education.—Most African schools are managed by religious voluntary agencies; Asian schools are administered by both the government and local communities. At the end of 1958 there were 2,118 grant-aided primary schools (with 317,899 pupils), 3,051 unaided primary schools (134,576 pupils), 173 grant-aided secondary schools (17,454 pupils), and 77 unaided secondary schools (6,855 pupils). Asian pupils totaled 15,195 in primary, and 4,897 in secondary schools. There were 37 teacher-training colleges and 81 rural trade schools. The University College of East Africa at Makerere enrolled 823 students, including 270 from Uganda.

Production.—Main cash crops are cotton, which is grown exclusively by African peasants, and coffee, which is cultivated mainly by Africans but is also grown on large non-African estates. The bumper cotton crop in the 1957–58 season totaled 400,100 bales (400 pounds each); coffee output was 77,000 tons, down slightly from the record yield of the previous year. Tea production was the highest on record, about 8,300,000 pounds. Other major crops are tobacco (3,750,000 pounds in 1957–58) and sugar (80,000 tons). Important exports are hides (2,126 tons in 1957–58), goat skins (1,011,300 pieces), and sheep skins (107,500 pieces). Production of copper, the most valuable mineral, was valued at £2,065,335; of lesser commercial importance are wolfram, tin, gold, and lead. Cement production was 102,000 tons. Lakes and river fisheries employ about 20,000 persons (mostly Africans); catches in 1958 totaled 52,000 tons, valued at £2,120,000. Output of electricity in 1958 was 177 million kw.-hr.

Foreign Trade.—Uganda's exports in 1958 were valued at £45,409,024; imports at £27,002,482. Coffee, which had an export value of £20,827,270, became for the first time the chief export item, surpassing cotton, which was valued at £18,141,400. Other exports and their 1958 values (in thousand pounds) were: copper, £2,065; animal feeds, £1,104; tea, £979; and hides and skins, £647. Principal imports include synthetic fibers and cotton piece goods, clothing, iron and steel, motor vehicles, machinery, petroleum products, and tires and tubes. About one half of Uganda's trade is with other Commonwealth countries.

Transportation and Communications.—Lake, marine, road, and railway services in Uganda are operated by the East African Railways and Harbors Administration. In 1959 the Uganda Legislative Council approved the administration's proposal to build a new railway from Jinja to Bukontes on the Kampala-Nairobi line, thereby reducing total mileage of the trip by 45 miles and saving four hours of traveling time. Uganda has 2,898 miles of all-weather highways and 503 miles of bitumenized roads, as well as 8,300 miles of local roads. The airport at Entebbe is served by four international airlines. In 1958 there were 38,844 registered motor vehicles, and 12,069 telephones.

Zanzibar

A British protectorate since 1890, Zanzibar is the largest coralline island (area, 640 square miles) on the East African coast, and is separated from the mainland by a channel 22½ miles across. The island of Pemba (380 square miles) lies 25 miles to the northeast. The total population of 299,111 (1958 census) comprises 228,815 Africans, 46,989 Arabs, 18,334 Asians, 507 Europeans, and 4,466 of other races.

Government and Political Events, 1959.—The British resident (Sir George Mooring was appointed in 1959 to succeed Sir Henry Potter in early 1960; Sir Henry took office in 1954) presides over a 12-member Executive Council (including 7 official members) and a 25-member Legislative Council (including 13 official and 12 representative members). On April 16, 1959, the British resident announced a change in the number of representative members of the Executive Council from 3 to 5, of whom 2 are representatives of the Legislative Council and one represents Pemba; and an increase in the number of elected representative members of the Legislative Council from 6 to 8, with the number of appointed representative members accordingly decreased from 6 to 4. The first elections of representative members (then 6 in number) to the Legislative Council took place in 1957. It was also announced in 1959 that the minimum age of the male electors was reduced from 25 to 21 years, and that a committee would be appointed to consider giving women the right to vote. A Privy Council, consisting of the heir apparent to the throne, 2 ex-officio members, and the British resident as vice president, is presided over by the sultan (Seyyid Sir Kalifa bin Harub, acceded in 1911). The legislative decrees of the sultan are binding when countersigned by the British resident.

Finance.—Government revenue in 1958 was estimated at £2,626,763; expenditure, £3,183,472. In 1957–58, Zanzibar contributed £37,514 to services of the East Africa High Commission.

Education.—Primary school education is free for Arabs, Africans, and Indians. In 1958 there were 18,900 pupils enrolled in 78 government and grant-aided public schools; there are in addition 3 independent schools and 2 teacher-training centers. Higher education for Arab and African students is provided at Makerere College, Uganda.

Production.—The protectorate has the world's largest growth of clove trees—about 61,000 acres containing some 4 million trees (of which about three fourths are on Pemba)—and provides about 80% of the world's clove supply. Clove exports in 1958 totaled 9,104 metric tons, and exports of clove oil amounted to 92 tons. Next in economic importance is the growing and processing of coconuts; exports of coconut oil totaled 3,330 tons in 1958, and copra production was 13,272 tons in 1958. Other crops are rice, cassava, sweet potatoes, chilies, tobacco, and maize; tropical fruits are grown, and a small export trade in oranges is conducted with the mainland. Manufactures include coir fiber and rope, soap, jewelry, ivory and ebony ornaments, and metalware.

Foreign Trade.—Zanzibar's exports in 1958 totaled £5,060,000; imports, £5,200,000. Well over half of the annual export value is furnished by cloves and clove oil. Principal imports are cotton piece goods (2,170,000 square yards in 1958), rice (8,280 tons) and grain, petroleum, ivory, tobacco, and foodstuffs. About 60% of total exports go to the United Kingdom and Commonwealth countries.

Transportation.—Roads on the island of Zanzibar aggregate 339 miles (63 miles bitumen-surfaced); and on Pemba, 107 miles (26 miles bitumen-surfaced). There are no railways. Zanzibar is a port of call for many foreign steamship companies, and the government operates regular service to Pemba and the African mainland.

W. R. F.

BRITISH GUIANA. This crown colony (the only British territory on the South American continent) is situated on the Atlantic Ocean, and is bounded by Brazil on the south and west, by Venezuela on the west, and by Surinam on the east. Its area of 83,000 square miles comprises three counties (named from the principal rivers): Essequibo, 61,660 square miles; Berbice, 16,920; and Demerara, 4,420. The population at the end of 1958 was estimated at 540,620, including 258,610 of East Indian descent and 182,710 of African origin. Principal towns are Georgetown, the capital (pop., with environs, 126,550 in 1958), New Amsterdam, Mackenzie, Springlands, and Bartica.

Government.—An interim government comprises the governor (Sir Ralph Grey, appointed Oct. 7, 1959, succeeding Sir Patrick M. Renison); a 9-member Executive Council, over which he presides; and a 23-member Legislative Council, in which 14 seats are elective. Of these 14 seats, 9 were won in the 1957 elections by the left wing of the People's Progressive Party, led by Dr. Cheddi B. Jagan (former prime minister who was deposed in 1953 following charges that his party had engaged in Communist intrigues); 3 by the moderate wing, led by Linden F. Burnham; and 1 each by the United Democratic Party and the National Labor Front.

Finance.—The British West Indian dollar equals U.S.$0.5833. Budget estimates for 1959 provided for current expenditure of BWI$47,456,899, and for revenue of BWI$49,221,690. A sum of BWI$21,450,000 was allocated in 1959 to the 5-year development program, costing BWI$91 million, to improve and extend basic facilities. Technical assistance is being provided by the U.S. International Cooperation Administration.

Education.—In 1958 there were 111,746 pupils in the colony's 316 public primary schools. The 41 secondary schools comprised 2 government-owned, 9 grant-aided, and 30 private secondary schools. There are 3 vocational secondary schools, and a trade school is conducted at Mackenzie.

Transportation.—Motor roads aggregate 370 miles; forest roads, 239 miles; and trails, about 400 miles. The government-owned British Guiana Airways provides services within the colony; external services are operated by British West Indian Airways, Pan American World Airways, KLM Royal Dutch Airlines, Air France, and Cruzeiro do Sul. Motor vehicles numbered 16,238 in 1958. Railway mileage in 1959 comprised 94 miles of government-owned railways and 63½ miles owned by the Demerara Bauxite Company. Work continued in 1959 on a multimillion dollar railroad to connect manganese mines on the Barima River with tidewater.

Economy.—Agriculture and mining form the basis of the economy. Bauxite production (accounting for about 90% of mining revenue) was 1,585,879 tons in 1958. Also mined are gold (17,500 bullion ounces in 1958), and diamonds (33,091 metric carats). Sugar production rose in 1958 to a record 306,361 tons. Other leading crops include rice (the major subsistence crop), coconuts, coffee, cocoa, and citrus fruits. About 60,000 square miles of forest area are available for exploitation; 1,404,000 cubic feet of sawn timber were exported in 1958.

Foreign Trade.—Total exports in 1958 were valued at BWI$97,708,582, including sugar, 300,320 tons (BWI$54,727,482); bauxite (BWI$20,562,188); rice (BWI$4,785,346); timber (BWI$3,458,256); and rum, 2,454,872 gallons (BWI$3,453,849). Total imports were valued at BWI$116,408,248, including machinery (BWI$28,544,527); flour (BWI$4,262,753); and cotton piece goods (BWI$3,045,937). The United Kingdom took 48% of British Guiana's exports in 1958; Canada, 32%; and the United States, 6%. Of total 1958 imports, the United Kingdom supplied 46%; Canada, 7%; and the United States, 16%.

Principal Events, 1959.—The colony's future economic development was discussed at London in August by British colonial officials and a delegation from British Guiana headed by Dr. Cheddi B. Jagan, minister of trade. A development program was advanced that would cost initially BWI$110 million, of which new United Kingdom development and welfare allocations would provide BWI$22 million. In addition the United Kingdom would make two loans of BWI$19.2 million each to the colony during the period 1960–64. Priority was to be given drainage and irrigation works, and plans

for a new hospital at Georgetown and reconstruction of the 67-mile main coastal road were to be completed but their execution deferred. The development program was characterized as inadequate by Dr. Jagan.

The Legislative Council, sitting as a special committee "to recommend what form constitutional advance from the present interim arrangements should take," recommended on May 11 that British Guiana should become an independent state within the Commonwealth. Its government would consist of a governor, a cabinet of 9 to 12 members, and a unicameral legislature of 48 members elected from 24 constituencies. The People's National Congress recommended that the colony should join The West Indies federation.

Sir Ralph Grey assumed his duties as governor in November. He succeeds Sir Patrick Muir Renison, who was appointed on September 8 as governor and commander in chief of Kenya.

DONOVAN ROWSE,
Author and Publicist.

BRITISH HONDURAS. This crown colony lies south of Yucatán, Mexico, on the Caribbean Sea, and is bounded on the south and west by Guatemala. Its land area is 8,867 square miles; its population (composed of Negroes, Maya Indians, Hispano-Indians, Caribs, and Europeans) increased from 82,333 in 1956 to 88,156 at the end of 1958. The capital and chief port is Belize (pop., est., 30,000).

Government.—A governor and commander in chief (Sir Colin H. Thornley, appointed on Aug. 16, 1955) presides over an Executive Council, 6 of whose 9 members are drawn from a 15-member Legislative Assembly. All 9 elected seats in the latter body were held in 1958 by the People's United Party. Six district town boards have been reconstituted with 4 elected and 3 nominated members. Belize has now a wholly elected City Council.

In 1957 revenue was estimated at BH$8,691,319; expenditure, at BH$8,002,687 (the British Honduras dollar = U.S.$0.70). A deficit under the 1958 budget of BH$940,000 was covered by a grant-in-aid from the United Kingdom government, which has provided British Honduras with about £1 million for expenditure on development up to March 1960. The principal projects are agricultural and medical, but forestry, communications, education, social welfare, and housing also benefit.

Education.—Facilities in 1958 comprised 110 government and government-aided primary schools (17,471 pupils), 32 nonaided primary schools (1,560 pupils), 8 nonaided secondary schools (1,239 pupils), and a government technical high school (146 pupils). A residential Roman Catholic college was opened in the Stann Creek district in 1958.

Transportation.—Main roads aggregate 280 miles, and there are 131 miles of feeder roads. Five airlines serve Stanley Field, near Belize. With the opening in 1957 of a new runway at Orange Walk, airstrips throughout the colony totaled 27. A freighter-passenger vessel service connects Belize with Jamaica on a triweekly basis.

Economy.—British Honduras is a small colony with a limited economy. It is dependent chiefly on forest products, especially mahogany, logwood, cedar, dyewoods, and chicle (the base for chewing gum), but progress has been made in the cultivation of rice, cacao, bananas, and sugar and in the development of a livestock industry (some cattle are now exported). Citrus products are the main agricultural export. Marine products consist principally of crayfish (rock lobster, BH$141,685 in 1957) for the United States market; commercial fishing employs about 400 full-time fishermen.

In 1958 exports of timber were valued at BH$3,973,896 (51.2% of total exports) and comprised 61,641 cubic feet of logs (mahogany, 45,804 cubic feet) and 1,101,515 cubic feet of sawn timber (mahogany, 547,355 cubic feet). Exports (in pounds) of citrus products included oranges, 152,200; orange juice, 3,893,200; grapefruit juice, 1,284,100; and canned grapefruit, 3,883,300 (4,634,900 in 1957). Sugar exports amounted to 8,699 tons. In sterling, total imports were valued at £4,629,060; exports, at £2,271,969.

BRITISH MALAYA. See MALAYA, FEDERATION OF.

BRITISH NORTH BORNEO. See BORNEO.

BRITISH SOMALILAND. See SOMALILAND PROTECTORATE.

BRITISH VIRGIN ISLANDS. Lying east of the Virgin Islands of the United States (q.v.), this group of 36 islands (11 inhabited) forms a British colony (area, 67 square miles; pop. est., 7,600 in 1958) which is geographically part of the Leeward Islands but has not joined The West Indies federation. On Tortola, the largest island (20 square miles), is Road Town (pop., 1,200 in 1956), the seat of administration. Sage Mountain, on Tortola, rises to 1,780 feet.

The government, which is under an administrator (G. P. Allsebrook), includes an 11-member Legislative Council. On July 21, 1959, it was announced that a third elected member would be added in 1960 to the 6-member Executive Council, which now includes 3 members of the Legislative Council (2 elected, 1 nominated). The colony in 1959 reaffirmed its desire to remain under the British crown but outside The West Indies federation, except in respect to the latter's advisory and other services.

Revenue, in terms of United States currency, totaled $414,590 in 1958; expenditure, $515,857. In 1958 there were 13 primary schools, 3 community schools, and 1 private school (aggregate enrollment, 2,179); and 1 government secondary school, with 99 students. Imports totaled $664,823, and domestic exports $165,698, in 1958.

The colony is within the economic orbit of Puerto Rico and the U.S. Virgin Islands, and there has been a considerable migration of labor to St. Thomas, attracted by high rates of pay in the tourist industry there. An hotels aid ordinance (enacted in 1953) and increased United Kingdom government grants have aided the growth of the colony's own tourism. Cattle are exported to the French islands of Martinique and Guadeloupe, and the raising of fruit and vegetables is a major occupation.

BRITISH WEST AFRICA. Situated on the west coast of Africa, these three British dependencies comprise the federation of Nigeria (including the trust territory of British Cameroons), the colony and protectorate of Sierra Leone, and the colony and protectorate of Gambia. A fourth territory (the Gold Coast) became in 1957 an independent state under the name of Ghana (q.v.). The total area of British West Africa is 405,178 square miles; the combined population, 36,772,384.

The West African Inter-Territorial Council coordinates and promotes the work of numerous regional organizations, including various health, social, and economic research institutes. The governor of Nigeria is permanent president of the council, which has its headquarters and a secretariat at Accra, the former capital of the Gold Coast.

In preparation for the establishment of independence by Nigeria on Oct. 30, 1960, further steps were taken in 1959 to achieve self-government. Elections to Nigeria's first self-governing federal House of Assembly were held in December. Earlier, Northern Nigeria became the last of the territory's three regions to attain internal self-government. The new Central Bank of Nigeria issued new Nigerian currency on July 1, 1959, replacing notes of the West African Currency Board. In July the United Kingdom announced it had loaned Ni-

BRITISH WEST AFRICA

Group	Area (sq. mi.)	Population[1]	Capital
Nigeria:			Lagos (337,000)
Northern Region[2]	281,792	18,802,000	
Eastern Region	29,484	7,927,000	
Western Region[3]	45,403	6,736,000	
Southern Cameroons	16,581	811,000[4]	
Total	373,250	34,276,000	
Sierra Leone:			Freetown (100,000)
Colony	256	130,000[5]	
Protectorate	27,669	2,100,000[6]	
Total	27,925	2,230,000	
Gambia:			Bathurst (21,500)
Colony	29	29,300[4]	
Protectorate	3,974	237,084[7]	
Total	4,003	266,384	
British West Africa	405,178	36,772,384	

[1] Figures are mid-1958 estimates unless otherwise indicated. [2] Data include area, 17,500 sq. mi., and population, 759,000, of the Northern Cameroons. [3] Data include area, 27 sq. mi., and population of the federal territory of Lagos. [4] Mid-1957 est. [5] Mid-1952 est. [6] Mid-1956 est. [7] Mid-1957 est., excluding 9,600 seasonal immigrants.

geria the sum of £15 million to finance the development of ports, highways, railways, post and telegraph services, schools, and other public programs.

Sierra Leone assumed control of its own military forces in 1959. During the year the franchise was extended in Gambia to include all adults residing in the protectorate.

Nigeria

Situated on the Gulf of Guinea and containing the Niger River valley, Nigeria has been a federation under a governor general since 1954. It is administered in three regional divisions, each with its own governor: Northern, Eastern, and Western. Included for administrative purposes in the Northern Region, under a United Nations trusteeship, are the Northern Cameroons (area, 17,500 sq. mi.); the remainder of the trusteeship (16,581 sq. mi.) constitutes the Southern Cameroons, formerly included for administrative purposes in the Eastern Region, but administered separately since October 1954 (see British Cameroons). The chief cities are Lagos, the capital (mid-1958 est., 337,000) and Ibadan (500,000).

Government and Political Events, 1959.—A constitutional conference held in London in October 1958 set the date for Nigerian independence as Oct. 1, 1960, at which time this largest of the British dependencies will become the world's largest Negro nation. In 1959 the federation continued to be administered by a governor general (Sir James Robertson) or his deputy (Sir Ralph Grey), assisted by a Federal Council of Ministers composed of the prime minister and not less than 10 African ministers appointed by him. The prime minister (in 1959, Alhaji Abubakar Tafawa Balawa) is scheduled to replace the governor as chairman of the council upon the attainment of Nigerian independence. The federal House of Representatives was enlarged in 1959 from 184 to 320 elected members. An upper house or Senate with probably 12 members from each region is to be formed. Each of the three regions is self-governing and has a premier, an Executive Council, a House of Chiefs, and a House of Assembly, most members of which are elected. Southern Cameroons has an Executive Council presided over by a commissioner, and a 32-member House of Assembly and a House of Chiefs. Numerous native administrations are mainly responsible for local government.

As the result of general elections held on Dec. 12, 1959, Nigerians chose 312 members of the federal House of Representatives, which will play the major role in the government of an independent Nigeria in 1960. Seats were distributed proportionately among the regions as follows: Northern Region, 174; Eastern Region, 73; Western Region, 62; Southern Cameroons, 8;[1] and Lagos, 3. The Northern Region became the last of the regions to achieve internal self-government on March 15, when the regional premier, the Sardauna of Sokoto, succeeded the British governor as chairman of the region's Executive Council. British Colonial Secretary Alan Lennox-Boyd met with the federal and regional premiers at Lagos in May, at which time he gave assurances that Great Britain would continue technical and financial aid to Nigeria after its independence.

Finance.—Budget revenues for the 1959–60 fiscal year were estimated at £43.7 million, exclusive of £32.8 million for regional governments. Actual expenditures for 1958–59, including regional expenses, were £64,244. Expenditure in 1959–60 included £4 million for the development fund; total expenditure for the development program since 1955 totaled about £36 million as of March 31, 1958. The Central Bank of Nigeria began the issuance of new Nigerian currency on July 1, 1959.

Education.—In 1958, over 2 million of about 5 million children of primary school age attended primary schools. As the result of an extensive educational expansion program in Lagos, the number of children in primary schools was increased from 32,000 in 1956 to 79,000 in 1959. The University College at Ibadan had about 1,000 students in 1958.

Economy.—Agriculture, the most important segment of the economy, accounts for about 90% of all exports. Production of principal crops in the 1958–59 season was as follows: cocoa, 138,061 metric tons (about the same as in 1957–58); groundnuts, 583,000 (down 25% from 1957–58); cotton, 89,000 (down 21% because of a serious drought); and palm oil, 173,000 (up 4%). Other agricultural products for export include bananas, rubber, timber, and hides and skins.

Mining is growing in importance. Nigeria supplies about 5% of the world's tin and accounts for over 75% of the world output of columbite. Production of coal in 1958 was a record 926,025 metric tons. Proven petroleum reserves amount to 17 million tons; in 1958 the 20 producing wells supplied 600,000 metric tons of crude oil for export. Other minerals are iron ore, sulfur, and salt.

Foreign Trade.—Nigeria's exports in 1958 were valued at £135.6 million; imports, at a record £166.9 million. Chief exports and 1958 values were: groundnuts, £26.9 million; cocoa, £26.7 million; palm kernels, £20.4 million; palm oil, £12.6 million; timber, £6.2 million; and tin ore, £3.9 million. Major imports are machinery, transport equipment, household appliances, fabrics, cement, and food. Nigeria's chief trading partner, the United Kingdom, took 55% of Nigerian exports and supplied 43% of imports in 1958.

Transportation and Communications.—Nigeria's road network totals 37,033 miles, including 3,439 miles of surfaced highways. Government railways aggregate 1,903 miles, not including a 400-mile extension under construction in Northern Nigeria as part of the current $116 million railway improvement program. Nigerian Airways and six other main international airlines operate regular air services from Kano and Lagos. The expansion of port facilities at Port Harcourt continued in 1959. A modern telecommunications equipment program was scheduled for completion in 1960. Africa's first television system was started in Nigeria in September 1959. In 1958 there were 38,000 registered motor vehicles and 26,187 telephones.

Sierra Leone

A mountainous peninsula on the West African coast, the Crown Colony of Sierra Leone was formed in 1808; the surrounding protectorate, which borders Liberia and Guinea, was added in 1896. Sierra Leone Protectorate is divided into three provinces: Northern (13,925 square miles), South Western (7,868); and South Eastern (5,876). The population consists almost entirely of Africans, with small European and Asian minorities. Freetown, the capital, is a principal port of British West Africa.

Government and Political Events, 1959.—According to the constitution of 1958, the governor (Sir Maurice Dorman, appointed in 1956) has a veto power over vital matters. A deputy assists the governor, particularly in respect to external affairs, defense, and internal security. An all-African Executive Council consists of a premier and 11 other ministers chosen from the elected legislators. The House of Representatives has 57 members, including 39 who are elected. Premier Sir Milton Margai heads the majority political group, the Sierra Leone People's Party.

Finance.—Government revenues for the 1959 fiscal year ending in March totaled £10,517,835; expenditures, £10,886,157.

Education.—Education is not compulsory. In 1958 there were 522 primary schools with 69,276 pupils, and 25 secondary schools with 5,904 pupils. In addition, 6 teacher-training colleges had 604 students, and 6 technical and vocational institutions enrolled 450 full-time and 872 part-time students. Fourah Bay College had 265 students in 1957.

Economy.—Agriculture employs over half the population, and 56,287 persons were engaged in mining and light industries in 1956. Chief crops for export are palm kernels and coffee (66,952 cwt. exported in 1958), and the main subsistence crop is rice, grown chiefly in the protectorate. Other agricultural products are cocoa, piassava, peanuts, ginger, kola nuts, benniseed, bananas, peppers, and chilies. Principal minerals with 1958 production figures are: iron ore, 1,299,937 tons; diamonds, 1,490,037 carats; and chromite, 14,236 tons.

Foreign Trade.—Sierra Leone's exports in 1958 were valued at £19,613,058 (up 7% over 1957); imports, £23,903,129 (down 18%). Leading exports in 1958 included diamonds, valued at £8,518,545; iron ore, £4,490,460; and palm kernels, £2,448,256. Among the principal imports are petroleum products, motor vehicles, base metals, fabrics, and rice. Over half the territory's trade is with the United Kingdom.

Transportation.—Government railways aggregate 394

[1] Scheduled elections for the 8 seats representing Southern Cameroons were postponed, pending the results of a plebiscite to be held in 1960 which is to decide whether or not the territory will join an independent Nigeria.

BRITISH INFORMATION SERVICE

Horsemen en route to Kaduna, capital of the Northern Region of Nigeria, where they joined 10,000 tribesmen at a durbar on May 15, celebrating the region's attainment of self-government in March. Moslem month of fasting had delayed festivities.

miles. There were 2,992 miles of highways in 1958. Three international airlines operate out of the airport at Lungi, near Freetown.

Gambia

This crown colony, situated at the mouth of the River Gambia on the West African coast, comprises St. Mary's Island (area, 2,500 acres) and the adjoining division of Kombo St. Mary (mid-1957 est., 7,800). The protectorate extends inland some 200 miles on either bank of the river in strips of territory rarely exceeding 7 miles in width. Bathurst, on St. Mary's Island, is the capital and chief port; main towns in the protectorate are Brikama, Mansa Konko, Georgetown, and Basse.

Government.—The governor (Sir Edward H. Windley assumed office in 1958) is assisted by an Executive Council comprising at least 6 appointed members of the elected legislators. The Legislative Council consists of 21 members, of whom 11 are directly elected and 3 are indirectly elected, as well as a speaker and the governor, who serves as council president. On Sept. 23, 1959, the franchise, which had been limited to residents of the colony, was extended to all adults in the protectorate.

Finance.—Revenue in 1958 was £1,895,006 (£2,128,107 in 1957); expenditure (including £130,560 on education), £1,961,539.

Education.—In 1959 there were 49 government and mission primary schools with a total enrollment of 7,550 pupils, and 5 secondary schools with 829 pupils. Yundum College had 52 students.

Economy.—Gambia's exports in 1958 were valued at £4,109,118; imports, at £3,908,801. Peanuts is the major crop and accounts for over 90% of annual export value. Output of unshelled peanuts in 1958 totaled 62,931 tons. Other exports are oil cake, palm kernels, and hides and skins. Rice is the second major crop.

Transportation.—Internal transportation is furnished primarily by river steamers, one of which provides post office facilities. The colony has 39.5 miles of surfaced roads, and the protectorate, 967 miles of earth roads. There are no railways. Gambia is served by Air France and West African Airways, which connect Bathurst with the capitals of Sierra Leone and Ghana, and with Europe.

(See also Africa.)

W. R. F.

BRITISH WEST INDIES. See West Indies Federation.

BROADCASTING. See Federal Communications Commission; Radio and Television.

BROWN, Edmund Gerald (Pat), American political leader: b. San Francisco, Calif., April 21, 1905. Elected governor of California in November 1958, Brown defeated Sen. William F. Knowland by more than a million votes and brought in with him the state's first Democratic-dominated legislature since 1889. Having followed this triumph with a year of vigorous leadership, he inevitably became a subject of great interest, both as a possible candidate for the Democratic presidential or vice presidential nomination in 1960 and as leader of the nation's second-largest delegation (81 votes) to the Democratic National Convention. He was expected to go to the convention in July as California's favorite-son candidate for the presidential nomination.

Following his graduation from San Francisco Law School and admission to the state bar in 1927, Brown plunged at once into politics. Originally a Republican, he switched to the Democratic Party as a supporter of the New Deal in 1934. In 1939 he ran for San Francisco County district attorney, lost, ran again in 1943, and was elected. He was defeated as candidate for state attorney general on the Democratic slate in 1946, but in his next try, in 1950, he was the Democrats' only victor for major office and established himself as the party's best vote-getter. The performance was repeated in 1954.

In the first session of the state legislature in 1959, he compiled a record of 35 victories and only five defeats on major issues. He achieved major legislation in highly controversial areas—most importantly, a first-step $1,750 million water resources development program (subject to ratification by the electorate in 1960) that broke a long-standing North-South stalemate within the state. Other major actions included tax increases to stabilize the budget, abolition of cross-filing in California elections, antidiscrimination legislation, a crackdown on abuses against immigrant farm laborers, and a thoroughgoing reorganization of the state's executive branch. (See also California.)

BRUNEI. See Borneo.

BUDDHISM. See Religion.

BUDGET, U.S. See Treasury Department.

BUILDING AND CONSTRUCTION. New Construction Put in Place.—Keeping pace with the economy, the value of new construction put in place in 1959 reached a new peak of $54 billion, a 10% gain over 1958. The high rate of construction activity prevailed throughout the year, although the prolonged steel industry work stoppage (see IRON AND STEEL) had a somewhat depressing effect toward the end of the year. As in recent years, both private and public construction shared the gains, with the former accounting for 70% of the total. Although rising costs of approximately 3% played a role in elevating the 1959 value of new construction put in place, the physical volume of construction still rose by about 7%.

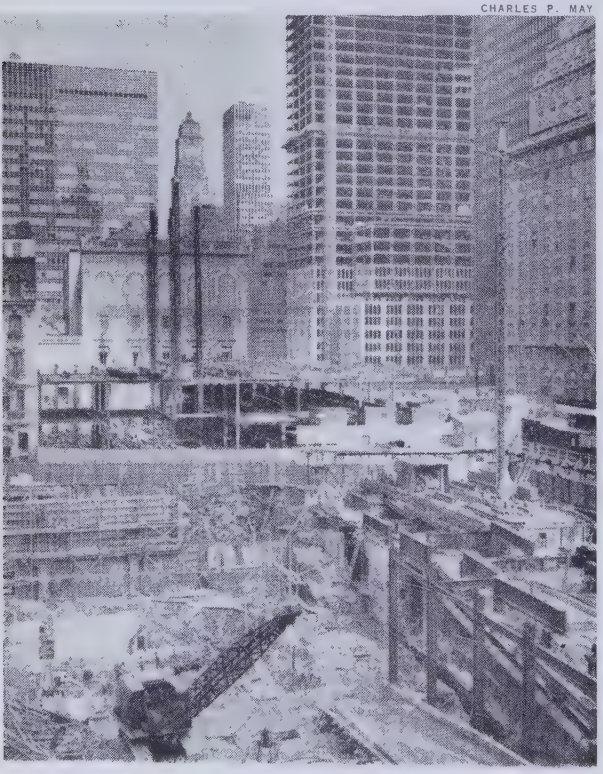
In the private sector the $38 billion expended represented a 13% increase over 1958. The strongest element in the increase was nonfarm housing, with a 23% rise from $18 to $22 billion. Expenditures for commercial, industrial, and other nonresidential buildings declined slightly, 1%, although within the commercial category, stores, restaurants, and garages marked up a 22% increase. Farm construction followed the general pattern with a 19% rise. Public utilities showed virtually no change.

Total public construction activity at $16 billion reflected an almost $1 billion increase over 1958. Expenditures by the federal government, rather than by state and local governments, provided the greater stimulation to public construction activity in 1959, because of the impact of federal contracts let in 1958 to counteract the then prevailing recession. In 1959, federal outlays on construction increased by about 20%; outlays by state and local governments changed negligibly.

Thus, construction categories associated with federal programs displayed the greatest increases during 1959. Highway construction (see HIGHWAYS) at a new peak of $5.8 billion was up 5%. Similarly, military projects at $1.5 billion were up 6%. Conservation and development work registered a 13% rise to approach a record $1.2 billion. Categories based mostly on state and local government funds were less impressive in 1959. Public educational building at $2.7 billion declined by 7% from the previous year. Sewer and water systems, achieving a $1.5 billion record outlay, moved up 6%.

Typical of the building boom in New York City is this view of a section of Park Avenue in mid-Manhattan. Two office buildings are shown in early stages of construction, while the skeletal structure of another rises in the background.

CHARLES P. MAY



New Housing.—In 1959, starts of privately and publicly owned new nonfarm dwelling units exceeded 1.3 million, 16% more than in 1958 and almost at the all-time peak of 1950. Only 35,000 units started were publicly owned. As in earlier years, about 70% of the new housing starts were in metropolitan areas. The average construction cost of new private one-family houses, more than four fifths of the total, was about $13,300, exceeding that of 1958 by $350.

The increasing role of the multiple-family structure in 1959 continued a trend evident since 1955. In terms of actual numbers, there were more units started in rental type buildings in 1959 than in any year since 1928. A decade had passed since multiple-dwelling starts accounted for as high a ratio (20%) of new housing units as they did in 1959.

Although a tightening money situation became evident around the middle of 1959, housing starts were not appreciably affected until the last quarter of the year. The proportion of dwelling units started under Federal Housing Administration and Veterans Administration mortgage insurance, about one third, remained about the same as in 1958. VA homes, which accounted for 8% of all private housing starts in 1959, were, however, down sharply from earlier years. In view of the high level of 1959 starts compared with 1958, there was a substantial increase of 18% in the number of homes built under the government mortgage insurance programs. (See also HOUSING.)

Building Permits.—Although building permits cover only a portion of total construction, the statistics derived provide useful detailed information on geographic distributions of construction work authorized during the year.

The value of all building construction authorized by permits in 1959 amounted to $23 billion, a 16% gain over 1958. Private work valued at $20.5 billion rose 20%, whereas public work decreased almost 25%.

Building permit valuations rose in each of the four major geographic regions of the United States, with the Northeast marking up the greatest increase, 30%. The more than 100% growth in office building construction in the Northeast was the most dramatic jump, probably attributable to the office building boom in New York City. It is noteworthy that about one fourth of construction authorized by building permits took place in the states of New York and California, which showed gains in 1959 of 50% and 25%, respectively.

Construction covered by permits declined in a few states. The District of Columbia recorded a 60% decline.

Construction Costs.—After a year of relative stability in 1958, construction costs in 1959 moved upward 3% over the earlier year, according to the U.S. Department of Commerce composite index. The 1959 level was more than 40% over the 1947–49 base period. Prices of materials and average hourly earnings of construction workers rose by an average of from 2% to 4%, but all major components of construction costs did not move accordingly. (See also HOUSING.)

Employment and Earnings.—In 1959 contract construction employment, at a monthly average level of 2.8 million, was up 5% over 1958. The 1959 level, approximating those of 1955 and 1957, was significantly exceeded only in 1956, when 2.9 million were employed. Employment dropped to a low of 2.3 million in February 1959 and reached a peak of 3.1 million in August. About 80% of the employees were in building construction activities, while the balance was engaged in highway and other nonbuilding construction pursuits, a proportion which prevailed during recent years. Among the building construction workers, slightly less than two thirds were connected with the special trades, such as plumbing, painting, and electrical work. The other third was employed by general building contractors. California, with almost 300,000 contract construction workers, and New York with 250,000, were chief employment centers.

In general, hourly and weekly earnings for all types of construction workers were higher in 1959 than 1958. Weekly earnings in 1959 averaged $115, based on an average work week of 37 hours at more than $3 per hour.

Weekly earnings were $5 greater than those in 1958, principally because hourly earnings went up. Hours of work were almost unchanged. Special trades workers, who earned $120 per week, topped all others, while employees of general contractors trailed at $107 per week.

BENJAMIN D. KAPLAN,
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BULGARIA. A Soviet-dominated people's republic, bounded on the north by Rumania, on the east by the Black Sea, on the south by Greece and Turkey, and on the west by Yugoslavia.

Area and Population.—Bulgaria has an area of 43,047 square miles and a population (est. mid-1958) of 7,722,000, almost two thirds of which is rural. Sofia, the capital, had 725,756 inhabitants at the 1956 census. Other leading cities (with 1956 populations) are Plovdiv (162,518), Varna (119,769), Ruse (83,472), Burgas (72,795), Dimitrovo (Pernik, 59,721), Pleven (57,758), and Stara Zagora (55,322). The major ethnic groups (est. 1952) are Bulgarians (91%), Turks (6%), and gypsies (2%).

Government.—The Bulgarian People's Republic was proclaimed on Sept. 15, 1946. According to the constitution of 1947, the highest organ of the government is the unicameral National Assembly (Narodno Sobranie), consisting of 254 deputies. Although the constitution supposedly guarantees free elections, citizens cannot organize their own parties or place on the ballot candidates for the National Assembly who are unacceptable to the Communist Party. The National Assembly elects and, when not in session, is represented by its Presidium; its chairman is Dimiter Ganev, elected on Nov. 30, 1958, to succeed the late Georgi Damyanov. The National Assembly also appoints the cabinet, which since April 17, 1956, has been headed by Premier Anton Yugov. In March 1959 the government was reorganized (see below, *Principal Events*).

Bulgaria has a totalitarian system of government which controls every phase of national life. Political power is vested in the Politburo, an organ of the Central Committee of the Communist Party. The party, which claims 485,255 members (1958), is the dominant force in the Fatherland Front (Otechestven Front), which also includes the Agrarian National Union, headed by Georgi Traikov, and splinter groups of one-time democratic parties which accepted Communist rule. The last parliamentary elections (Dec. 22, 1957) gave Fatherland Front candidates nearly all the votes cast.

Education.—Elementary education is obligatory between the ages of 7 and 15. In April 1959 the Central Committee of the Communist Party announced certain changes in the educational system; henceforth students will have to spend some time as workers in industry and agriculture. In 1957, Bulgaria had 6,803 elementary schools (including 1,116 for Turkish-speaking pupils) with 830,000 pupils, 250 secondary schools with 200,000 students, and 230 vocational schools with 58,842 students. The University of Sofia, the country's most important institution of higher education, and 31 other institutions had a combined enrollment of 37,049. About 1,000 students were attending specialized schools in the Soviet Union.

Religion.—The principal religious groups (est. 1952) are the Orthodox (89.07%), Moslem (9.54%), Roman Catholic (0.78%), Protestant (0.13%), and Jewish (0.04%). Leadership and administration of the Bulgarian Orthodox Church are vested in a Holy Synod, comprised of the patriarch as head of the church and the metropolitans of the 11 dioceses (the patriarch serves as the metropolitan of the Sofia diocese). On May 10, 1953, Metropolitan Kiril of Plovdiv was chosen patriarch in a contrived election that was denounced by the patriarch of Constantinople. The cultural and spiritual work of religious institutions has been drastically reduced.

Finance.—The 1959 budget called for revenues of 27,100 million leva and for expenditures of 26,900 million leva, of which 17,500 million were earmarked for the national economy, 5,600 million for social and cultural undertakings, and 1,700 million for national defense. The Bulgarian lev is linked to the Russian ruble at the ratio of 1.70 leva to 1 ruble; 6.80 leva (9.50 at the tourist rate) equal U.S.$1.

Defense.—The peace treaty of 1947 limited Bulgaria's armed forces to 65,000 officers and men. In 1957 they were estimated to total 200,000, although at the meeting of the Political Consultative Committee of the Warsaw Treaty Organization on May 24, 1958, it was presumably agreed that the army would be cut down somewhat. The naval tonnage exceeds the maximum (7,250 tons) established by the peace treaty. Bulgaria has 1 destroyer, 3 or 4 submarines, 2 patrol vessels, and about 30 torpedo boats. The ports of Varna, Burgas, and Sozopol have been developed to accommodate Soviet naval craft. The Soviet Union has built 10 airfields for jet planes, of which those at Tolbukhin (Dobrich), Yambol, Pleven, and Sofia are the largest. The Bulgarian Air Force also exceeds the size (90 planes) established by the peace treaty.

Transportation and Communication.—Bulgaria's road system (1956) totals 15,870 miles, and the rail network (1957), 2,670 miles. In 1957 the tonnage of the Black Sea fleet was estimated at 26,000, and the Danube fleet consisted of 42 ships. Bulgaria has over 300,000 radios and a very few television sets.

Agriculture.—The number of collective farms, which in November 1957 totaled 3,158 and comprised 960,000 households, was reduced as a result of mergers to 625 collectives with the same number of households by December 1958. Numerous changes were introduced in agriculture during 1959. In February a system of daily wages was established on collective farms, and in April compulsory deliveries were replaced by a contractual purchasing scheme under which prices were raised to a position about 50% below free market prices.

According to Bulgarian newspapers, the country has recently experienced shortages of fruits and vegetables, especially in the larger cities. One paper complained that farmers have refused to market their crops. There was evidence that the collective farms, in connivance with local officials, have circumvented compulsory deliveries and have sold their produce on the free market at higher prices.

The agricultural phase of Bulgaria's so-called "big leap forward" calls for expanded production of maize (corn), sunflower seed, sugar beets, wool, cotton, and livestock through greater use of farm machinery and fertilizers and the expansion of irrigation facilities. Chief crops and 1957 yields (in thousand metric tons) were: wheat, 2,375; maize, 1,461; sugar beets, 1,464; sunflower seed, 208; tobacco, 73; and grapes, 570.

Industry.—Industrial production in 1958 reportedly exceeded planned estimates by 6% and was up 16% over that in 1957. In mid-January 1959 the first secretary of the Communist Party, Todor Zhivkov, announced a series of drastic changes in economic planning and administration. He proposed a doubling of Bulgaria's industrial production by 1962, and the telescoping of the Third Five-Year Plan (1958–62) into a three-year plan. The goal for 1959 provided for increases of 27.8% in industrial production, 43% in capital investment, and 73.9% in agriculture. A new system of economic administration provided for the establishment of 30 provincial economic units with broad local powers. Machine-tractor stations and some local industries were to be collectivized.

Planned production goals in certain basic industries for 1962 and 1965, as compared with 1958 actual output, are as follows (in metric tons):

	1958	1962	1965
Steel	211,000	400,000	900,000
Pig iron	...	230,000	700,000
Lead	26,000	45,000	90,000
Coal	12,730,000	23,772,000	...
Cement	934,000	2,300,000	...
Chemical fertilizers	...	1,000,000	1,600,000
Electric power (million kw.-hr.)	3,024	6–7,000	10,000

The government admitted in late 1959 that more than 30% of state enterprises were behind in planned production, but noted that satisfactory results were being obtained in the output of electric power, pig iron, steel, lead, and cement.

Foreign Trade.—As a result of postwar industrialization, Bulgaria's exports of manufactured and semimanufactured goods have increased from 19.6% of total exports in 1939 to 60% of the total in 1956. Its foreign trade with the Soviet bloc in 1955 amounted to 89.9% of exports and 86.3% of imports, of which 46.7% of exports and 45.7% of imports were exchanged with the USSR. In 1959, Bulgaria made a trade agreement with Communist China covering the period 1959–62.

Exchanges of goods with Middle Eastern, Asian, and western European countries has steadily increased since 1955. In 1957, trade with the West

was estimated at $100 million, of which the major share was with West Germany, Austria, Italy, Great Britain, France, and Switzerland. Principal Bulgarian exports to the West are foodstuffs, chemicals, and steel; leading imports from the West are machinery, metals, fertilizers, dyes, yarns, and vehicles.

Principal Events, 1959.—Communist First Secretary Todor Zhivkov proposed in January significant changes in the country's government and administration aimed at decentralizing authority. The changes involved abolition of some ministries and the creation of 30 new districts in place of the existing 13 districts and 117 counties. The new districts were to be entrusted with jurisdiction over local political, cultural, and economic affairs. The functions of the abolished ministries were to be discharged by special commissions, their primary task being to coordinate the work of the districts. The plans provided for the transfer of 140,000 employees of the central administration to "more productive" jobs. The National Assembly approved Zhivkov's proposals on March 14. Six ministries were abolished and some of their occupants were appointed as chairmen of special commissions in the reorganized cabinet.[1]

Bulgaria celebrated the 15th anniversaries of its "liberation" from Nazi occupation and, on September 9, of the "socialist revolution." Many eulogies were paid to the "gallant Red Army" for the nation's liberation, and Premier Anton Yugov, in a major address, predicted the triumph of socialism.

One of the most important developments in foreign relations during 1959 was the resumption on March 27 of diplomatic relations with the United States which had been severed in 1950. The renewal of relations was followed by the lifting of the United States tourist ban to Bulgaria on May 12 and the gradual restoration of trade intercourse between the two countries.

On May 26 the International Court of Justice announced that the compensation claims which Israel asked from Bulgaria for the downing of an Israeli airliner by Bulgarian planes on July 27, 1955, did not fall under its jurisdiction.

Bulgarian dignitaries made several important visits to friendly Communist states during the year. In May, Bulgaria took part in the meeting of the Council for Mutual Economic Assistance held in Tiranë, Albania, and a group headed by Zhivkov and Yugov visited Czechoslovakia and Hungary. In January the Bulgarian Communist Party sent representatives to the 21st congress of the Soviet Communist Party at Moscow.

In regard to Soviet Premier Khrushchev's visit to the United States in September, Sofia Radio told its listeners that "all peoples" anticipated good results from the Khrushchev-Eisenhower meetings. It expressed hope that "the ice of the cold war for which the Soviet Union was not responsible will melt," but cautioned its audience not to expect any changes in regard to the "status of the countries of eastern Europe."

Following Khrushchev's proposal for a denuclearized zone in the Balkans, Bulgaria, on July 22, sent a draft of a proposed 20-year nonaggression pact to Greece. On July 31, Greece replied that the United Nations charter which both countries had signed already contained a declaration renouncing war as a means of settling disputes. In a note on August 7, Bulgaria accused Greece of distorting the principle of the United Nations charter in order to justify its participation in NATO.

During the first part of the year Sofia launched a vigorous propaganda campaign against the Yugoslav regime. Relations with Yugoslavia remained strained, although the propaganda campaign subsided somewhat in the final months of the year. According to an announcement from Belgrade on August 28, a trade agreement was concluded between Bulgaria and Yugoslavia under which the latter promised *inter alia* to supply Bulgaria with 16,570 tons of wheat for seed.

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[1] Tano Tsolov, formerly minister of heavy industry, was appointed chairman of the Committee for Industry and Technical Progress; Kimon Georgiev, formerly minister of electrification and water economy, was transferred to the Committee for Construction and Architecture; and Stoyan Tonchev, formerly minister of communal economy, was made chairman of the Committee for Labor and Prices. The heads of other abolished ministries, Stanka Tsekova, Atanas Dimitrov, and Radenko Vidinski, were relieved outright, as was the minister of trade, Boris Taskov, who reportedly lacked confidence in the ultimate success of Bulgaria's "big leap forward."

BUREAU OF EMPLOYMENT SECURITY. The Bureau of Employment Security (BES) of the U.S. Department of Labor is the federal partner in the federal-state system of employment security agencies. The bureau's employment service and unemployment insurance functions are discharged through the United States Employment Service (USES) and the Unemployment Insurance Service (UIS).

Labor Market Conditions.—The operating statistics for the fiscal year 1959 reflected the improvement in economic conditions which began in late 1958. Industrial production (seasonally adjusted), which had dropped to a low of 126% of the 1947–49 average in April 1958, rose each month throughout fiscal 1959 to an all-time high of 155% in June 1959.

Civilian employment, after dropping to a recession low of 62.0 million in February 1958, increased to 65.4 million by August, but dropped to a seasonal low of 62.7 million in January and February 1959. Employment gained rapidly thereafter and by June 1959, aggregated a record 67.3 million, which was 2.3 million above the June 1958 level and 800,000 above the prerecession level of June 1957.

The peak of recession unemployment (5.4 million) was reached in June 1958. There was a rather rapid drop in joblessness in the four succeeding months, until the usual seasonal rise during the winter. The downward trend was resumed in March 1959 and continued through May, but the jobless total rose again in June—as it does each year with the entry of high school and college graduates and students into the labor market. The seasonally adjusted national rate of unemployment dropped from 7.3% of the civilian labor force in July 1958 to 5.1% in July 1959.

Insured unemployment under state unemployment insurance programs, which had risen to nearly 3.3 million in April 1958 during the midst of the recession, dropped each month thereafter through October. Seasonal factors brought the usual midwinter increase, but the downward trend began again in February 1959 and continued to the end of the fiscal year. In June 1959, insured unemployment was 1.3 million, or one half the level of a year earlier and only slightly above June 1957.

The general economic recovery was reflected in the reclassification of a number of major labor market areas to categories indicating relatively better balance between labor supply and demand. In the July 1958 classification listing, 89 major areas were characterized as having a substantial labor surplus; a year later only 46 areas were so characterized. In addition, the number of smaller

areas designated as areas of substantial labor surplus dropped from 182 on the July 1958 listing to 143 in July 1959.

United States Employment Service.—In addition to its basic function of working with state employment services to assist workers to find jobs and employers to find workers, the USES operates a Veterans Employment Service and a Farm Placement Service. Specialized assistance to state employment services for the occupational adjustment of workers and the solving of manpower problems for employers is also part of the USES responsibility.

In the fiscal year 1959, the increasing labor demand generated by the increasing pace of the economic recovery resulted in a drop of about 1 million in new job applications to a total of 9.4 million. Total job placements by public employment service offices, which had dropped to 13.9 million under the impact of the recession in the fiscal year 1958, registered a substantial gain during the business recovery to 15.3 million in fiscal 1959.

Employment counseling services were provided to more than 1 million individual job seekers in fiscal 1959, the largest total for any 12-month period. Total counseling interviews numbered 1.7 million.

Unemployment Insurance Service.—Unemployment insurance is designed to protect wage earners and their families from wage loss through involuntary unemployment by paying, if no suitable jobs are available, weekly benefits related to their former wages, for varying periods (depending on state laws).[1]

Each state and the District of Columbia has its own unemployment insurance law and operates its own program within the framework of the federal laws. The federal government grants funds to the states to cover the cost of administering the programs. The Unemployment Insurance Service carries the federal responsibility for reviewing state laws and their administration to determine whether the states qualify for these grants and whether employer contributions paid or excused under such laws may be credited against the federal unemployment tax.

In fiscal year 1959, the states received about $307 million in federal grants to cover the cost of administration of the state unemployment insurance and employment services and of veterans and federal employees programs. For benefit payment purposes, states collected about $1,675 million in contributions (which were deposited to their accounts in the federal Treasury) and received interest on their current accounts totaling some $179 million. On June 30, 1959, the balance in the Federal Unemployment Trust Fund amounted to about $6.8 billion. Benefits paid out during fiscal 1959, including those under the temporary programs, totaled more than $3.9 billion, which was about $600 million more than in fiscal 1958 and higher than in any previous fiscal year. Of this total, approximately 18% was paid under the temporary extended programs.

Many state legislatures strengthened their unemployment insurance systems in 1958 and 1959. Twenty-seven states, whose programs include over 60% of all covered workers, now provide a maximum basic weekly benefit of $35 or more. Fifteen of these, with over 30% of all covered workers, have a basic benefit of $40 or more. In 1958 and 1959, several states increased the maximum augmented weekly benefit amount for claimants with dependents. Eleven states now have higher maximum weekly benefits for such claimants, varying from $45 to $65 and, in Alaska, to $70 (limited to claimants in Alaska with dependents in the state).

Fifteen states liberalized their duration provisions during 1958 and 1959. Eight states, with 25% of the covered workers, now have a uniform duration of 26 weeks or more for all eligible claimants, the objective set by President Eisenhower. Thirty-three others, with about 60% of the covered workers, have a variable duration with a maximum of 26 weeks or more. At the present time, six states have laws providing that whenever unemployment rises above specified levels, the duration of benefits will automatically be increased for the period of high unemployment. In general, the rate of insured unemployment is used as the measure of the need for such extension.

In response to the increased number of unemployed workers who exhausted all their benefits during the recession of 1957–58, Congress passed the Temporary Unemployment Compensation Act of 1958 to provide benefits for longer periods of time. The Bureau of Employment Security was given responsibility for directing the temporary program under this act in cooperation with states agreeing to participate. The program was in effect throughout fiscal 1959. Sixteen states and the District of Columbia signed agreements with the secretary of labor to participate fully in the program. In addition, five states established their own temporary programs to extend benefits independent of the federal program. About 70% of all workers covered under state and federal unemployment insurance laws (excluding persons covered by the Railroad Unemployment Insurance Act) were covered by these temporary programs.

The Temporary Unemployment Compensation Act fulfilled a definite need in the overall federal-state unemployment insurance system. Under the federal program, from its inception in June 1958 through June 30, 1959, almost 1.6 million persons who had exhausted their regular benefits were paid more than $474 million in temporary benefits. In the five states operating their own temporary programs, an additional amount of more than $126 million in benefits were paid to approximately 432,000 persons who had exhausted their regular benefit rights. It is estimated that, on the average, almost 10 additional weeks of benefits were paid to each beneficiary under these temporary programs.

Special Employment Services.—During the 1959 fiscal year, the bureau and the state employment security agencies stepped up their continuing efforts to improve the effectiveness of employment service operations. Actions taken by the bureau included assistance to state agencies in improved organization and management techniques; development of training materials and training programs to advance the competence of field supervisors, local office managers, and employment counselors; and development and validation of additional aptitude and proficiency testing material, including the wider use of the USES-developed General Aptitude Test Battery (GATB).

Older workers continued to be one of the major groups to receive added emphasis in educational and promotional activities designed to encourage greater acceptance of the experience and qualifications of middle-aged and older workers and to

[1] The programs are financed through a combination of federal and state tax measures. The Federal Unemployment Tax Act levies a tax on employers in commerce and industry throughout the country and allows them credit (up to 90% of this tax) for the contributions they pay under state unemployment insurance tax laws. The act is limited to employers who within a year had four or more workers in each of 20 weeks. Almost half of the state laws cover firms with fewer than four workers. Railroad employees are covered under a separate system administered by the federal Railroad Retirement Board.

counteract prejudicial employer attitudes with respect to the hiring of older workers.

Evidence that the older worker program of the USES is having results is indicated by the 1.1 million job placements of workers 45 years and older made by public employment offices in the fiscal year 1959. During the year, 115,000 older workers were provided employment counseling services.

Another major activity of local public employment offices involves special programs to aid young people in starting their working careers. These programs include counseling, testing, and placement service for high school graduates and dropouts, and special job development campaigns for students having summer jobs and part-time work. One measurement of the scope of this activity is the fact that out of the 1958 graduating class, 244,346 seniors in 8,301 high schools received employment counseling and, in most cases, aptitude testing from their local employment services.

In the highly specialized field of placing physically handicapped workers in jobs utilizing their abilities, the local employment service offices continued to maintain a high standard of accomplishment. Through the USES-developed techniques of selective placement, employment counseling, and working with other interested groups, both governmental and private, the local employment offices provided job-counseling services to 159,157 handicapped workers in the fiscal year 1959 and placed 279,638 in jobs. The promotional and educational activities of the President's Committee on Employment of the Physically Handicapped, and of the subsidiary governors' and mayors' committees, as well as the rehabilitation work of the Office of Vocational Rehabilitation of the Department of Health, Education, and Welfare, have contributed significantly to the continuing accomplishments of local employment service offices in the job placement of physically handicapped workers.

Job Counseling and Placement Services to Veterans.—This statutory responsibility is carried out by the local offices of the state employment services under the functional supervision of the Veterans Employment Service through its state veterans employment representatives. In fiscal 1959, 1,780,000 veteran applicants registered for work in local employment offices, a drop of some 27% from the preceding fiscal year. During this same period local employment offices made 1,291,000 job placements of veteran applicants, representing an increase of 5% over the previous year. Local employment offices provided counseling services for 145,000 veterans, of whom 46,800 were disabled. During this period 131,500 disabled veterans registered with local employment offices, through which 111,900 disabled veteran placements were made. (See also VETERANS ADMINISTRATION.)

Community Employment Planning.—The USES continued in fiscal 1959 to encourage the state and local offices of the employment security system to participate in economic development activities and bring their special skills and resources to bear upon the tasks of planning for employment development and creating new job opportunities. In order to promote participation, the bureau prepared a pamphlet entitled *Community Organization for Employment Development,* which describes different types of development committees and outlines steps in their formation. State employment service local offices were cooperating with 1,850 community employment development organizations. Exhibits for display at fairs and industrial development meetings were provided to the states to publicize the USES and its role in employment planning.

Farm Placement Service.—According to biweekly reports throughout the fiscal 1959 farm season from 267 of the nation's important agricultural areas, there were over 1,355,000 seasonal hired workers employed at the peak of the season (mid-October 1958). Placements of domestic workers on farm jobs in fiscal 1959 totaled 9,615,163. In addition there were 447,760 Mexican nationals contracted, 6,900 Canadians employed, and 10,030 British West Indians admitted temporarily to the United States for farm employment.

Advance scheduling of migrant farm labor crews, first started in 1949 and called "The Annual Worker Plan," was participated in by nearly all states needing migrant labor, with 6,833 crews or groups, comprising an estimated 140,000 workers, involved in the calendar year 1958. State employment services made maximum use of local workers, including school youths, through day-haul transportation programs before requesting out-of-area workers.

Unemployment Benefits for Federal Military and Civilian Employees.—Included in the framework of the federal-state unemployment insurance system are three groups whose benefits are paid from federal funds—veterans, former federal civilian employees, and ex-servicemen. The federal program covering veterans with service prior to Jan. 31, 1955, will expire after Jan. 1, 1960. This program entitles a veteran to $26 for a week of total unemployment up to a total of $676. In August 1958, Congress enacted a permanent program (the Ex-Servicemen's Unemployment Compensation Act of 1958) to cover members of the armed forces. Benefits are payable under the conditions of the law of the state where the ex-serviceman files his first claim.

During fiscal 1959, more than 305,000 individual veterans and ex-servicemen filed claims, and about $97 million in benefits were paid under the two programs. From the inception of the veteran's program in October 1952 through June 30, 1959, more than 1.6 million individual veterans filed claims and nearly $452 million in benefits were paid.

In fiscal 1959, approximately 156,000 workers whose most recent employment had been with the federal government filed claims. More than $55 million in benefits were paid to federal civilian employees for an estimated 1.8 million weeks of unemployment.

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BUREAU OF MINES. See MINING.

BUREAU OF STANDARDS. See NATIONAL BUREAU OF STANDARDS.

BURMA, Union of. A former British dependency, this independent republic of southeast Asia, bounded by India on the northwest and Communist China on the northeast, came formally into existence on Jan. 4, 1948. The total mainland area (263,589 square miles) consists of Burma proper (162,290 square miles, including the Chin Hills); Shan State (61,090); Kachin State (33,903); Kayah State (formerly Karenni States, 4,506); and Karen State (1,800). Burma's sovereignty also extends over the Coco Islands (used as a prison camp starting in 1959) in the Indian Ocean some 270 miles southwest of Rangoon.

Population.—On the basis of a partial census, the population was estimated at 18,859,000 in 1953, and at roughly 20 million in 1957. The inhabitants of Burma belong to many races and speak many languages. Besides indigenous Tibeto-Burmans, the population includes large numbers of Chinese, Indo-Burmans, and Indians. Buddhism is the principal religion. The capital and chief port is Rangoon (pop., 737,079 in 1955); other principal cities (and 1955 populations) are Mandalay (185,867), Moulmein (102,777), and Bassein (77,905).

Government.—Parliament consists of the president (U Win Maung, who took office on March 13, 1957); a 125-member Chamber of Nationalities (partly elected by direct suffrage and partly nominated by the various states); and an elected 250-member Chamber of Deputies. Each state has its own legislature. General elections were planned for early 1960, following the renomination as prime minister of Gen. Ne Win, the army chief of staff, who took over the government headed by U Nu on Oct. 29, 1958 (see below, *Principal Events, 1959*).

Finance.—The unit of currency is the kyat (K4.7667 = U.S.$1, average value in 1958). Reduced by the imposing of price controls and the limitation of profit margins after the change of government in 1958, revenue receipts were estimated at K955,300,000 in 1958–59; expenditure was cut back to K935,700,000, but a deficit was anticipated on capital account of K47,600,000. In 1959–60 revenue was estimated at K964,500,000, with provision for an overall deficit of K70 million. A substantial part (K270 million) of total capital outlay was to be funded by loans granted by the International Bank for the development of Burma Railways and the port of Rangoon, and by financial aid from various foreign governments (see below, *Principal Events, 1959*).

Education.—Education is free at primary level, but in an attempt to tighten discipline the government decided in 1959 to levy fees from middle and high schools. In 1957 there were 10,921 primary schools (1,649,201 pupils); 453 middle schools (238,456 pupils); and 235 high schools (89,126 pupils). Besides the University of Rangoon, the government maintains in that city the State School of Fine Arts, Music, and Drama, and a teacher-training college. There are also five intermediate colleges and a number of technical and vocational institutes. The University College, Mandalay, was raised in June 1958 to the status of a university.

Transportation and Communications.—Diesel engines were introduced along the main line of the government-owned railways in 1958. Passengers carried in 1957–58 increased to 26,877,000 from the previous year's total (25,500,000, est.); 2,750,000 tons of freight were loaded compared with 2,200,000 tons in 1956–57. The Irrawaddy Delta has nearly 2,000 miles of navigable water. Passengers using services of the Inland Water Transport Board numbered 5,307,000 in 1957–58—an increase of 707,000 over the previous year. The Union of Burma Airways, using 34 civil airports and landing fields, carried 83,000 passengers in 1957–58 on 30 internal and 13 external flights weekly; nine international airlines use the Mingaladon, Rangoon, airport. There were 8,825 miles of main and district roads in 1955, of which 4,299 miles were surfaced. With United States financial aid, and using studies carried out by the U.S. Army Corps of Engineers, a major highway has been planned to link Rangoon with central Burma.

Agriculture.—Paddy acreage was estimated in 1958–59 at 10,194,000, and rice production (a principal source for Burma of foreign exchange) at 6,267,000 tons—an advance of more than a million tons on the 1957–58 output. Two million tons of rice were available for trading, but marketing difficulties were expected to hold down exports to about 1 million tons, including 350,000 tons exported to India under the Indo-Burmese rice agreement of 1956. Some 1,200,000 acres of rice lands destroyed during World War II in the Delta area are being successfully reclaimed for the use of nearly 500,000 villagers. In 1958–59 the acreage planted to sesame (1,362,000) and production (35,000 tons) both were lower than in the previous year, while jute output advanced to 6,000 tons (from 28,790 matured acres). Other chief crops in 1958–59 were peanuts (142,000 tons from 977,000 acres); cotton (11,000 tons from 332,000 acres); sugarcane (1,050,000 tons from 75,000 acres in 1957–58); millet and wheat (81,000 tons from 580,000 acres in 1956–57).

Lumber.—Hardwood production rose in 1958, but teak output (170,222 tons, compared with 216,797 tons in 1957) has not yet caught up with the prewar average. In 1958, the total of other timber production (including green teak, used in the making of veneers) was 519,318 tons—down from 1957.

Minerals.—Production of petroleum (principally at the Chauk and Syriam refineries) in the first half of 1957–58 was 53,018,000 gallons (crude oil), compared with 37,118,000 gallons in the same period of the previous year; of gasoline, 15,123,000 gallons; and of kerosene, 10,015,000. The value of total mineral production, including tungsten, lead, and zinc was 23% lower in 1958 than in 1957.

Manufacturing.—In 1958, milled sugar (39,851 tons, compared with 26,560 tons in 1957) led industrial production. Gains were also recorded in the first half of 1957–58 in cotton yarn (1,933,000 pounds); cigarettes (477,496,000 units); bricks and tiles; and jute and gunny sacks (12 million, 1958 full year). Electricity consumption amounted to 96,580,000 kw.-hr. in the Rangoon area in 1958.

External Trade.—In 1958 both imports and exports (K1,108 million and K882 million, respectively) were below the level of the previous year. Exports of rice and rice products (1,472,000 tons, valued at K652 million) fell 33.5% by volume and 27% by value. Other exports (value in millions) included raw cotton (K17); pulses (K41); raw rubber (K25, a drop of 34.2%); oil cake (K26); timber (K64); and metals and ores (K34). Imports comprised consumer goods (K625,300,000) and capital goods (K483,100,000). The former included (values in millions) fabrics (K69); pharmaceutical products (K32); coal (K28); metal products (K145), and chemical elements and compounds (K10). For the first seven months of fiscal year 1958–59 (October through April) exports totaled K506 million; imports, K540 million (consumer goods, K323 million), the trade deficit being K34 million, compared with a deficit of K247 million in the same period of the previous year.

UPI

During visit to Rangoon on January 8, Yugoslav President Tito (left) converses with Burmese Prime Minister Ne Win.

Principal Events, 1959.—After holding office from Oct. 29, 1958, Gen. Ne Win, Army chief of staff, resigned as prime minister on Feb. 13, 1959, but within two weeks he had been renominated by the Chamber of Deputies and a new cabinet sworn in. Meanwhile the severity of his administration, including measures directed equally against crime, subversion, and corrupt practices, had produced in Burma a political ferment not experienced since independence. Several members of Parliament were reportedly among the more than 200 offenders against official regulations arrested and removed to a newly created prison camp in the Coco Islands, including 106 members (up to March 11) of the Communist-dominated National United Front. In February passive resistance to the government's policy of "oppression" was proposed by U Nu, Gen. Ne Win's predecessor, following the arrest and detention of 62 members of the Anti-Fascist People's Freedom League, including 58 of U Nu's personal following.

Deferred general elections, to be held early in February 1960, were provided for in the current budget. In going before the electorate, the semimilitary regime could point to its successful rounding up of armed Burman Communists (600 surrenders up to March 10, 1959); reprisals taken on the remnants of rebel forces (estimated at 3,600) in Karen State and upon Chinese Nationalist guerrillas on the northeast frontier; the improvement of railway services, including a new overnight express run between Rangoon and Mandalay in the face of attempted guerrilla raids; and large-scale rehabilitation projects in the city of Rangoon. Involved in the latter was the removal, under army direction aided by citizen "sweat brigades," of 170,000 squatters to newly made nearby towns, and the extermination of some 50,000 semiwild dogs. Credited to the army's enforcement of security was the improvement in crime statistics. In the first quarter of 1959 there were 330 homicides, 499 robberies, and 98 kidnapings, compared with 521 homicides, 794 robberies, and 135 kidnapings in the same period of 1958.

Reversing a policy instituted in 1953 against foreign aid in outright gifts, the government agreed in July to receive United States grants of up to $37 million over a four-year period. In 1959, Burma was also to receive $5,733,000 in aid from the International Bank for Reconstruction and Development, $4,879,000 from the Soviet Union in the form of credits, and $483,000 in economic assistance under the Colombo Plan. It was decided to use $2.5 million under the existing $25 million

Burma–United States loan agreement for the foreign exchange cost of 12 new rice mills, to turn out approximately 320,000 tons annually. Dollar loan funds were also to be used for the modernization of 30 to 40 existing rice mills.

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BUS TRANSPORTATION. See MOTOR TRANSPORTATION; URBAN TRANSIT.

BUSINESS DATA, U.S. Number of Business Firms.—More than 4,600,000 separate concerns made up the American business structure in 1959. (The number of farms is comparably large, but farms are not included in the official statistics of the business population summarized in Table 1.)

Table 1—NUMBER OF FIRMS IN OPERATION AND NUMBER OF NEW AND DISCONTINUED BUSINESSES, 1957–59
(Thousands)

	1957	1958	1959[1]
New buinesses formed	405	411[1]	...
Businesses discontinued	341	356[1]	...
Firms in operation, January 1:			
All industries	4,471	4,534	4,589
Contract construction	465	468	476
Manufacturing	332	333	331
Wholesale trade	304	311	317
Retail trade	1,926	1,948	1,956
Service industries	810	830	852
All other	634	644	657

[1] Based on incomplete data. (Source: U.S. Department of Commerce, Office of Business Economics. Estimates based primarily on data from the U.S. Department of Health, Education, and Welfare, Bureau of Old-Age and Survivors Insurance.)

Small firms are greatly in the majority, as evidenced by the fact that three out of four concerns have no more than three paid employees. In the trade, services, and finance sectors the proportion is even higher. The larger firms, however, provide a much more substantial share of all paid employment.

Of every five businesses at least two are likely to be retail stores and one is generally a professional practice or other service enterprise. Contract construction companies account for one in every 9 or 10 concerns, and manufacturing and wholesale distribution each account for approximately one out of 14 firms.

The number of business concerns increased by between 55,000 and 65,000 during 1958 (as it had in 1957), even though a business slump had developed toward the end of 1957 and continued for almost a year. The growth in the number of firms spurted as the nation's economy moved out of the recession, so that by mid-1959 the number of separate concerns had increased 75,000, or almost 2%, from the total of a year earlier.

In 1958 the formation of new businesses was stepped up slightly but did not reach the pace set two years earlier, when 431,000 new concerns were launched. On the other hand, the number of businesses discontinued for one reason or another also rose in 1958. Bankruptcies contributed to the increase, but continued to represent only a minor fraction of the total number. Other causes of discontinuance include the owner's retirement or death and changes in the line of business conducted.

Fixed Capital Investment.—The capital required to carry on a business, like the number of employees, naturally varies a great deal from one line of activity to another (see Table 2). The average corporation in trade or services shows total assets (including accounts receivable as well as physical properties) of around $250,000. If unincorporated ventures were included, the average would be very much smaller. Communications companies average $6 million in total assets, and public utilities, $15 million to $20 million. There are also, of course, wide differences within industries.

Investment in New Plant and Equipment.—The assets indicated in Table 2 have been accumulated year by year, as new investment has exceeded the values lost through sale or scrappage. Purchases of business plant and equipment in 1959 were estimated at somewhat more than $33 billion. Table 3 shows which industries did most of the investing.

Table 3—EXPENDITURES ON NEW PLANT AND EQUIPMENT BY U.S. BUSINESS, 1957–59[1]
(Millions of dollars)

	1957	1958	1959[2]
Manufacturing	15,959	11,433	12,444
Durable	8,022	5,469	6,020
Nondurable	7,937	5,964	6,424
Mining	1,243	941	996
Railroad	1,396	754	1,032
Transportation other than railroad	1,771	1,500	2,024
Public utilities	6,195	6,088	5,840
Commercial and other[3]	10,398	9,810	10,919
Total	36,962	30,526	33,255

[1] Data exclude expenditures of agricultural business and outlays charged to current account. [2] Estimates based on anticipated capital expenditures reported by business in late July and August 1959. [3] Includes communications, trade, service, construction, and finance. (Source: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.)

The industry pattern is partly traceable to differences in numbers of firms and in their average capital needs. There are also differences in the pace of capital expansion, and it is interesting to note the effect of technological advance. In nonrail transportation, for example, the 1959 expansion programs exceeded even those of 1957, mainly because of the shift to jet aircraft.

Manufacturing, which accounts for approxi-

Table 2—GROSS ASSETS OF CORPORATIONS, 1956 AND 1957[1,2]

	Number of companies		Total gross assets: Average per company reporting ($ million)		Total gross assets: Total ($ billion)		Gross plant, equipment, and inventories: Gross depreciable assets ($ billion)		Gross plant, equipment, and inventories: Inventories ($ billion)	
	1956	1957	1956	1957	1956	1957	1956	1957	1956	1957
All industries, total	827,916	879,106	1.3	1.3	1,066.8	1,126.1	327.5	356.9	78.7	80.6
Manufacturing	128,457	133,558	2.2	2.2	277.9	292.7	134.2	146.8	49.8	50.4
Durable-goods industries	66,666	70,832	2.0	2.0	134.3	142.8	60.2	66.9	28.7	29.0
Nondurable-goods industries	61,791	62,726	2.3	2.4	143.6	149.9	74.0	79.9	21.0	21.3
Finance	244,755	255,976	2.1	2.1	511.6	536.4	28.8	31.8	0.1	0.1
Transportation	24,963	26,099	2.3	2.2	57.3	58.7	43.9	45.4	1.0	1.0
Public utilities	3,417	3,534	16.9	17.9	57.8	63.2	51.5	56.3	1.2	1.4
Communications	4,515	4,859	6.0	6.1	26.9	29.6	21.8	24.6	0.8	0.7
Trade	270,951	289,377	0.3	0.3	82.3	86.5	20.2	21.5	23.1	24.0
Service	74,372	82,429	0.2	0.2	17.0	19.5	9.1	10.6	0.7	0.8
Construction	45,223	50,425	0.3	0.3	12.0	13.9	3.3	3.9	0.9	1.0
Mining and miscellaneous	31,263	32,849	0.8	0.8	24.2	25.6	14.8	16.0	1.1	1.3

[1] Coverage of these data is not quite complete, but comprises firms accounting for 99% of all corporate sales and operating receipts. [2] Asset values are shown gross of accumulated depreciation, depletion, and amortization. (Source: Based on reports to the U.S. Internal Revenue Service in connection with federal income tax returns.)

mately two fifths of the gross depreciable assets shown in Table 2, also provides a similar fraction of total plant-and-equipment spending. Its fraction of the spending total declined somewhat in 1958 and held about even in 1959. Railroad purchases, down more than usual in 1958, spurted in 1959.

Net Income.—The 1958–59 upswing in general business activity stood out especially clearly in the record of business net incomes. The cash return to equity owners from the nation's corporations showed comparatively little change during the cyclical swing, the companies being in general willing and able to maintain the established dividend rates. Total profits fluctuated widely, however. From an early 1957 high which was equivalent to an annual rate of $44 billion (or one fifth of the total flow of national income from corporate business), before-tax earnings swung down to an early 1958 low of only $31.5 billion, at an annual rate, and then rebounded to an all-time peak rate of $51 billion in the spring of 1959 (Table 5). This high spring rate was due in part to the temporary surge of demand which reflected the stockpiling of steel and steel products in business inventories, in anticipation of the protracted steel strike (see IRON AND STEEL) which began soon after mid-1959. The effects of the strike itself were felt in a sharp decline of profits from the second to the third quarter and, during the final quarter, in shortages of materials caused by the stoppage. Table 4 shows how the business expansion prior to the strike raised corporate profits and, to a somewhat lesser extent, the net earnings of business and professional men from their own enterprises.

Table 4—BUSINESS NET INCOMES, 1958–59
(Billions of dollars)

	Seasonally adjusted at annual rates						
		1958 (Quarter)				1959 (Quarter)	
	1958	I	II	III	IV	I	II
Corporate profits	37.1	32.0	33.6	38.3	44.6	46.5	52.6
Taxes	18.2	15.7	16.5	18.8	21.9	22.6	25.6
After-tax profits	18.9	16.3	17.1	19.5	22.7	23.8	27.0
Dividends	12.4	12.7	12.6	12.6	12.0	12.8	13.0
Income of nonfarm non-corporate enterprises	32.4	31.6	32.0	32.6	33.2	33.7	34.5

(Source: U.S. Department of Commerce, Office of Business Economics.)

Table 5 indicates the industrial pattern of the rise in corporate earnings. From the first quarter of 1959 to the second, the bulk of the advance is seen to have been in profits from steel manufactures and other durable goods. In the third quarter (figures not shown), durables bore the brunt of the earnings decline. Over the longer and more "normal" period of economic expansion from the 1958 low to the opening quarter of 1959, the profits expansion was more evenly distributed among major industries. Here too, however, the cyclically sensitive manufacturing division accounted for a larger proportion of the rise than of the initial total.

Table 5—CORPORATE PROFITS, BEFORE TAX, AND INVENTORY VALUATION ADJUSTMENT, BY BROAD INDUSTRY GROUPS, 1957–59
(Billions of dollars)

	Seasonally adjusted at annual rates						
		1958 (Quarter)				1959 (Quarter)	
	1958	I	II	III	IV	I	II
All industries, total	36.7	31.5	33.8	38.0	43.5	45.5	51.0
Manufacturing	18.7	16.2	16.7	19.1	22.9	24.2	28.6
Durable goods	9.5	7.9	8.2	9.3	12.6	13.0	17.0
Nondurable goods	9.2	8.3	8.5	9.8	10.3	11.2	11.6
Transportation, communications, and utilities	5.7	5.1	5.4	5.9	6.4	6.7	6.8
All other industries	12.3	10.3	11.7	13.0	14.2	14.7	15.6

(Source: U.S. Department of Commerce, Office of Business Economics.)

The profit, sales, and investment spending totals of such typically large-scale industries as heavy manufacturing and the public utilities are much influenced by the experience of very large companies, such as General Motors and Standard Oil of New Jersey. Table 6 is an unofficial compilation of the sales and profits of such firms—those industrial and trading concerns with 1958 sales of $1 billion or more. Each year a few more companies are added to the list, and an important cause of shifts in rankings is the altering pattern of public demand for the various kinds of products represented.

Table 6—INDUSTRIAL AND TRADING CORPORATIONS WITH SALES OF OVER $1 BILLION, 1958

	Sales ($ billion)	After-tax profits ($ million)
General Motors	$9.5	$634
Standard Oil (N.J.)	7.5	562
Great Atlantic & Pacific Tea	5.1	54
Ford Motor	4.1	96
General Electric	4.1	243
Sears, Roebuck	3.7	166
U.S. Steel	3.5	302
Socony Mobil Oil	2.9	157
Gulf Oil	2.8	330
Swift	2.6	9
Texaco	2.3	310
Safeway Stores	2.2	33
Western Electric	2.2	86
Chrysler	2.2	—34
Bethlehem Steel	2.0	138
Westinghouse Electric	1.9	75
Standard Oil (Indiana)	1.9	118
Armour	1.9	1
Du Pont	1.8	341
Kroger Grocery	1.8	22
Boeing	1.7	29
Shell Oil	1.7	117
Standard Oil (California)	1.6	258
General Dynamics	1.5	37
National Dairy Products	1.5	46
J. C. Penney	1.4	47
Goodyear Tire & Rubber	1.4	66
Union Carbide	1.3	125
Procter & Gamble	1.3	73
Douglas Aircraft	1.2	17
United Aircraft	1.2	42
Sinclair Oil	1.2	49
International Business Machines	1.2	126
Radio Corp. of America	1.2	31
International Harvester	1.1	43
Montgomery Ward	1.1	28
Continental Can	1.1	41
Phillips Petroleum	1.1	84
Firestone Tire & Rubber	1.1	54
American Can	1.0	46
Cities Service	1.0	45
General Foods	1.0	48

(Source: compilations by the author.)

Comparing 1958 with the more prosperous year 1957, one would expect to find the motors and steel companies giving place to the producers and distributors of more staple products. This was indeed the case. Among the corporations moving up in the ranking by sales were food and petroleum producers and grocery and general merchandise chains. Among those moving down were several of the largest auto manufacturers and steelmakers. Figures for 1959 would, of course, reflect still further shifts.

(See also INCOME; INDUSTRIAL PRODUCTION; RETAIL STORE SALES; WHOLESALE SELLING; and articles on individual industries.)

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BUTTER. See Index entry.

CABINET, U.S. See UNITED STATES—*Government.*

CADMIUM. Cadmium is obtained as a byproduct of the treatment of other metals, chiefly lead and zinc. According to the U.S. Bureau of Mines, estimated world production for 1958 was 19,850,000 pounds, a decline from the 21,070,000 pounds produced in 1957. The United States supplied 49% of the total in 1958, compared with 50% in 1957. Apparent consumption of primary and secondary cadmium metal declined from 10,999,000 pounds in 1957 to 8,177,000 in 1958. Imports of cadmium metal dropped to 1,002,000 pounds in 1958 from 1,586,000 pounds in 1957. Exports were 580,000 pounds in 1958 (693,000 in 1957). In the first three quarters of 1959, domestic output of primary and secondary cadmium metal was 6,736,156 pounds; general imports were 1,067,620 pounds; and exports of metal and flue dust totaled 694,529 pounds. (See MINERAL PRODUCTION for output by major countries.)

CALIFORNIA. Western coastal state, United States; admitted to the Union, Sept. 9, 1850. The "Golden State" ranks third in area and second in population among the 50 states.

Area and Population.—Area: 158,693 square miles (land, 156,740; inland water, 1,953), divided into 58 counties. Population: (1950) 10,586,223; (est., July 1, 1958) 14,284,000. Urban places with 1950 populations above 20,000 (unless another date is indicated):

Alameda	70,642[3]	Monterey Park	33,045[8]
Alhambra	53,558[2]	Mountain View	26,023[7]
Anaheim	60,327[5]	National City	31,785[7]
Arcadia	37,271[7]	Newport Beach	21,201[7]
Bakersfield	34,784	Oakland	384,575
Baldwin Park	32,334[7]	Oceanside	20,489[5]
Berkeley	113,805	Ontario	41,656[7]
Beverly Hills	30,443[5]	Orange	21,334[7]
Buena Park	31,805[8]	Oxnard	28,879[5]
Burbank	90,966[7]	Palo Alto	48,003[8]
Burlingame	21,985[7]	Paramount	25,128[7]
Chula Vista	35,557[8]	Pasadena	104,577
Compton	63,670[4]	Pomona	58,875[7]
Concord	28,537[7]	Redlands	25,719[8]
Costa Mesa	22,631[7]	Redondo Beach	41,723[5]
Culver City	31,367[5]	Redwood City	38,960[4]
Daly City	30,506[5]	Richmond	99,545
East Bakersfield	38,177	Riverside	75,673[7]
El Cajon	27,776[7]	Sacramento (*capital*)	157,182[4]
El Cerrito	23,633[7]	Salinas	21,133[4]
Eureka	27,951[5]	San Bernardino	83,145[6]
Fremont	26,788[7]	San Bruno	20,037[5]
Fresno	122,944[7]	San Buenaventura	25,880[7]
Fullerton	49,272[7]	San Diego	494,201[7]
Garden Grove	58,380[7]	San Francisco	822,200[10]
Gardena	30,576[7]	San Gabriel	21,755[3]
Glendale	114,460[7]	San Jose	127,564[5]
Hawthorne	31,504[7]	San Leandro	32,729[3]
Hayward	54,789[7]	San Mateo	65,999[7]
Huntington Park	29,450	Santa Ana	69,345[5]
Inglewood	61,001[7]	Santa Barbara	55,675[7]
La Mesa	23,521[7]	Santa Clara	43,281[8]
La Puente	20,066[7]	Santa Cruz	22,794[4]
Lodi	20,100[8]	Santa Monica	75,132[2]
Long Beach	250,767	South Gate	51,293[1]
Los Angeles	2,435,300[9]	South San Francisco	35,690[5]
Lynwood	28,124[2]	Stockton	75,157[3]
Manhattan Beach	32,535[7]	Sunnyvale	35,094[7]
Menlo Park	25,669[7]	Torrance	93,372[7]
Merced	20,394[7]	Vallejo	34,913[1]
Monrovia	25,286[7]	West Covina	40,915[7]
Montebello	30,019[7]	Whittier	32,217[5]
Monterey	21,840[5]		

[1] Special census, 1952. [2] Special census, 1953. [3] Special census, 1954. [4] Special census, 1955. [5] Special census, 1956. [6] Unofficial estimate, Jan. 1, 1957. [7] Special census, 1957. [8] Special census, 1958. [9] Unofficial estimate, July 26, 1959. [10] Estimate Jan. 1, 1960.

Executive.—Chief state officers in 1959:
Governor: Edmund G. Brown (Democrat)
Lieutenant Governor: Glenn M. Anderson
Secretary of State: Frank M. Jordan
Treasurer: Bert A. Betts
Attorney General: Stanley Mosk
Auditor General: William H. Merrifield
Supt. of Public Instruction: Roy E. Simpson

Constitution and Judiciary.—The present constitution went into effect in 1879. The Supreme Court comprises 7 justices; chief justice in 1959 was Phil S. Gibson.

Legislature.—The California Legislature comprises a 40-member Senate (in 1959, 27 Democrats and 13 Republicans) and an 80-member Assembly (47 Democrats, 32 Republicans, 1 vacancy), which meets in regular session in odd-numbered years commencing on the first Monday after the first day of January, and in budget session in even-numbered years on the first Monday in February. (See below, *Principal Events, 1959.*)

Finance.—In the 1957–58 fiscal year, state revenue of $1,750,909,000 included $1,670,476,000 from state tax sources and $80,433,000 from all other sources. An additional $456,297,348 (not considered as revenue) was received from the federal government. Tax revenue comprised $605,237,617 from a 3% general sales tax, $149,269,337 from individual income taxes, $173,598,817 from corporate income taxes, $302,671,082 from motor fuel taxes, $154,816,610 from licensing, and $365,315,537 from all other state tax sources. Expenditures of $1,914,988,000 consisted of $791,655,378 for education, $304,625,980 for health, welfare, and safety, $439,432,476 for highways, and $379,274,166 for all other purposes. State long-term indebtedness on Aug. 1, 1959, amounted to $1,665,324,000.

Banking.—As of June 10, 1959, the state's 42 national banks had $18,267,456,000 in assets, $8,362,746,000 in demand deposits, and $8,051,246,000 in time deposits. The 92 state banks and their 372 branches (June 30, 1959) had assets of $7,289,871,000, demand deposits of $2,923,790,000, and time deposits of $3,392,346,000.

Education.—School attendance is compulsory between the ages of 8 and 16, inclusive. Operating expenditures for public elementary and secondary schools in the 1957–58 fiscal year totaled $1,100,347,465 ($372.91 per pupil), and income comprised $666,183,347 from local school districts, $524,882,856 from the state, and $23,447,154 from the federal government. Outlays for construction and improvements amounted to $433,426,445. Teachers' salaries (1958–59) averaged $6,020 (high school, $6,403; elementary, $5,710). In the 1958–59 fiscal year the state spent $139,185,530 to operate institutions of higher learning and $137,153,042 for construction and improvements.

CALIFORNIA SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k-6; k-8)	4,507	65,915	2,061,075[1]
Public junior high (7–9)	275	...[2]	325,363[3]
Public junior-senior high (7–12)	41	...[2]	...
Public senior high (9–12; 10–12)	513	38,093	607,249[4]
Private and parochial elementary and secondary	...	...	318,913
Private junior colleges	...	...	1,412
Public junior colleges	62	4,637	119,619[5]
Teachers colleges	12	4,185[6]	81,030
Colleges and universities	64	...	112,566

[1] Excluding 33,845 special pupils. [2] Included in senior high. [3] Includes 7th to 9th grade pupils in 7-to-12 category. [4] Excluding 303,158 special pupils. [5] Excluding 148,263 special pupils. [6] Including 903 part-time instructors.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal, state, and county funds (excluding institutional costs) totaled $420,753,948, including $247,814,083 for the aged, $131,205,026 for dependent children, and $16,111,595 for the needy blind. A monthly average of 553,490 persons received assistance.

State expenditures for mental health activities totaling $123,124,551 included 4 hospitals for the mentally deficient and epileptic (June 30, 1959, 11,539 patients) and 12 hospitals for the mentally ill (47,553). Adult penal and correctional programs (1957–58) cost $29,278,885, and covered 8 prisons (June 30, 1959, 17,809 inmates) and 22 prison farms and camps (1,379). Youth authority programs cost $12,383,679 and covered (June 30, 1959) 2 reception centers and clinics (596 inmates), 6 training schools (2,102), and 3 forestry camps (252). The Department of Corrections also maintained 2 youth reception guidance centers (153) and 4 other facilities (1,173).

Labor Force.—The state's labor force in July 1959 totaled 6,128,000, including 484,000 agricultural workers. Nonagricultural employment was up to 5,399,000 from 5,168,000 in the previous

July and also above the 5,272,000 average for the 12 intervening months. Of nonfarm employees, 25.1% were in manufacturing, 22.9% in trade, and 16.9% in service industries. Unemployment in July 1959 was down to 245,000 from 357,000 in the previous July. The state paid $251,865,869 in unemployment compensation benefits during the year ending June 30, 1959.

Manufacturing.—In the fourth quarter of 1957 there were 25,668 manufacturing establishments in the state. Employment for the year averaged 1,252,508 persons who received $6,458,073,000 in wages. Value added by manufacture totaled $11,996,657,000, and outlays for new plant and equipment amounted to $866,953,000. Production workers in manufacturing averaged $102.66 for an average workweek of 40.9 hours in August 1959.

MAJOR CALIFORNIA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1] (thousands of dollars)
Transportation equipment	331,264	$1,955,428	$3,201,486
Food and kindred products	159,850	720,452	1,768,455
Fabricated metal products	85,429	421,897	833,263
Nonelectrical machinery	88,016	469,106	779,536
Electrical machinery	76,334	376,363	677,431
Chemicals and products	36,292	196,650	592,942
Printing and publishing	64,322	320,693	570,033
Primary metal industries	48,687	268,265	515,698
Stone, clay, glass products	35,721	171,470	465,755
Lumber and wood products	54,678	259,961	412,530

[1] For definition, see text footnote 1 in the article, *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

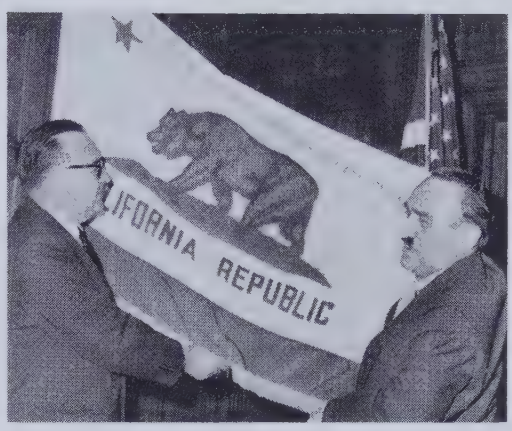
Mining.—California has the most diverse mineral output of any state, and in 1958 it ranked third among the states in the value of its mineral output, accounting for 9.09% of the national total. It produced all of the nation's output of boron and iodine, and was first in its yield of natural calcium chloride, diatomite, gypsum, mercury (59% of national total), sand and gravel, and natural soda; second in cement, chromite, feldspar, potash, pumice, and talc and soapstone; third in ball clay, perlite and pyrites; and fourth in bromine, china clay, gold, molybdenum, peat, and stone.

CALIFORNIA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Boron minerals	528,209	$ 38,310,000
Cement (bbl.)[2]	39,583,000	124,367,000
Chromite	20,588	1,646,000
Clays	2,394,000	5,012,000
Feldspar (long tons)	71,193	624,000
Gold (fine ounces)	185,385	6,489,000
Gypsum	1,423,000	3,184,000
Lime	262,000	4,470,000
Magnesium compounds	74,132	4,854,000
Manganese ore and concentrates	17,644	1,516,000
Mercury (76-pound flasks)	22,365	5,123,000
Natural gas (1,000 cubic feet)[2]	465,582,000	108,481,000
Natural gas liquids (bbl.)	20,310,595	68,485,000
Petroleum (bbl.)[2]	314,429,000	911,844,000
Petroleum gases (bbl.)	8,166,476	18,678,000
Sand and gravel	84,137,000	95,340,000
Stone	32,423,000	48,345,000
Talc and pyrophyllite	148,806	1,439,000
Other minerals	...	71,766,000
Total	...	$1,502,660,000[3]

[1] Excludes masonry cement, value included in "Other minerals." [2] Preliminary. [3] Excludes duplication of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in 1958 (including imports by common carriers for processing, and excluding imports to fresh fish markets) amounted to 831,712,903 pounds valued at $77,485,821, a rise from 738,050,743 pounds ($64,980,912) for the 1957 season. Poundages and values of principal 1958 species were: yellowfin tuna (218,075,149; $29,730,515); skipjack (148,158,256; $17,034,768); and albacore (54,673,098; $9,948,122).



WIDE WORLD

Visiting San Francisco on January 11, Soviet Deputy Premier Anastas Mikoyan (right) is attracted by bear on state flag of California, displayed by Governor Edmund Brown.

Agriculture.—Cash farm income for the first nine months of 1959 was up to $1,919,255,000 from $1,869,474,000 recorded for the same period of 1958. For the full year 1958, income comprised $1,088,708,000 from livestock and livestock products, $1,740,755,000 from crops, and $23,329,000 from government payments. Principal income sources in 1958 were: cattle, $405,487,000; dairy products, $348,201,000; cotton lint, $255,785,000; and grapes, $166,479,000.

CALIFORNIA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Almonds (tons)	41,280	19,800	82,000
Apples (1,000 bu.)	8,349	9,650	10,400
Apricots (tons)	190,300	90,000	210,000
Avocados (tons)	25,210	48,300	65,000
Barley (1,000 bu.)	60,693	67,488	68,523
Beans, dry (1,000 bags)	4,270	4,091	3,718
Cherries, sweet (tons)	30,720	12,200	13,500
Cotton lint (1,000 bales)	1,424	1,604	1,920
Cottonseed (1,000 tons)	572	626	771
Dates (tons)	18,094	19,600	22,900
Grapes (tons)	2,680,800	2,741,000	2,950,000
Figs, equiv. fresh basis (tons)	90,550	80,600	63,600
Hay (1,000 tons)	6,168	6,906	6,756
Hops (1,000 lb.)	11,421	9,027	9,338
Lemons (1,000 boxes)	13,669	17,000	18,000
Olives (tons)	47,700	68,000	26,000
Oranges (1,000 boxes)	37,781	40,200	35,000
Peaches (1,000 bu.)	33,152	32,502	28,545
Pears (tons)	355,700	345,000	420,000
Plums (tons)	80,600	61,000	98,000
Potatoes (1,000 cwt.)	26,535[1]	29,598	27,528
Prunes (tons)	160,800	96,000	140,000
Rice (1,000 bags)	10,529	11,080	13,110
Strawberries (1,000 lb.)	142,347[1]	214,200	170,280
Sugar beets (1,000 short tons)	3,364	3,628	4,841
Walnuts (tons)	66,820	82,200	57,000
Wheat (1,000 bu.)	10,305	8,162	8,718

[1] Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state Department of Agriculture estimated that there were 131,000 farms in 1958. About 37 million acres, or 37% of the state's entire area is farmland, with more than 8 million acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 3,978,000 cattle, 1,600,000 sheep, and 31,397,000 chickens (excluding commercial broilers). During the week of Oct. 18–24, 1959, there were 663,000 family and hired workers engaged in farming.

Transportation and Communications.—State and federal funds disbursed for highways in the 1957–58 fiscal year totaled $451,076,371, and contracts awarded by the state involved construction work on 1,775 centerline miles.

Highways and roads on Jan. 1, 1959, totaled 141,351 miles (67,268 surfaced). Registered *motor vehicles*

numbered 7,243,336 on June 30, 1959, including 5,791,241 passenger cars. There were (1958) 41 *railroads* operating (1957) 7,513 line miles; and (1959) 18 regularly scheduled *airlines* and 4 supplemental air carriers, and 593 *airports and airfields* (167 commercial and municipal, 44 military, 360 private, 17 federal, 3 state, and 2 district).

Communications media (1958) included 172 AM and 45 FM *radio stations;* 28 *television stations;* 123 daily *newspapers* (circulation, 4,705,000); and (Jan. 1, 1959) 2,103,500 business and 4,722,600 residential *telephones.*

Principal Events, 1959.—After a decade of acrimonious North-South wrangling over the solution of California's water problems, the legislature passed Gov. Edmund (Pat) Brown's first-step, compromise water program, including a proposal for a $1.75 billion bond issue. Approval of the spending plan must come from voters in the 1960 election. The legislation calls for coordinated control and utilization of the state's water resources. Protection of northern water rights in the "counties of origin" against legislative abrogation is implicit in the bill. California's new water plan points toward the expenditure of $11 billion over a period of more than 60 years, but individual projects must be approved by the legislature on a piecemeal basis. It envisions construction of the world's biggest water transport system.

Other newly approved construction activity includes a 12,500-mile statewide freeway and expressway system, to be built over the next 20 years at an estimated cost of $10.5 billion. New freeways eventually will link all cities in the state having a population of 5,000 or more, and new tunnels will be constructed under San Francisco Bay.

California's Democratic-controlled legislature also passed a Brown-sponsored Fair Employment Practices Act and another law which he backed ending cross-filing in state elections.

A period of fiscal reckoning coincided with the advent to power of Governor Brown, who was inaugurated as the state's 32d governor on January 5. Failure to enact necessary new taxes, and temporizing with state finances by falling back on the state's "rainy day" fund, could not go on forever. To meet the state's $2.2 billion budget and to avert a treasury deficit, the legislature in 1959 increased personal income, inheritance, bank, corporation, and beer taxes. Added to a new tax on horse racing and a 3-cent-a-pack tax on cigarettes, these measures provide $222.7 million in additional revenue, or 18.5% more than was anticipated from tax sources existing prior to the increases. Brown had hoped to raise $256 million in new taxes per year. Under the governor's goading, the legislature enacted the biggest spending and taxing program in the history of the state, raising taxes enough to trim a threatened $201 million annual deficit to $5 million. The tax measures which Governor Brown submitted to the legislature corresponded very closely to those which it passed, with the notable refusal of the legislature to adopt a severance tax on oil and gasoline products.

California's population has continued to grow unceasingly. Despite a slight dip in migration into southern California during the 1957–58 recession, that section's population boom proceeded at a pace of nearly 1,000 new persons per day. From April 1, 1950, to July 1, 1959, there was a net increase of 3,190,000 in the state's 14 southern counties, which contain about half of California's population. In the same nine years the entire state's population growth accounted for 18% of the total United States gain. California's population (estimated by the state Department of Finance) stood at 15,280,000 on July 1, 1959.

Business and agricultural activity has generally kept up with population growth. For the first nine months of 1959, cash farm receipts were almost 3% greater than in the comparable period of 1958 (see above, *Agriculture*). California manufacturing establishments had, by mid-1959, generally recovered from the 1957–58 recession, which was milder in the West than in other sections of the country. Several industry groups, such as the missile-electronics industry and the ordnance and electrical machinery complex, increased their number of employees by 20–30% in one year. Aircraft manufacturing employment, approaching 250,000 workers in the third quarter of 1959, was about 3% higher than in the year before.

Unemployment in California in 1959 remained spotty and deceiving. While some workers were thrown out of work by the national steel strike, by cutbacks in military defense expenditures, and by other industrial dislocations, personal income reached an estimated record level of $39,050 million in mid-1959. This was an increase of more than $3 billion, or 8.6%, over a year earlier. Per capita income during 1958 was $2,559, up 0.6% from 1957 and 24% above the national average.

(See also BRIDGES; DAMS; IRON AND STEEL; LOS ANGELES; NEWSPAPERS; SAN FRANCISCO; TUNNELS.)

ANDREW F. ROLLE,
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CAMBODIA. A kingdom of Southeast Asia, situated on the Gulf of Siam and bordered by Vietnam, Laos, and Thailand. Estimated area: 66,606 square miles. The population (est. April 1958) of 4,740,000 consists chiefly of Khmers (Cambodians), but includes about 350,000 Vietnamese and 250,000 Chinese. Khmer is the national language. Phnom Penh (1956 est. pop., 500,000) is the capital and chief city.

Government.—King Norodom Suramarit (acceded 1955) is the sovereign of this constitutional monarchy. The National Assembly has 61 members elected at least every four years. A ministry headed by a premier is responsible to the assembly. Chief political control is held by Prince Norodom Sihanouk, who relinquished the throne to his father in 1955 and founded the Popular Socialist Community. The prince's party won all the assembly seats in the elections of 1955 and 1958; there is no effective political opposition. The prince, who has served as premier several times since 1955, has headed the present cabinet since its investment on July 10, 1958.

Education and Religion.—An estimated 35–40% of the population is literate. In recent years the government has made substantial efforts to expand elementary education. There were 3,162 elementary schools with 416,722 pupils in 1957; 15 secondary schools with 8,991 students; and five technical schools. Cambodia also has two teacher-training colleges, a law faculty, a school of medicine, and a Buddhist university at Phnom Penh. The principal religion is Buddhism; a small minority of Vietnamese and Europeans is Roman Catholic.

Finance.—The 1958 draft budget estimated revenues at 2,433 million riels; and expenditures at 2,650 million riels, of which 657 million was allocated for defense, 809 million for social services, 414 million for investment, and 151 million for economic services. (The riel equals about U.S.$0.029 at the official rate.) United States military and economic aid is important.

Transportation and Communications.—The Mekong River and its tributaries provide an important means of transport; Phnom Penh is the chief port. On July 22, 1959, a 133-mile highway linking Phnom Penh with the new seaport of Sihanoukville (formerly, Kompong Som) was completed; the road cost an estimated $32 million and was constructed with United States aid. There were 1,010 miles of asphalted highways and 677 miles of macadamized roads in 1957. Cambodia's only railway extends 240 miles from Phnom Penh to the Thai border at Poipet. Air service is provided by Royal Air Cambodge, a Cambodian-French enterprise. In 1957 there were 5,700 passenger cars, 4,700 commercial vehicles, 7,000 radios (1956), and 2,818 telephones.

Production.—Cambodia's predominantly agricultural economy is dependent on the small-scale cultivation of rice (the staple of diet) and the production of rubber, a major export. The gross domestic product in 1957 was valued at 15,975 million riels,

of which agriculture, forestry, and fishing contributed 43.7%. Output of paddy in 1958 was estimated at 1.2 million metric tons, or about the same as in 1957. Production of rubber in 1958 was 33,555 tons, up 9% from the previous year. The chief secondary crop and an important export is maize (corn). Sugar production, based on the sugar palm, averages about 40,000 metric tons annually. Other crops are soya beans, peanuts, pepper, kapok, cinnamon, aniseed, essential oils, and tobacco. Cattle breeding is an important source of income. Cambodia's vast forests provide softwood timber, bamboo, and hardwoods.

Industry, of minor but growing importance, contributed 12% of the national output in 1957. Cambodia had a two-year equipment plan (1956–57) and is engaged in a five-year economic development plan (1958–62). Industrial establishments include rubber processing plants, tanneries, an automobile assembly plant, metal fabricating plants, textile mills, and alcohol distilleries. Of major importance are cottage handicrafts producing woven goods, baskets, pottery, leather, and wood products.

Foreign Trade.—The value of exports in 1958 was 1,852 million riels (up 2% over 1957); imports, 2,643 million (up 29%). Rice exports were valued at 775.2 million riels; rubber, 614.4 million; and maize, 224.4 million. Chief imports are textiles, base metals and manufactures, food, machinery, and transport equipment. Cambodia's chief suppliers in 1958 were France, Japan, the United States, Hong Kong, West Germany, and Singapore; principal customers were France, the United States, Singapore, and Hong Kong.

Principal Events, 1959.—Cambodia resumed diplomatic relations with Thailand on February 6, following the good offices of Johan Beck-Friis of Sweden, special representative of U.N. Secretary General Dag Hammarskjöld. Beck-Friis obtained the release of 67 Thai citizens who had been arrested by the Cambodian government, and secured Thailand's promise to release 14 Cambodians who had also been arrested. Relations between the two countries had been severed by Cambodia on Nov. 24, 1958, as a result of border disputes.

The government also re-established trade relations with South Vietnam after a year's rupture. Prince Norodom Sihanouk and President Ngo Dinh Diem of South Vietnam, meeting at Saigon on August 3–4, reached partial agreement on how to deal with Communist rebels using Cambodia as a refuge for raids on South Vietnam. It was reported that Cambodia had agreed to assist the Vietnamese in capturing the rebels, but would not permit Vietnamese troops to invade Cambodia for that purpose.

Early in the year the government put pressure on alleged subversive elements. In February the army deposed the governor of Siemreap Province, Gen. Chhuon Mochulpich, who had virtually ruled part of western Cambodia with the help of his own private army. He was accused of leading a movement to overthrow the present regime, and fled to escape arrest. On October 1 a military tribunal in Phnom Penh sentenced 16 men to death for participation in the antigovernment plot. In January the government ordered the arrest of Sam Sary, former ambassador to London, who had founded the opposition Democratic Union Party and had attacked the regime in a newspaper article. He also was accused of plotting to overthrow the government.

Premier Prince Norodom Sihanouk made a state visit to Indonesia on February 9–14. In return, President Sukarno of Indonesia visited Cambodia on June 20–24.

W. R. F.

CAMEROONS. See British Cameroons; French Cameroons.

CANADA. A member of the Commonwealth of Nations, comprising about 40% of continental North America, and consisting of 10 provinces, the Northwest Territories, and the Yukon Territory. The capital is Ottawa (pop., 1956 census, 222,129), in the Province of Ontario.

Area.—With a total area of over 3.8 million square miles, Canada is the second largest country in the world, exceeded only by the Soviet Union. (Area by provinces and territories is shown in Table 1.)

Table 1—AREA OF CANADIAN PROVINCES AND TERRITORIES
(In square miles)

Province or territory	Land	Fresh water	Total
Newfoundland (incl. Labrador)	143,045	13,140	156,185
Prince Edward Island	2,184	...[1]	2,184
Nova Scotia	20,402	1,023	21,425
New Brunswick	27,835	519	28,354
Quebec	523,860	71,000	594,860
Ontario	344,092	68,490	412,582
Manitoba	211,775	39,225	251,000
Saskatchewan	220,182	31,518	251,700
Alberta	248,800	6,485	255,285
British Columbia	359,279	6,976	366,255
Yukon Territory	205,346	1,730	207,076
Northwest Territories	1,253,438	51,465	1,304,903
Franklin	*541,753*	*7,500*	*549,253*
Keewatin	*218,460*	*9,700*	*228,160*
Mackenzie	*493,225*	*34,265*	*527,490*
Total, Canada	3,560,238	291,571	3,851,809

[1] Too small to be enumerated.

Population.—The population of Canada was estimated at 17,442,000 as of June 1, 1959, a rise of 2.3% from the year before and 8.5% from the 1956 census figure (est. pop., Sept. 1, 1959, 17,550,000). Families in Canada were estimated to number 3,953,000 in 1958 (up 6.7% from 1956), with an average size of 3.8 persons. Of the 1959 population, about 32.5% was in the age group under 15 years (up 11.4% over 1956), 60% in the group 15 to 64 years (up 7.2%), and 7.5% in the group 65 years and over (up 5.7%).

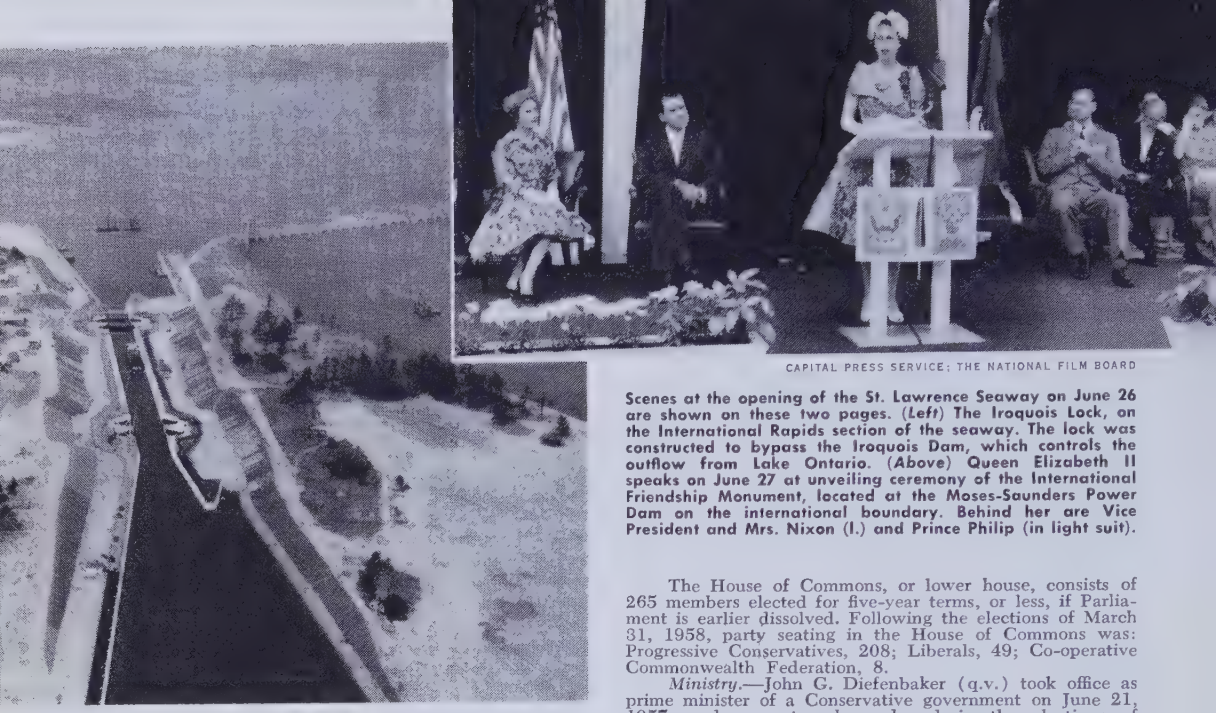
Table 2—POPULATION OF CANADA

Province or territory	1951 census	1956 census	1959 (est. June 1)
Newfoundland	361,416	415,074	449,000
Prince Edward Island	98,429	99,285	102,000
Nova Scotia	642,584	694,717	716,000
New Brunswick	515,697	554,616	590,000
Quebec	4,055,681	4,628,378	4,999,000
Ontario	4,597,542	5,404,933	5,952,000
Manitoba	776,541	850,040	885,000
Saskatchewan	831,728	880,665	902,000
Alberta	939,501	1,123,116	1,243,000
British Columbia	1,165,210	1,398,464	1,570,000
Yukon Territory	9,096	12,190	13,000
Northwest Territories	16,004	19,313	21,000
Total, Canada	14,009,429	16,080,791	17,442,000

(Source: Dominion Bureau of Statistics.)

Canada's urban population in 1956 comprised 66.6% of the total, as compared with 63.5% in 1951. Of the 1956 total population, about 17.1% (2,746,755 persons) lived on farms. Canada's largest cities and their populations (1956 census) are: Montreal, 1,109,439 (metropolitan area, 1,620,758); Toronto, 667,706 (metropolitan area, 1,358,028); Vancouver, 365,844 (metropolitan area, 665,017); Winnipeg, 255,093; Hamilton, 239,625; Edmonton, 226,002; Ottawa, 222,129; Calgary, 181,780; and Quebec, 170,703.

Vital Statistics.—Canada's birth rate, one of the highest for industrialized countries, was 27.6 in 1958; the death rate, one of the lowest in the world, 7.9; and the infant mortality, 30 (a record low for Canada). Life expectancy at birth in 1951 averaged 66.3 years for males (up 6 years since 1931) and 70.8 for females (up 8.8 years).



CAPITAL PRESS SERVICE; THE NATIONAL FILM BOARD

Scenes at the opening of the St. Lawrence Seaway on June 26 are shown on these two pages. (*Left*) The Iroquois Lock, on the International Rapids section of the seaway. The lock was constructed to bypass the Iroquois Dam, which controls the outflow from Lake Ontario. (*Above*) Queen Elizabeth II speaks on June 27 at unveiling ceremony of the International Friendship Monument, located at the Moses-Saunders Power Dam on the international boundary. Behind her are Vice President and Mrs. Nixon (l.) and Prince Philip (in light suit).

National Derivation.—According to the 1951 census, 85.3% of the population was Canadian born. Canadians of British origin comprised 47.9% of the total population; French, 30.8%; other European, 18.2%; and Asian, 0.5%. The official Indian population (those living on reserves) was estimated at 170,000 in 1958; Eskimos, 11,500; Negroes, 18,020 (1951).

Immigration.—Immigrants entering Canada in 1958 numbered 124,851, less than half the 1957 figure but roughly equal to the 1946–56 average. Of the 1958 total, Italians comprised 22.9%; British, 21.3%; and Germans, 11.6%. In 1958, Canadian citizenship was granted to 84,183 persons formerly owing allegiance to other countries.

Religion.—Adherents of religious denominations according to percentage of total population in 1951 were: Roman Catholic, 43.3%; United Church of Canada, 20.5%; Church of England, 14.7%; Presbyterian, 5.6%; Baptist, 3.7%; Lutheran, 3.2%; Jewish, 1.5%; Ukrainian (Greek) Catholic, 1.4%; Greek Orthodox, 1.2%; Mennonite, 0.9%; other, 4.1%.

Government and Social Welfare

Government.—A member of the Commonwealth of Nations, Canada is a self-governing and fully independent nation. Canada's sovereign is Queen Elizabeth II. The government, based largely on the British constitutional system, is administered by a prime minister and a cabinet of departmental ministers who are members of the Parliament at Ottawa. The cabinet is responsible to the lower chamber, or House of Commons, and holds office as long as it retains the confidence of that body.

Governor General.—Executive power is nominally vested in a governor general appointed by the British crown on the advice of the Canadian cabinet, usually for a term of five years. The governor general, representing the sovereign, acts under the advice of the Canadian ministry. Maj. Gen. George P. Vanier (q.v.) was installed as governor general on Sept. 15, 1959, succeeding Vincent Massey, who had held office since 1952.

Judiciary.—The Supreme Court of Canada, composed of a chief justice and eight puisne judges, is the final court of appeal in both civil and criminal cases throughout Canada. Patrick Kerwin was appointed chief justice on July 1, 1954.

Parliament.—The Canadian Parliament consists of a House of Commons and a Senate. The influence of the Senate on legislation is considerably less than that of the House of Commons, in which most public bills are introduced and to which the ministry is responsible.

The Senate, or upper house, consists of 102 members appointed for life by the governor general on the advice of the ministry. It is composed of 24 senators from Ontario, 24 from Quebec, 10 from Nova Scotia, 10 from New Brunswick, 6 each from Newfoundland, Manitoba, Saskatchewan, Alberta, and British Columbia, and 4 from Prince Edward Island.

The House of Commons, or lower house, consists of 265 members elected for five-year terms, or less, if Parliament is earlier dissolved. Following the elections of March 31, 1958, party seating in the House of Commons was: Progressive Conservatives, 208; Liberals, 49; Co-operative Commonwealth Federation, 8.

Ministry.—John G. Diefenbaker (q.v.) took office as prime minister of a Conservative government on June 21, 1957, and was strongly endorsed in the elections of March 31, 1958. The Canadian Ministry, in order of precedence in the Privy Council, was as follows, as of Jan. 1, 1960:

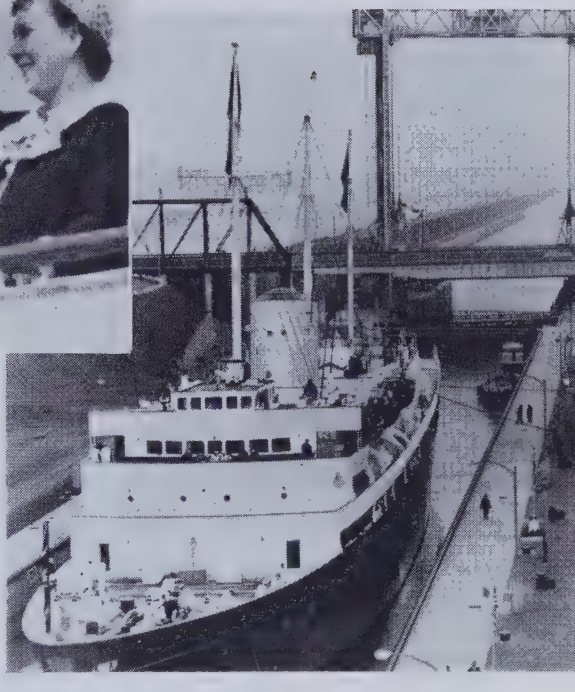
Prime minister—John G. Diefenbaker.
Secretary of state for external affairs—Howard C. Green.
Minister of finance and receiver general—Donald M. Fleming.
Minister of veterans affairs—Alfred J. Brooks.
Minister of transport—George Hees.
Solicitor general—Léon Balcer.
Minister of national defence—George R. Pearkes.
Minister of trade and commerce—Gordon M. Churchill.
Minister of justice and attorney general—Edmund D. Fulton.
Minister of national revenue—George C. Nowlan.
Minister of agriculture—Douglas S. Harkness.
Minister of citizenship and immigration—Ellen L. Fairclough.
Minister of fisheries—J. Angus MacLean.
Minister of labour—Michael Starr.
Postmaster general—William McLean Hamilton.
Minister without portfolio—William J. Browne.
Minister of mines and technical surveys—Paul Comtois.
Minister of national health and welfare—Jay W. Monteith.
Minister of northern affairs and national resources—Francis A. G. Hamilton.
Minister of defence production—Raymond J. M. O'Hurley.
Secretary of state of Canada—Henri Courtemanche.
Minister of public works—David J. Walker.
Associate minister of national defence—Joseph P. A. Sévigny.

Provincial Government.—Each of Canada's 10 provinces has a lieutenant governor appointed by the governor general of Canada, its own premier and executive council or cabinet, and a popularly elected unicameral Legislative Assembly (Quebec alone retains an appointive Legislative Council in addition to its Legislative Assembly). The Northwest Territories and the Yukon Territory are under the jurisdiction of the federal government. (See separate articles on the Canadian provinces and territories.)

Federal Budget.[1]—For the fiscal year ended March 31, 1959 (data for 1957–58 in parentheses) budgetary revenue totaled $4,754.7 million ($5,048.8 million), and expenditure, $5,364.0 million ($5,087.4 million). The 1958–59 deficit of $609.3 million compared with a deficit of $38.6 million in 1957–58. Chief sources of revenue in the 1959 fiscal year were (in millions): personal income tax, $1,353.5; corporate income tax, $1,020.6; ex-

[1] All monetary figures used in this article are in Canadian dollars. In 1958 the monthly average exchange rate of the Canadian dollar was U.S.$1.030; in the first 7 months of 1959, U.S.$1.036.

WIDE WORLD



After ceremonies officially opening the St. Lawrence Seaway on June 26, President and Mrs. Eisenhower joined Queen Elizabeth II and Prince Philip aboard the royal yacht *Britannia* (*right*) and sailed through Côte Ste. Catherine Lock. (Above) President and Mrs. Eisenhower shield their eyes from the sun's glare as they stand on bridge of the royal yacht with the queen and Prince Philip. The seaway, a joint undertaking of the United States and Canada, permits ocean-going vessels to sail into the heart of the continent.

cise (including sales) taxes, $935.1; and customs import duties, $486.5. Expenditure for national defense, defense production, and civil defense aggregated $1,442.4 million. Other major expenditure items were (in millions): public debt charges, $648.0; family allowances, $474.8; subsidies and tax sharing payments to provinces, $467.0; veterans affairs, $288.8; and transport, $288.8. The net public debt as of March 31, 1959, totaled $11,678 million, a rise of $632 million during the year.

The draft budget for the fiscal year 1960, submitted to Parliament on April 9, 1959, forecast revenue at $5,267 million, and expenditure at $5,660 million, for an anticipated deficit of $393 million.

Defense.—As of April 30, 1958, there were 118,877 men and women in Canada's active armed forces. Personnel was divided among the services as follows (with reserves given in parentheses): Canadian Army, 47,289 (41,013); Royal Canadian Navy, 19,919 (4,342); and Royal Canadian Air Force, 51,669 (4,627).

Social Welfare.—The federal government pays a pension of $55 per month to all persons aged 70 or over who have resided in Canada at least 10 years. Old-age pension payments in the fiscal year 1958 amounted to $473.9 million, to over 800,000 persons. Allowances up to $55 per month are paid to needy persons aged 65–69, and to needy blind or disabled persons; this program is administered by the provinces, with the federal government paying up to 50% of the maximum allowance in the case of the needy aged and disabled, and up to 75% in the case of the blind. Under the family allowance program the federal government pays $6 per month for children under 10 years old and $8 for children aged 10–15; family allowance payments totaled $474.8 million in the fiscal year 1959. Canada's unemployment insurance program is administered by the federal government, which also adds one fifth of total employer-employee contributions; benefit payments in 1958 amounted to $492.9 million, up nearly 62% over 1957. Other federal programs include veterans benefits, grants to provincial and municipal health programs, and aid to Indians and Eskimos. (See also CHILD WELFARE; MARRIAGE AND DIVORCE; STANDARDS OF LIVING.)

Education.—Public elementary and secondary schools are administered by the 10 provinces and the Yukon Territory. The federal government is responsible for Indian schools and schools in the Northwest Territories. The Ottawa government also provides university grants, which amounted to about $25.6 million in 1958.

The sharp rise in pupil attendance in the 1950's resulted in the overcrowding of classrooms and other problems. In the school year beginning 1959 an estimated 4 million pupils attended elementary and secondary schools, a 53% increase over the 1950–51 attendance. In the elementary schools, the rise was almost wholly accounted for by the increase in child population. On the secondary level there was both a rise in population and a rise in the percentage attending school (from 51% to 59%). During the period 1950–59 the number of teachers rose by 57%, but an estimated 20% of all teachers in 1955–56 had less than the necessary professional preparation. The median salary for teachers rose from $2,050 in 1950–51, to $3,470 in 1957–58, and the average expenditure per pupil from $142 in 1950 to an estimated $256 in 1959. Full-time university-grade enrollment on Dec. 1, 1958, totaled a record 94,400 students, up 9.1% from a year earlier.

Table 3—CANADIAN EDUCATION STATISTICS
(Data for 1956–57)

Type of School	Schools	Teachers	Pupils
Provincially controlled schools:			
Elementary and secondary	28,884	122,829	3,258,809
Evening	...	...	209,281
Correspondence courses	...	...	46,975
Schools for the blind	6	94	576
Schools for the deaf	8	203	1,605
Teacher-training schools	133	1,020	15,723[1]
Federally controlled schools:			
Indian schools	468	1,500	30,835
National Defence schools overseas	12	225	4,504
Northwest Territories	36	155	3,104
Privately controlled schools:			
Academic[2]	1,212	10,869	151,141
Business training schools[3]	250	554[4]	46,346
Universities and colleges:[5]			
Full-time university grade	283	7,180	78,100[4]
Extension, part-time, etc.	...	7,210	98,300
Total, all types	31,292	151,839	3,945,299

[1] Includes 991 pupils in short courses. [2] Quebec independents included. [3] Day, evening, and correspondence courses. [4] Excludes Quebec. [5] Excluding prematriculation courses.

Libraries.—Public library service is provided mainly by the municipalities. The 870 public libraries in 1957 (including 29 regional and 8 traveling and open-shelf) served 77.3% of the population and had an aggregate book stock of 11,328,188 volumes; a total circulation of 41,939,109; a current operating expenditure of $12,359,-

540; and a full-time staff of 2,067. In addition, there were 624 university and college, federal and provincial government, and professional and technical libraries, with an aggregate book stock of about 12.8 million volumes and a full-time staff numbering 2,532.

The Canadian Economy

Tendencies in 1959.—Recovery from the 1957–58 recession, which had remained somewhat slow and spotty until the end of 1958, gathered momentum in the spring and summer of 1959. By the fall, most major sectors of the economy were at or above prerecession levels, although the condition of the economy could not yet be said to be one of a boom. Strong consumer and government demand, and rising inventory accumulation by business, major forces in the 1958 recovery, continued to exert a buoying effect in 1959. Unemployment in October 1959 was down to 3.8% of the labor force (5.1% in October 1958), and labor income in the January–September period of 1959 was nearly 8% over that of the first 9 months of 1958. Retail trade in the first 10 months of 1959 was about 5% over the 10-month total for 1958, while commodity exports showed a gain of 3%. The index of industrial production, spurred by strong performances in the mining and nondurable goods sectors, as well as the somewhat slow but steady recovery in durables, reached a new record in September. Housing construction, which had been at a peak level in 1958, dropped off in 1959, when starts in the first 9 months declined almost 16% from the like period of 1958. The midyear estimate of capital expenditure in 1959 totaled $8.5 billion, slightly above the $8.4 billion spent in 1958. Farm cash income in the first half of 1959 exceeded the high level of the first half of 1958.

National Income and Product.—In 1958, a year of slow recovery from recession, gross national product rose by less than 1% in volume, although price rises contributed toward an estimated 2.3% rise in value. The slight volume gain—which followed an advance of 9% in 1955, 9% in 1956, and no change in 1957—was attributable to higher output in the agricultural sector, nonfarm production remaining virtually unchanged from 1957. Major factors in the 1958 lull were the heavy inventory liquidation during the first half of the year and the decline in business outlays for new plant and equipment. Opposing these downward trends were the continued growth in consumer and government expenditure and the rise in residential construction.

The average income of nonfarm families and unattached individuals in 1957 was $4,269 (median income: $3,624), a rise of about 11% over 1955 and 34% over 1951. However, taking into account price increases (see Cost of Living), the rise in real income from 1951 to 1957 was about 20%.

Table 4—CANADIAN NATIONAL PRODUCT AND EXPENDITURE
(In millions of dollars)

Item	1956	1957	1958
Gross National Product			
Wages, salaries, and supplementary labor income	14,890	15,996	16,434
Military pay and allowances	424	476	491
Corporation profits before taxes	2,908	2,547	2,475
Rent, interest, and miscellaneous investment income	1,767	1,905	2,026
Accrued net income of farm operators from farm production	1,450	996	1,157
Net income of nonfarm unincorporated business	1,965	2,011	2,119
Inventory valuation adjustment	−238	−71	−29
Net national income at factor cost	23,166	23,860	24,673
Indirect taxes less subsidies	3,636	3,848	3,858
Capital consumption allowances and misc. valuation adjustments	3,642	3,994	3,923
Residual error of estimate	141	71	55
Gross national Product at market prices	30,585	31,773	32,509
Gross National Expenditure			
Personal expenditure on consumer goods and services	18,833	19,964	21,012
Government expenditure on goods and services	5,386	5,738	6,150
Business gross fixed capital formation:			
New residential construction	1,526	1,409	1,762
New nonresidential construction	2,589	3,103	2,813
New machinery and equipment	2,659	2,823	2,324
Value of change in inventories	1,084	210	−424
Exports of goods and services	6,365	6,394	6,289
Deduct: imports of goods and services	−7,715	−7,796	−7,361
Residual error of estimate	−142	−72	−56
Gross national expenditure at market prices	30,585	31,773	32,509

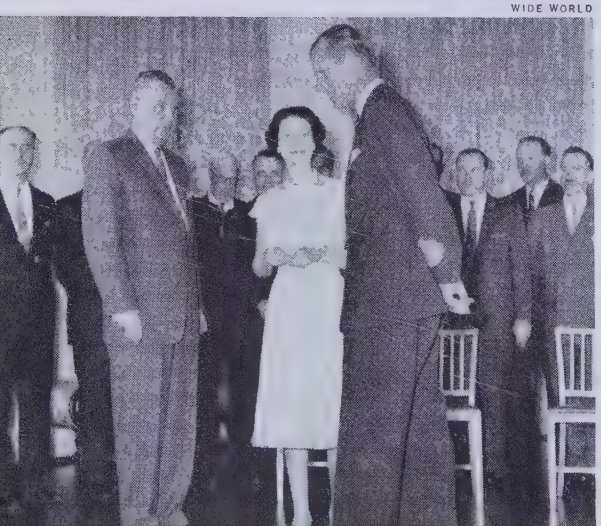
Note: figures are subject to revision. (Source: Dominion Bureau of Statistics.)

Manufacturing.—Manufacturing employs about twice as many persons as agriculture and contributes about 29% of the annual value of goods and services produced in Canada. Ontario, the leading manufacturing province, provides about 50% of output; Quebec, 30%; and British Columbia, 8%. The gross value of factory shipments in 1958 was estimated at $21,655,903,000 (prelim.), down about 2.3% from the record $22,183,594,000 of 1957. Employees in manufacturing numbered 1,359,061 in 1957 (about 23% of the total labor force), and salaries and wages totaled $4,819,628,000. Canada's leading manufacturing industries are pulp and paper, nonferrous metals and products, petroleum products, motor vehicles, foodstuffs, sawmill products, primary iron and steel, and aircraft and parts. The volume index of manufacturing production (1949=100) fell from 142.9 in 1957, to 138.4 in 1958; the decline was in the durables sector, nondurables remaining virtually stationary. Production of some important durables in 1958 was: steel ingots, 4,254,607 tons (down 14% from 1957); pig iron, 3,060,962 (down 18%); passenger cars, 297,088 units (down 12.6%); domestic washing machines, 305,847 units (up 16%); and television sets (producer's sales), about 306,000 (down 8%).

Building and Construction.—The overall value of construction in 1958 was a record $7,231 million, up 3% over 1957. Expenditure on new construction was $5,956 million; on repair, $1,275 million. Of the total expenditure on construction, the out-

In Halifax, Nova Scotia, on August 1, Queen Elizabeth and Prince Philip meet with Canadian Prime Minister John Diefenbaker (at queen's right). At a Privy Council the same day, the queen approved the appointment of Maj. Gen. George P. Vanier as successor to Governor General Vincent Massey.

WIDE WORLD



lay on building construction was $4,099 million, including $2,188 million on residential building, $709 million on commercial, $533 million on institutional, and $391 million on industrial. Residential starts and completions reached record levels in 1958. Starts numbered 164,632 units (up nearly 35% from 1957); completions, 146,686 (up 25%).

Retail Sales.—The value of retail sales in 1958 was a record $15,252 million (prelim.), or 2.9% over 1957. Sales of independent stores amounted to $12,219 million (up 1.9%); of chains, $3,033 million (up 6.7%). Estimated sales of the leading trades in 1958 were (in millions): grocery and combination, $3,094; motor vehicle dealers, $2,391; department stores, $1,342; other food and beverage stores, $1,107; and garages and filling stations, $971.

Labor.—Canada's civilian labor force averaged 6,127,000 in 1958. Of this number a monthly average of 405,000 were without jobs and seeking work (257,000 in 1957). Wages and salaries in manufacturing averaged $72.67 per week ($69.94 in 1957), and the workweek averaged 40.2 hours (40.4 in 1957). Time lost in labor disputes totaled 2,879,100 man-working days, up 76% over 1957. Membership in labor unions at the end of 1958 was about 1,454,000, up 4.9% during the year. About 27% of women of working age were in the labor force in 1958.

Corporate Profits.—Corporate profits before taxes in 1958 totaled $2,904 million (prelim.), down 3.4% from the $3,005 million in 1957; profits after taxes, $1,673 million, down 1.5% from the $1,699 million in 1957. The 1958 decline in profits was in the manufacturing sector, chiefly in industries producing iron and steel products and petroleum and coal products. The nonmanufacturing sector showed a slight gain. Dividend payments in 1958 approximated $758 million, down 4% from 1957.

Banking.—The government-owned Bank of Canada regulates the volume of currency and credit, serves as the government's fiscal agent, and performs other fiscal functions. Canada's 9 privately owned chartered banks had 4,678 branch offices in Canada and abroad at the end of 1958, a rise of 1,268 in 10 years. Total Canadian dollar deposits of chartered banks amounted to $12,664 million as of June 30, 1959 (up 8% over a year earlier), including $7,201 million in personal savings deposits (up 9%). (See also BANKING.)

Agriculture.—Canadian farms numbered 575,015 in 1956 (down 7.7% from 1951); 76.9% were operated by their owners, 6.2% by tenants, 15.8% by part owner and part tenant, and 1.2% by managers. The average size of farms rose from 279.3 acres in 1951 to 302.2 in 1956. Tractors on Canadian farms numbered 499,811 in 1956 (up 25.1% from 1951); grain combines, 136,927 (up 51.3%). In 1956, 73.5% of farms had electric power, as compared with 51.3% in 1951.

Farm Income.—Farm cash income from the sale of farm products in 1958 totaled $2,847 million (prelim.), or 10.5% above the 1957 total of $2,577 million (rev.). Major sources of 1958 income (with 1957 data in parentheses) were (in millions): wheat, $427 ($378); other grains, seeds, and hay, $179 ($208); participation and equalization payments, $68 ($104); other field crops, $258 ($240); livestock, $949 ($784); dairy products, $495 ($460); poultry and eggs, $292 ($277); and all other, $118 ($125). Net income from farming

Table 5—ACREAGE AND PRODUCTION OF PRINCIPAL FIELD CROPS[1]
(Figures in thousands)

Crop	Acreage 1958	Acreage 1959[2]	Production 1958	Production 1959[2]
Wheat (bu.)	20,899	23,065	371,730	413,520
Oats for grain (bu.)	11,039	11,391	400,951	417,933
Barley (bu.)	9,548	8,289	244,764	255,550
Rye (bu.)	521	517	8,002	8,149
Flaxseed (bu.)	2,623	2,391	22,766	21,277
Mixed grains (bu.)	1,422	1,501	64,648	63,790
Corn for grain (bu.)	499	489	29,892	31,023
Buckwheat (bu.)	102	83	2,139	1,629
Peas, dry (bu.)	72	64	1,146	984
Beans, dry (bu.)	67	68	1,421	1,430
Soybeans (bu.)	263	251	6,649	6,828
Potatoes (cwt.)	311	295	40,301	35,290
Mustard seed (lb.)	87	80	70,292	49,144
Rapeseed (lb.)	626	218	388,100	180,000
Sunflower seed (lb.)	49	42	22,125	37,000
Tame hay (tons)	11,477	11,779	18,029	20,246
Fodder corn (tons)	381	369	3,767	3,964
Field roots (tons)	35	30	401	337
Sugar beets (tons)	98	94	1,325	1,221

[1] Not including Newfoundland, for which data are not available.
[2] November estimate. (Source: Dominion Bureau of Statistics.)

WIDE WORLD

Queen Elizabeth presents new colors to members of the Royal 22d Regiment. The queen reviewed the troops June 23 on the Plains of Abraham, Quebec City, as part of her tour.

Reviewing troops of the Royal 22d Regiment are Queen Elizabeth, who is colonel-in-chief of the famed French-Canadian regiment; Maj. Gen. George P. Vanier (left), whom she later named as governor general; and Prince Philip (right).

THE NATIONAL FILM BOARD

operations in 1958 was $1.3 billion (prelim.), up 20% from 1957.

Farm Output.—The index of the physical volume of agricultural production (1935–9 = 100) rose from 133.6 in 1957 (rev.) to 139.4 in 1958 (prelim.). Output of livestock and livestock products was chiefly responsible for the 1958 increase, wheat and most other field crops (with the chief exceptions of oats, barley, and flaxseed) showing slight declines. Production of leaf tobacco for the crop year ending Sept. 30, 1959, was an estimated 197.3 million pounds (green weight), up nearly 20%. The 1958 crop of apples, the chief commercial fruit crop, was 17 million bushels. Milk production in 1958 was a record 18.1 billion pounds (up 4.7%); creamery butter, 337 million (up 11%); cheddar cheese, 87.5 million (down 9%); concentrated milk products, 598 million (up 11%); and eggs, 450 million dozen (up 0.7%).

Mineral Production.—Canada leads the non-Communist nations in the production of uranium, nickel, zinc, and asbestos, is second in gold and the platinum metals, and third in iron ore and silver. With the discovery of vast reserves of oil and natural gas in the Midwest, iron ore in Ontario, Quebec, and Labrador, and uranium in Saskatchewan and Ontario, Canada's mineral production rose in value by 240% from 1947 to 1957. In 1958, petroleum maintained its position as Canada's leading mineral, though output dropped about 8.4% from 1957. Uranium jumped to second place, with output more than doubling that of 1957. The total value of mineral production in 1958 was estimated at $2,122.2 million (prelim.), down 3.1% from the record $2,190.3 million of 1957. Ontario, the leading producer, provided 37.7% of the 1958 output value; Quebec, 17.5%; Alberta, 16.0%; and Saskatchewan, 10.1%. (See also IRON AND STEEL.)

Table 6—CANADA'S LEADING MINERALS
(Figures are in thousands; data for 1958 are preliminary.)

Mineral and unit of production	1957 Quantity	1957 Value	1958 Quantity	1958 Value
Asbestos (tons)	1,046.1	$104,489.4	942.1	$ 96,168.0
Cement (tons)	6,049.1	93,167.5	6,069.0	95,869.6
Clay products	...	35,922.2	...	42,611.9
Coal (tons)	13,189.2	90,220.7	11,441.7	78,217.6
Copper (lbs.)	718,218.5	206,898.0	698,929.0	178,077.6
Gold (troy ozs.)	4,433.9	148,757.1	4,534.5	154,065.5
Iron ore (tons)	22,272.2	167,221.4	15,878.5	121,437.3
Lead (lbs.)	362,968.5	50,670.4	371,540.7	42,095.6
Natural gas (M cu. ft.)	220,006.7	20,962.5	337,996.0	28,487.6
Nickel (lbs.)	375,916.6	258,977.3	278,082.8	196,734.0
Petroleum (bbls.)	181,848.0	453,593.6	166,476.3	401,027.2
Sand and gravel (tons)	159,829.5	91,939.4	167,943.9	97,528.8
Silver (troy oz.)	28,823.3	25,182.9	31,311.4	27,200.2
Stone (tons)	40,282.1	59,197.7	40,516.9	57,699.5
Uranium oxide (lbs.)	13,271.4	136,304.4	28,237.3	290,228.4
Zinc (lbs.)	827,481.7	100,042.5	857,275.9	93,100.2

(Source: Dominion Bureau of Statistics.)

Forestry.—Canada's vast forests contain an estimated 665,126 million cubic feet of merchantable timber, of which nearly 90% is regarded as accessible to commercial operations. Forest production in 1957 totaled 3,172.2 million cubic feet (down 8.4% from the record 1956 volume), valued at $823.1 million (down 12.4%). Output of leading primary forest products in 1957 (in millions of cubic feet) was: logs and bolts for sawing, 1,553.7; logs for pulping, 108.4; pulpwood, 1,163.9; and fuelwood, 285.1. British Columbia, the leading province in primary forest production, had a 1957 output of $301.8 million; Quebec, $231.9 million; and Ontario, $155.4 million. (See also FORESTRY; LUMBER.)

Fisheries.—Landings of sea fish and shellfish in 1958 totaled 1,851.3 million pounds (prelim.), valued at $101.6 million (up about 25% from 1957). Landings on the Atlantic coast, chiefly lobster, cod, and haddock, had an estimated value of $51.4 million; on the Pacific coast (chiefly salmon, herring, and halibut), $50.2 million (up 66% over 1957).

Furs.—Pelts taken from wildlife and ranch-raised animals in the 1957–58 fur season numbered 6,440,000 (down 7% from 1956–57), valued at $26,335,000 (up 3%). Mink continued as the leading fur, with 1,116,000 pelts valued at $18,345,000; beaver was second with 342,000 pelts valued at $3,572,000.

Hydroelectric Power.—With only about a fourth of its water power resources under utilization, Canada is second only to the United States in total hydroelectric power installation. Canada's capacity turbine installation totaled 22,379,626 hp. at the end of 1958, with net new capacity added during the year amounting to a record 2,485,040 hp. Electrical energy generated from water power (comprising about 93% of total electric power) amounted to 90,247.8 million kw.-hr. in 1958, 8.6% above 1957 output. (See also SAINT LAWRENCE SEAWAY AND POWER PROJECT.)

Foreign Trade.—Reflecting the business recession of 1957–58, Canada's exports remained virtually stationary in 1958 for the second successive year, while imports dropped even more sharply than in 1957. Canada's 1958 exports (including re-exports) totaled $4,928.4 million, or 0.1% below the $4,934.4 million of 1957; imports totaled $5,192.4 million, or 7.7% below the $5,623.4 million of 1957 (1957 imports had been 1.4% below 1956). Total trade in 1958 was reduced by 4.1%, while the fall in imports cut the deficit in commodity ac-

Table 7—CANADIAN TRADE BY LEADING COMMODITIES

Commodity	1957 ($'000)	1958 ($'000)	% of change, 1957–1958
Exports[1] to all countries:			
Newsprint paper	715,490	690,209	−3.5
Wheat	380,415	446,078	17.3
Planks and boards	281,681	292,013	3.7
Wood pulp	292,406	285,449	−2.4
Uranium ores and concentrates	127,935	276,506	116.1
Aluminum[2]	229,386	222,442	−3.0
Nickel[2]	248,253	212,580	−14.4
Copper[2]	162,109	137,113	−15.4
Aircraft and parts[3]	39,910	109,113	173.4
Iron ore	152,281	107,674	−29.3
Imports from all countries:			
Machinery (nonfarm) and parts	631,599	532,916	−15.6
Petroleum[4]	305,557	278,540	−8.8
Automobile parts[3]	260,075	240,526	−7.5
Electrical apparatus	249,328	240,112	−3.7
Rolling mill products	221,257	147,049	−33.5
Automobiles, passenger	106,596	141,543	32.8
Engines (internal combustion) and parts	123,870	121,327	−2.1
Tractors and parts	127,658	117,290	−8.1
Aircraft and parts[3]	93,691	94,820	1.2
Pipes, tubes, and fittings	147,727	88,371	−40.2

[1] Domestic exports (not including re-exports, amounting to $98.1 million in 1958). [2] Primary and semifabricated. [3] Except engines. [4] Crude and partly refined. (Source: Dominion Bureau of Statistics.)

Table 8—DISTRIBUTION OF CANADIAN TRADE BY LEADING COUNTRIES

Country	Calendar Year 1956 ($'000)	1957 ($'000)	1958 ($'000)	% of total (1958)
Exports[1] to:				
United States	2,818,655	2,867,608	2,832,262	58.6
United Kingdom	812,706	737,530	775,896	16.1
West Germany	134,098	151,939	201,863	4.2
Japan	127,870	139,152	104,891	2.2
India	25,714	28,991	79,110	1.6
Imports from:				
United States	4,161,667	3,998,549	3,572,379	68.8
United Kingdom	484,679	521,958	526,650	10.1
Venezuela	208,401	248,145	209,590	4.0
West Germany	89,348	97,646	105,944	2.0
Japan	60,826	61,605	70,216	1.4

[1] Domestic exports (not including re-exports, amounting to $98.1 million in 1958). (Source: Dominion Bureau of Statistics.)

count to $264 million (from $639 million in 1957). Among the outstanding export changes in 1958 were the 116% jump in uranium and the 173% rise in aircraft and parts. Newsprint paper, despite a 4% decline, maintained its leading position, accounting for over 14% of total domestic exports. Import changes included declines of 13% in iron and steel goods, 5% in fibers and textiles, 11% in nonferrous metals, and 12% in nonmetallic minerals, and a rise of 33% in passenger cars.

The United States continued as Canada's leading trading partner, providing 68.8% of Canada's 1958 imports (71.1% in 1957) and taking 59.1% of exports (59.3% in 1957). (See also INTERNATIONAL TRADE.)

Transportation and Communications.—The Trans-Canada Highway, scheduled for completion in 1960, will have a length of 4,480 miles, not including some 390 miles through the Province of Quebec, which has not entered into the federal-provincial Trans-Canada Highway Agreement.

Canada had 423,939 miles of highways and rural roads in 1957, including 231,044 miles of surfaced roads. Of the total surfaced roads, 39,123 miles were of concrete, bituminous pavement, and bituminous surface. Expenditure on roads and highways (including bridges) outside urban areas totaled $701,972,824 in 1957, or 7.4% over 1956. Motor vehicle registrations numbered 4,675,560 in 1958 (5% over 1957), including 3,572,963 passenger car registrations. About 65% of Canadian households had automobiles in 1959.

Railroads.—Canada ranks third behind the United States and the USSR in total railroad mileage. Track mileage in operation in Canada at the end of 1958 was 59,319 route miles (222 miles more than in 1957); first main track, or single track, totaled 44,125. The two major systems, both transcontinental, are the government-owned Canadian National Railways (24,882 miles operated in 1958) and the privately owned Canadian Pacific Railway (17,096).

Commercial Aviation.—The chief scheduled operators are the Trans-Canada Air Lines (owned by the Canadian National Railways) and the Canadian Pacific Air Lines Ltd. (owned by the Canadian Pacific Railway). There are numerous smaller scheduled and nonscheduled lines. An average fleet of 930 aircraft was used by commercial carriers in December 1958 (858 in December 1957). Revenue passengers carried by Canadian carriers rose by 7.9% in 1958 to 4,021,721 (about 2,757,000 carried by Trans-Canada Air Lines). (See also AERONAUTICS.)

Shipping.—Vessels on the Canadian shipping registry (including vessels for inland navigation) numbered 18,294 with a net tonnage of 1,730,139 at the end of 1957. The major share of traffic utilizing Canada's network of canals passes through the Welland Ship Canal, the St. Lawrence River canals, and the Canadian Sault Ste. Marie Canal. Freight locked through Canada's 11 principal canals in the 1958 navigation season totaled 35,096,587 tons, down 5.7% from 1957.

Communications.—In 1959 nearly 81% of Canadian households had telephones, and Canada was third (behind the United States and Sweden) in the proportion of telephones to population. The number of telephones operated by Canada's 15 largest systems (operating 94% of all telephones) was 4,809,568 at the end of 1958 (prelim.), a rise of 6.5% during the year. Close to 75% of Canadian homes have television sets, and 91% of the population is within range of service. As of Jan. 1, 1959, there were 10 Canadian Broadcasting System and 40 private television stations in operation, and 26 CBC and 149 private radio stations. In 1958, Canada had 111 daily newspapers, including 91 in English and 13 in French; total circulation exceeded 4 million. Post offices numbered 11,768 on March 31, 1958. (See also MAGAZINES; NEWSPAPERS.)

(For further references, see the Index entry, *Canada.*)

M. J. G.

THE YEAR 1959 IN CANADA

The year 1959 marked the 200th anniversary of the battle of the Plains of Abraham, which eliminated the power of France in North America. Since this was a victory of English over French, and since the two communal groups, English-speaking and French-speaking, have too often confronted each other in the intervening centuries as "two nations warring in the bosom of a single state," they found some difficulty in celebrating the bicentenary together.

The year was also notable for the royal visit of Her Majesty Queen Elizabeth II and Prince Philip, who came to Canada to preside over the official opening on June 22 of the new St. Lawrence Seaway. Their subsequent continentwide tour produced the expected outpouring of loyal sentiment from Canadians everywhere, though no such spectacular demonstration of enthusiasm as was given on July 6 by the citizens of Chicago; but it left a certain amount of dissatisfaction. What had been announced as an informal visit turned out to be a minutely organized succession of official functions in which the royal guests were overworked. Controversies between Canadian and British newspapers as to how the tour should be managed, and dissensions among different groups of Canadians as to favoritism in the allotment of invitations to special functions left an uneasy impression that Canadians were not showing up at their best in the presence of royalty.

The representative of the queen in Canada, Governor General Vincent Massey, whose term of office had been twice extended, retired in 1959, and was succeeded on September 16 by a French Canadian, Maj. Gen. George P. Vanier (q.v.). The first Canadian to hold the office of governor general, Massey was universally admitted to have set an almost perfect standard in the grace and dignity of his public appearances and in his lively interest in all aspects of Canadian life.

Federal Government.—After the general election of 1958, which gave such a sweeping victory to the Conservative government of Prime Minister John Diefenbaker (q.v.), federal politics in 1959 were comparatively quiet. In December a Conservative Party convention of some 2,000 delegates met in Ottawa. Although the Gallup Poll agreed with private students of politics that the government was no longer so popular as in the victory year, the convention seemed to be without any differences of opinion whatever. It adopted a series of policy resolutions which failed to mention the two topics about which newspaper controversy had been most lively during the year—"tight" money and defense.

As in the United States, there was a collapse in the price of federal government bonds owing to government borrowings which the market seemed unable to absorb. Pressure by the Bank of Canada on the commercial banks to restrict the amount of credit available in order to fight inflationary tendencies, of which government borrowing was one of the chief causes, led to bitter complaints from private would-be borrowers and from provincial and municipal governments. The federal government's denial of any responsibility for the tight-money policy led to somewhat acrimonious discussions in public between it and the commercial banks.

The issue of defense became acute early in the year when the government finally took the step, which had been predetermined in 1958, of canceling (announced Feb. 20, 1959) the contract to build a Canadian supersonic jet plane, the Avro CF-105 Arrow. For the defense of the Arctic approaches to Canada against invasion by plane or missile, the government adopted the United States Bomarc missile in place of the abandoned jet planes—a fact which appeared to make Canada even more dependent on the United States than it had ever been before. Critics became vociferous when it developed that nobody seemed able to explain clearly whether the ultimate control of the atomic warheads in the Bomarc missile would rest with the Canadian or with the United States gov-

ernment. Technological developments were in fact creating confusion in Canadian defense policy as well as in that of all the Western countries. It was charged sarcastically that Canadian defense policy now consisted in spending $2 billion a year on anything that could plausibly be called defense.

Owing to its strict financial policy, the government also ran into other troubles. Increases in civil service salaries were refused by the minister of finance. The demands of the provinces for increased provincial subsidies were also turned down for the time being. And the assistance proposed by the federal government to the prairie wheat farmers, who had had portions of their wheat crop ruined by early snowfalls, was criticized throughout the West as being inadequate.

The 1959–60 budget, presented on April 9 by the minister of finance, Donald Fleming, provided for a general increase in taxation. He estimated for the coming fiscal year an outlay of $5,660 million against receipts of $5,267 million; these figures were based on an estimated gross national product of $34.5 billion, an increase of 7% over 1958. Slight increases were made in personal income, corporation, and sales taxes; duties on fruits and vegetables, and textiles; and excise taxes on cigars, cigarettes, and spirits. Every pocket was hit by these increases, but there seemed no likelihood that the government deficit would be eliminated, and the problem of future government borrowings remained.

Provincial Governments.—In Manitoba the Conservative government of Premier Duff Roblin, which had come into office in 1958 as a minority administration, appealed to the people on May 14 and won 34 seats out of 55, with the Liberals getting 11 and the Co-operative Commonwealth Federation (CCF), 10.

In Ontario, Premier Leslie Frost sought re-election on June 11, and for the sixth time in succession the Conservative Party won the day. Its representation was reduced from 83 seats to 71, the Liberals increased their number of seats from 11 to 22, and the CCF won 5 (formerly, 3); but the Frost government remained securely in office.

In Alberta, on June 18, the Social Credit government sought re-election and received its seventh successive mandate by winning an overwhelming victory—61 out of 65 seats. The leaders of the other three parties (Liberal, Conservative, and CCF) were defeated in their own constituencies. This was the fifth provincial victory won by the Social Credit Party under Premier E. C. Manning. It was the more notable because in the federal election of 1958 the Conservatives under Prime Minister Diefenbaker had swept every seat in Alberta, and Social Credit had been ousted completely from any representation at Ottawa.

In Newfoundland the Liberal premier (the only Liberal provincial premier in Canada), Joseph Smallwood, brought on an election on August 20 in order to obtain popular approval for his drastic action against a strike by the International Woodworkers of America, and to get the voters to endorse his denunciation of the federal government for its refusal to send additional police forces to assist in maintaining order during the strike and for its announcement that the special financial help given to Newfoundland would come to an end in 1962. His return to office with practically the same representation as before meant a strong endorsement from the voters of the province. However, Smallwood's differences with organized labor and with the Diefenbaker government continued.

In British Columbia the Social Credit government intervened vigorously (by getting a wage increase) to bring to an end a long strike in the forestry industry, but it also was responsible for labor legislation limiting picketing and making unions liable to suits for damages—legislation that was denounced by organized labor as viciously reactionary. Thus, in the Atlantic and the Pacific provinces, labor was given grievances that added urgency to the project of the CCF and the Canadian Congress of Labour for launching a new nationwide party of the left in which the trade unions would play a part similar to that which they play in the Labour Party of Great Britain.

Premier Maurice L. Duplessis of Quebec died on September 7. His successor, Paul Sauvé, died suddenly from a heart attack on Jan. 2, 1960, and was in turn succeeded by Antonio Barrette. During Duplessis' tenure, Quebec had stubbornly refused to cooperate with the federal government in a good many fields in which the other provinces cooperated more or less willingly. It refused to give up its right to income taxes and succession duties in return for subsidies from Ottawa. It refused to allow its universities to accept financial help from the Canada Council, as did the universities in other provinces. It remained to be seen whether the new administration would be more flexible in federal-provincial relations.

Canadian Broadcasting Corporation.—During and after the parliamentary session, the most exciting events in Ottawa centered around the Canadian Broadcasting Corporation (CBC). A strike which broke out in Montreal at the end of 1958 as the result of a bitter dispute between the CBC management and the producers of its French programs dragged on for weeks in early 1959 before it was settled. A special committee of the House of Commons carried on an investigation of the CBC which was distinctly hostile in tone. Among other things it discovered that expensive television entertainment programs sponsored by various business enterprises were only partly paid for by the sponsors, who thus got the benefits of advertising which was partly paid for by the taxpayers. In the middle of the investigation, all the producers of discussion programs on the CBC resigned on allegations of improper political interference in this field. The House of Commons committee, dominated by its Conservative majority, took rather extreme pains not to press the investigation of these allegations, since the interference, if there was any, obviously came from the Conservative government.

The government established a new Board of Directors to control the CBC. A new Board of Broadcast Governors was also set up to supervise the broadcasting activities of both the CBC and private broadcasters; its chairman was Andrew Stewart, former president of the University of Alberta. It began by announcing that it was prepared to license private television stations in the main cities where the CBC had hitherto held a monopoly, and by laying down fairly strict rules as to the percentage of Canadian content that would be required on television shows, whether produced by the CBC or by private enterprisers. Evidently the whole future of broadcasting in Canada would depend on the strictness with which the Board of Broadcast Governors enforced standards of quality and content in programs, and on the decisions which the Board of Directors made as to the proportion of CBC programs that should have a mass appeal and so attract sponsors, and those that should appeal to a more select audience.

Royal Commissions.—On the recommendation of the Royal Commission on Energy, headed by Henry Borden, a National Energy Board was set up in 1959 by the government to oversee all activities in this field. In August the Borden Commission made a further report on the oil industry recommending that if the Canadian oil producers in the West could not within a reasonable time

find markets in the United States, a pipeline should be built to Montreal where Canadian oil, in place of overseas oil presently used in Montreal, should be refined for Canadian consumers. This protectionist proposal was not unanimously adopted by the members of the commission. In December the Royal Commission on Price Spreads made a report which was strongly critical of some of the pricing and advertising practices of the big chain-store organizations.

Foreign Affairs.—Canada's external policy came under the direction of a new minister in 1959. Following the sudden death of Sidney Smith on March 17, Prime Minister Diefenbaker appointed on June 4 one of his most trusted associates to the office, Howard Green (q.v.) of British Columbia. Although without experience in this field, Green's frankness and informality during his early months of office helped to make him popular and to give the Conservatives something they could place in the balance against the great international reputation of the Liberal ex-secretary of state for external affairs, Lester Pearson. Secretary Green indicated in his first full report to the House of Commons on July 9 that the government's foreign policy was aimed at lessening world tensions and that Canada would remain firmly aligned with the other Western nations.

Canada continued to consult with the United States on outstanding issues during the year. American and Canadian officials met at Ottawa on January 5–6 to discuss economic problems affecting the two nations, chief of which was the question concerning United States import quotas on Canadian oil. A United States proclamation of March 10 imposing mandatory controls on all oil imports was later rescinded to exempt oil from Canada after the Canadian government had protested strongly against the action. On May 22 the United States and Canada signed an agreement relating to cooperation in atomic energy for purposes of mutual defense. During meetings of the Canada–United States Ministerial Committee on Joint Defense at Camp David, Md., on November 8–9, Secretary Green asked for and received assurances that Canada and other smaller nations within NATO would be consulted more thoroughly in the future in regard to planned East-West negotiations with the Soviet Union. (For details on the prime minister's foreign policy actions during the year, see DIEFENBAKER, JOHN.)

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CANADIAN LITERATURE. A large and interesting variety of books were published in Canada in 1959; and, in general, Canadian publishers were optimistic about the future, having overcome the uncertainty of the postwar period, the threat of television's incursion into the reading public's time, and the difficulties accompanying rising production costs.

Novels.—A number of worthwhile writers published their first novels during the year, with Phyllis Brett Young and Norma Sluman attracting considerable attention. Miss Young's book, *Psyche,* is filled with amusing and ironic incidents, and Miss Sluman's *Blackfoot Crossing* is excellent fiction about Chief Crowfoot and the Indians of Alberta in 1874. Other first-book novelists of interest were Ronald Hambleton, with his literate and lively *Every Man Is an Island,* and Illia Kiriak, with his intense but gentle *Sons of the Soil.* (Unfortunately, Mr. Kiriak, born in 1888, died in 1958, soon after he wrote this fine study of Ukrainian immigrants in the Canadian West.) Other writers of promise were Sheila Watson, who published *The Double Hook,* a profound, sometimes obscure study of clashing personalities, and Arthur Storey, who brought out *Prairie Harvest,* a rather drawn out but authentic, account of homesteading in Saskatchewan.

An unhappy phenomenon of Canadian letters is the fact that veteran novelists permit extended periods of time to elapse between books. Whatever the cause, this paucity of production is undoubtedly a main factor in the slow development of an aggressive and influential national literature.

Hugh MacLennan is a case in point. His fourth novel, *Each Man's Son,* was published in 1951, but it was not until 1959 that his fifth novel, *The Watch That Ends the Night,* appeared in print. (A collection of MacLennan's essays, *Thirty and Three,* came out in 1955.) MacLennan's latest work is a remarkably penetrating study of life in Montreal during the depression years of the 1930's and later. A memorable novel, *The Watch That Ends the Night* gives ample reason for Canadian critics and readers to yearn for more frequent works from the pen of this refreshing and important writer.

Among other seasoned novelists to bring out books in 1959 were Jeann Beattie, whose *Behold the Hour* affords a keen look at the nervous world of Toronto television, and is even better than her first novel, *Blaze of Noon* (1950); Jan Hilliard, who provides a delightful escape story in *Dove Cottage;* Nan Shipley, who, in *The Scarlet Lily,* recapitulates Canadian development, especially in the West, by tracing the fortunes and misfortunes of her heroine, Ellen Nash; and John Cornish, whose *Olga* is a boisterous account of eccentrics (including members of a religious sect not unlike the Doukhobors) in an Anglo-Slavic village in British Columbia.

Poetry.—A collection, *Recent Canadian Verse,* edited by Milton Wilson, is worthy of note because it indicates the trends among modern Canadian poets. Books of verse by individual poets include R. Cynewulf Robbins' *Out of Solitude* (bold, direct, realistic); George Johnston's *The Cruising Auk* (light but sharp); Verna Loveday Harden's *In the Mind Carrying* (traditional but beautifully worded); and Ronald Bates' *The Wandering World* (unique and exciting). An interesting publication of the year was *Anerca,* a collection of Eskimo poetry edited by Edmund Carpenter. *River and Realm* by Theresa E. and Don W. Thompson was characterized by one critic as the "Seaway in Verse."

Memoirs and Biography.—For so young a country, with so small a population, Canada continues to produce an astonishing number of people who feel they have a story of special interest to tell. Among the more interesting memoirs published in 1959 are *Farmer Citizen,* in which W. C. Wood reports on his 50 years in the Canadian farmers' movements; *Small Patients: The Autobiography of a Children's Doctor* by Alton Goldbloom; and *Days of Living* (ed. by Jackson Pollick), Martin Roher's inspiring report of his ten-year confinement to a hospital bed. Also published were *I Would Do It Again* by Robert E. Campbell, a former schoolteacher and member of the Alberta legislature; *I Was No Lady* by Jean W. Godsell, wife of a former Hudson's Bay Company employee in northern Canada; *Making Your Living Is Fun,* by Kate Aitken, veteran radio broadcaster; and *Something Always Turns Up* by Bluebell Stewart Phillips, wife of an Anglican minister in Quebec.

Of considerable historical value is *The Memoirs of Sir Joseph Pope.* Sir Joseph, who lived from 1854 to 1926, served from 1882 to 1891 as private secretary to Sir John A. Macdonald and from 1909 to 1926 as undersecretary of state for external af-

fairs. The subject himself contributed the memoirs from 1881 to 1907; his son, Maurice Arthur Pope, competently reported on the years subsequent to 1907.

Biography covered a wide range of subjects. W. J. Eccles published *Frontenac, the Courtier Governor;* Michael Brecher, *Nehru: A Political Biography.* Alden Hatch contributed *The Miracle of the Mountain: The Story of Brother André and St. Joseph's Shrine on Mount Royal;* Iris Noble, *The Doctor Who Dared: William Osler;* I. E. Levine, *The Discoverer of Insulin: Dr. Frederick G. Banting;* and Kenneth McNaught, *A Prophet in Politics: A Biography of J. S. Woodsworth.* Leslie Ruth Howard's *A Quite Remarkable Father* is a daughter's view of her late actor-father, Leslie Howard.

An interesting feature of the year was the number of multiple-subject biographies. These included Peter C. Newman's *Flame of Power,* a study of 11 Canadian millionaires; Margaret Mason Shaw's *Geologists and Prospectors: Tyrell, Camsell, Cross, LaBine;* and John Walter Grant MacEwan's *Fifty Mighty Men,* the story of Canadians who developed the West.

Other Nonfiction.—The flow of regional books continued unabated in 1959. Among these were Kenneth McNeill Wells' *Cruising the Trent-Severn Waterway;* Lex Schrag's *Crater Country,* an account of an expedition in 1958 to the meteor crater in Ungava; Andrew Hill Clark's *Three Centuries and the Island: A Historic Geography of Settlement and Agriculture in Prince Edward Island;* and E. C. Drury's *All for a Beaver Hat: A History of Early Simcoe County.*

There were a number of books about Canadian aviation and aviators. Eugenie Louise Myles, in *Airborne from Edmonton,* discusses the development of aviation in Edmonton after World War I. *There Shall Be Wings: A History of the Royal Canadian Air Force* was Leslie Roberts' contribution to this category. *In Canadian Skies,* which one critic described as "50 years of adventure and progress in the air above Canada," was written by Frank H. Ellis; and *The Silver Dart: The Authentic Story of the Hon. J. A. D. McCurdy, Canada's First Pilot,* by Henry Gordon Green.

The newly opened St. Lawrence Seaway received ample coverage during the year. Lionel Chevrier, first president of the Canadian Seaway Authority, discusses the building of the great water route in *The St. Lawrence Seaway.* In another book with the same title, T. L. Hills gives the background and economic consequences of the project. F. J. Bullock, in *Ships and the Seaway* treats the waterway from a seaman's point of view. Relative to the subject is *The St. Lawrence,* William Toye's discussion of the river itself.

Historical works published in 1959 included *The Story of Canada* by Donald Creighton, Canadian editor for The Encyclopedia Americana; *Quebec 1759* by C. P. Stacey; and *The Plains of Abraham* by Brian Connell. Current history and public affairs were represented by Edgar Wardwell McInnis' *The Atlantic Triangle and the Cold War,* George Edward Gordon Catlin's *The Atlantic Community,* and Miriam Chapin's *Contemporary Canada.*

Books by two Canadian statesmen also appeared. Vincent Massey, in the eloquent and witty *Speaking of Canada,* brings together 44 speeches he delivered between 1952 and 1959, when he was serving as governor-general. Lester B. Pearson offered *Diplomacy in the Nuclear Age,* which is based on a series of his lectures given in 1958.

Children's Books.—Books for very young readers, a recent innovation by writers of children's literature, included Winnifred Edwards' *The Money Tree, and Other Stories,* James McNeill's *The Sunken City, and Other Tales from Around the World,* and Lucille Chaplan's *Elephant for Rent.* The early teenage group could choose from Frances Fraser's *The Bear Who Stole the Chinook* (Indian legends); Audrey McKim's *Andy and the Gopher* (an Alberta lad's adventures with a gopher that has an Irish brogue); and Ragnhildur Guttormsson's *Ian of Red River* (Scottish immigrants of the area where Winnipeg now stands). Older teenagers were offered Robert D. Ferguson's *Man from St. Malo,* about Jacques Cartier; Fred Swayze's *Frontenac and the Iroquois;* Edward Alexander McCourt's *Revolt in the West: The Story of the Riel Rebellion* (published in 1958); and John Norman Harris' *Knights of the Air: Canadian Aces of World War II.* General histories of Canada were provided by Lyn Harrington's *Real Book About Canada* and Donalda Dickie's *My First History of Canada.*

Charles Clay,
Former National Secretary,
Canadian Authors Association.

French-Canadian Literature

Some twenty years ago French-Canadian literature broke away from the pastoral, religious, and patriotic patterns to which it had seemed chained from the beginning. Since then it has never looked back. The net result is that French Canada's contribution to North American literature has become increasingly varied and important.

Fiction.—The best novels of 1959 and late 1958 are by two well-known authors. Yves Thériault, the author of several novels and short stories, sets his latest and best novel, *Agaguk,* among the Eskimos in the barren lands of northern Quebec. Written in the best Flaubert tradition, its unrelenting realism achieves a vivid portrayal of Eskimo life and psychology. Anne Hébert, whose poems and short stories had already won her wide acclaim, has now brought out a novel, *Les chambres de bois,* which was an immediate success. Its poetic prose readily falls into symbolistic patterns that stress human solitude, a theme that increasingly haunts contemporary French-Canadian writers.

There are several other recent novels worthy of mention. In *Les sentiers de la nuit,* Jean Simard, the author of three previous novels, unfolds the somber and bitter failure of a disillusioned bank employee living in Montreal. *Carrefour des hasards,* René Chicoine's first novel, is also a story of failure —the failure of a bright young man overcome by sickness, frustration, and solitude. *L'anse aux brumes,* by Maurice Gagnon, attempts to blend the weird and the real. *L'aube de la joie,* by Anne Marie, deals with the prosaic life of a housewife. Robert Choquette's characters in *Elise Velder* got their start in radio and on television. *Les angoisses et les tourments* is Léo-Paul Desrosiers' 13th novel but not his best one. André Giroux, with two good novels to his credit, turns to the short story form in *Malgré tout, la joie,* but, despite the title, sadness and pessimism rather than joy dominate these stories.

Poetry.—Much of the poetry now being written in French Canada comes from young and enthusiastic poets eager to experiment. *Il fait clair de glaise,* by Maurice Beaulieu; *Poèmes de l'Amérique étrangère,* by Michel Van Schendel; *A la pointe des yeux,* by Alain Marceau; *Les archipels signalés,* by Jean-René Major; and *Les pavés secs,* by Jacques Godbout, are attempts by young poets who are trying out their wings and who are generally preoccupied with the problems of man's existence. Fernand Ouellette in *Séquences de l'aile,* and Michèle Lalonde in *Geôles* and *Songe de la fiancée détruite,* a dramatic poem, show considerable promise.

Nonfiction.—There were few essays published in 1959. *Foi et littérature,* by Pierre Angers, S.J., brings together several articles and symposia where the main concern lies with the literary critic's responsibilities. *L'homme et l'hiver au Canada,* by Pierre Deffontaine, though primarily concerned with things geographical, also offers a greater understanding of the Canadian people and of its literature.

Albert Le Grand,
Associate Professor of French,
Queen's University, Kingston, Ontario.

CANAL ZONE. See Panama Canal.

CANALS. St. Lawrence Seaway.—Canals that bypass power dams on the St. Lawrence River, and the modernized Welland Canal bypassing Niagara Falls were dedicated as completed works of the St. Lawrence Seaway on June 26. Queen Elizabeth II of Great Britain and President Dwight D. Eisenhower participated in the dedicatory exercises. (See also Saint Lawrence Seaway and Power Project.)

Ohio River.—Modernization of the fully canalized Ohio River continued throughout 1959 and still had many years to go. The 981-mile river has many outmoded locks and dams from Pittsburgh

to Cairo, Ill., where the Ohio joins the Mississippi. These must be replaced by fewer, higher structures as the navigable channels of the river are deepened from 9 to 12 feet. Sixteen new structures will replace 41 of 46 old locks and dams, and those not replaced will be improved to afford locks 1,200 feet long and 110 feet wide. Construction of new facilities continued in 1959 at Markland, Greenup, New Cumberland, and New Richmond locks and dams. Improvements were under way on existing Lock 41.

Tennessee River.—A bottleneck was removed in 1959 from the heavily trafficked Tennessee River, which is canalized as far as Chattanooga, Tenn. The Tennessee Valley Authority (q.v.) constructed and, on November 10, dedicated a major lock with a 100-foot lift to replace old locks at Wilson Dam, Muscle Shoals, Ala. The $38 million project involved cutting almost three miles of new canal, and the whole construction operation had to be performed without disruption to the heavy barge traffic.

Panama Canal.—Gaillard Cut is to be widened 200 feet through about two miles of its seven-mile length. The new width of 500 feet is expected to increase traffic capacity of the canal. (See also PANAMA CANAL.)

Suez Canal.—Widening and deepening operations continued on the Suez Canal. Throughout much of 1959 the *Essayons*, world's largest hopper dredge, was leased to the Suez Canal Authority by the U.S. Corps of Engineers for deepening the Mediterranean approaches. (See also SUEZ CANAL.)

China.—Communist China was in 1959 reportedly rebuilding the 2,400-year-old Grand Canal, which extends 1,056 miles from Peking southeast to Hangchow on the East China Sea. The ancient waterway, begun in the 5th century B.C., was extended, improved, and finally completed in 1414 A.D. It has needed thorough rebuilding for approximately a century.

(See also the Index entry, *Canals.*)

ARTHUR J. FOX, JR.,
Senior Staff Editor, "Engineering News-Record."

CANARY ISLANDS. A group of mountainous islands in the Atlantic off the coast of Spanish Sahara, comprising two Spanish provinces: Las Palmas and Santa Cruz de Tenerife. Area, 2,808 square miles; pop. (Jan. 1, 1957), 866,078. The seaports of Las Palmas (169,467) and Santa Cruz de Tenerife (114,831) are the provincial capitals. Farming, fishing, oil refining, bunkering, and tourism are the chief sources of income.

CANCER. The magnitude of the research effort in cancer is increasing, stimulated in large part by public demand for more effective cancer control methods. During the fiscal year 1959, the U.S. Congress appropriation for the National Cancer Institute was increased by $20 million to $75,268,000; and the American Cancer Society, with a total budget of about $34 million, allocated over $10 million for research. Altogether, nearly $100 million was spent by the United States on cancer research in 1959 (*Chemical and Engineering News*, Oct. 12, 1959). This compares with about $60 million allocated in 1958.

Incidence.—With the decrease in infectious diseases and nutritional deficiencies as causes of death, the death rate from cancer is rising throughout the world. In 1959 it was estimated that 450,000 people in the United States would develop cancer; 150,000 of these would be cured by modern methods of treatment, and 75,000 would die needlessly because they did not receive proper treatment promptly. The overall incidence of cancer deaths in men exceeds that in women by a ratio of 1.25:1, but the disease is more common in women (due largely to the incidence of breast cancer) in a ratio of 1.5:1 during the ages of 35–44.

Cancer Research.—The relationship between cigarette smoking and the increasing incidence of lung cancer continues to be supported by statistical studies. Despite these facts, the use of cigarettes is increasing in the United States. In a recent study among high school students in Portland, Oreg., it was found that 35% of the boys and 26% of the girls in the senior class were regular smokers.

The incidence of leukemia has approximately doubled in the past 20 years, but the annual rate is approaching a plateau. Exposure to radiation as a cause of cancer (including leukemia) is under close scrutiny; evidence is accumulating that X-ray therapy to the neck region in children is a cause of thyroid cancer, and the use of large doses of radioactive iodine for therapeutic purposes has been associated with the development of acute leukemia.

The American Cancer Society is organizing a 5-year cancer-prevention study, beginning in 1960, in which 70,000 volunteers will accumulate data on the family background and living habits of more than 500,000 American families. It is hoped that this survey may lead to suggestions as to the causative factors in certain forms of cancer.

Viruses continue to be under intensive study as a cause of human cancer. The polyoma virus, described by Sarah E. Stewart and Bernice E. Eddy, has been found to cause a variety of tumors in mice, rats, and hamsters when injected early in life. The observation that the virus will produce tumors in several different species is of the utmost significance. Several investigators have induced tumors or leukemia in mice by injecting extracts or isolated substances from human cancers. The significance of these findings is unclear, since the tumors do not occur consistently and since mice are unusually susceptible test animals; also, a variety of unrelated procedures will induce tumors. Nevertheless, the trend of these studies suggests that noncellular substances obtained from human tissues can induce tumors in mice. Ludwik Gross has observed that cell-free extracts of leukemia, induced by radiation in low-leukemia strains of mice, will produce the disease when injected into young animals of the same strain.

Clinical Results.—The Cancer Chemotherapy National Service Center is now coordinating the screening of about 40,000 substances every year for inhibitory activity against animal tumors. A major portion of this program is concerned with the testing of antibiotics obtained from filtrates of various microorganisms. A filtrate active against animal cancer is purified to obtain the active ingredient, and then is prepared in quantity and tested in various forms of human cancer.

A new alkylating agent, cyclophosphamide (Endoxan, Cytoxan) developed in Germany, was under clinical trial in the United States in 1959. It appears to have the same range of therapeutic activity as the numerous other nitrogen mustard analogues already available. Many fluorinated pyrimidines are being evaluated in human cancer; 5-fluorouracil and 5-fluorodeoxyuridine have been studied most extensively. They appear to have brief and irregular therapeutic activity in the range of the toxic dose, and temporary improvement has been observed in large bowel and breast cancer and in hepatomas.

Robert D. Sullivan has reported on a new approach to the chemotherapy of cancer of the oral cavity. An antimetabolite, amethopterin, was given by constant infusion into the arterial supply to the cancer, and a protective substance, citrovorum factor, was given intramuscularly in order to prevent the systemic toxicity of the drug. The high constant concentration of amethopterin in the tumor-bearing area has produced clear-cut destruction of the cancer in a few cases without serious systemic toxicity. This technique may prove to be useful in treating cancers in other areas of the body.

Drs. John B. Graham and Ruth M. Graham have attempted to enhance a hypothetical host defense against tumor growth by injection of suspensions of the patient's cancer cells in Freund's adjuvant. It is hoped that the tis-

sues will serve as an antigen and that antibodies will be produced against the cancer. The clinical results reported thus far do not indicate that the treatment is particularly useful.

If successful organ transplantation could be accomplished, the surgical approach to cancer would be greatly expanded. Recent work has suggested that acquired tolerance to specific homografts may be produced by certain chemicals. If this work is confirmed and extended, it would represent a major advance.

On the basis of work in mice, it was hoped that patients with acute leukemia could be given total body X-ray treatment in the lethal dose range to destroy the leukemic cells, and then normal bone marrow from another individual could be injected to replace that destroyed by the X-rays. In France, Georges Mathé gave total body irradiation in the lethal range (800–900 roentgens) to six children with acute leukemia, but in remission from the disease, and then injected homologous bone marrow. He obtained evidence of successful bone marrow acceptance in four cases, with suggestive evidence of "immune disease" from the foreign bone marrow, but the disease eventually recurred.

Necrology.—Jesse P. Greenstein (b. 1902), author of a classical work, *Biochemistry of Cancer* (2d ed. 1954), and chief of the biochemistry laboratory of the National Cancer Institute, died on Feb. 12, 1959. Cornelius P. Rhoads (b. 1898), director of the Sloan-Kettering Institute for Cancer Research and scientific director of the Memorial Center for Cancer and Allied Diseases, died on Aug. 13, 1959. Dr. Rhoads was one of the pioneers in the modern era of cancer research and the leading proponent of the chemotherapeutic attack on cancer.

(For further references, see the Index entry, *Cancer.*)

DAVID A. KARNOFSKY,
Sloan-Kettering Institute for Cancer Research, New York City.

CANDY. See CONFECTIONERY.

CANNING INDUSTRY. The total of canned goods produced by the industry during 1958 was slightly higher than in 1957, although there were decreases in the output of some individual products, mainly because of poorer crop yields. While the consumption of tomato products remained much the same during the two years, production in 1958 was 25% higher than in 1957, when the crop was very small.

If there were a fixed yearly supply of a perishable succulent food, an 18-month shelf (or storage) life for the canned product would be sufficient to insure its availability. Because of crop and other variations, however, a shelf life of three years is considered necessary. While the canning process provides this life, improvements are needed in the areas of flavor and color.

Green vegetables present the most serious problem in color preservation. The Blair process, which alkalinizes peas with calcium and magnesium oxides, yields peas of a bright green, but in a relatively short period of normal storage, the color reverts to the usual olive green.

The flavor problem is most serious in evaporated milk, which can be canned with little if any of the usual objectionable flavor but soon develops it during storage at normal temperatures.

The process of freezing canned concentrated orange juice was developed with the idea that the juice would not need to be subjected to heat. It was soon found, however, that inactivation of the quality-damaging enzymes required as much heat as in canning unconcentrated orange juice, in which all the essences are retained, and which, if kept under cold storage, would be a superior product.

New processes have been developed to sterilize certain vegetables very quickly and at very high temperatures without affecting the flavor, as the normal process does. Some enzymes survive, however, and still cause deterioration of flavor during normal storage.

There is evidence that greater use of cold storage may help achieve improvements in preserving flavor and color, as there is a direct relation between the lowering of temperature and the slowing of the molecular activity that causes the damage in these areas. (See also X-RAY.)

EDWARD F. KOHMAN,
Research Chemist and Consultant.

U.S. PRODUCTION OF CANNED FRUITS AND VEGETABLES, 1957–58

Product	Number of cases 1957	1958
Fruits and Fruit Juices:		
Apples[2]	3,688,185	3,639,132
Apple juice	4,652,718	5,346,198
Apple sauce[2]	14,006,339	16,002,901
Apricots	5,119,747	2,344,473
Blackberries	490,454	592,182
Blueberries	730,112	561,076
Boysenberries and youngberries	334,712	360,930
Cherries (red pitted)	3,604,022	2,746,314
Cherries (sweet)	1,502,847	1,508,325
Citrus salad (orange and grapefruit)[1]	651,741	540,001
Cranberry sauce	5,752,320	6,114,524
Figs	727,134	799,612
Fruits (mixed)	279,360	288,534
Fruit cocktail	14,883,778	15,106,618
Fruits for salad	1,172,379	839,417
Gooseberries	81,742	21,697
Grapefruit juice[1]	13,535,155	9,335,363
Grapefruit sections[1]	5,001,071	4,649,780
Lemon juice[1]	876,448	1,013,270
Loganberries	6,034	4,191
Olives (ripe)[2]	1,900,731	2,300,000
Orange and grapefruit juice (blended)[1]	4,491,809	4,139,828
Orange juice[1]	20,059,220	18,562,164
Peaches	28,135,788	28,395,159
Peaches (spiced)	497,366	471,198
Pears	10,772,094	9,777,495
Pineapple[2]	18,556,567	19,482,510
Pineapple juice[2]	11,248,651	13,464,622
Plums (purple)	1,126,857	1,464,663
Plums (not purple)	115,865	52,582
Raspberries (black)	215,265	239,860
Raspberries (red)	79,488	88,368
Strawberries	76,694	78,241
Tangerine juice[1]	602,505	246,763
Vegetables:		
Asparagus (green)	4,786,099	4,659,037
Asparagus (white)	1,983,109	2,827,322
Beans (green)	24,037,962	25,359,493
Beans (wax)	4,228,833	2,836,819
Beans (lima)	2,739,308	2,751,562
Beets	9,059,289	8,652,259
Carrots	2,295,491	3,034,293
Carrots and peas (mixed)	1,860,662	1,517,669
Chili sauce	2,207,926	2,098,665
Corn	37,516,892	32,078,437
Okra	650,813	987,321
Peas (black-eyed)	1,629,540	2,275,424
Peas (green)	37,806,943	33,110,010
Pimentos	919,006	1,261,487
Potatoes (sweet)	4,663,615	6,056,379
Potatoes (white)	3,745,705	3,946,968
Pumpkin and squash	2,844,467	2,996,550
Sauerkraut	7,409,524	7,254,120
Spinach	6,230,037	5,211,041
Other greens	2,152,654	2,523,281
Succotash	522,937	384,292
Tomatoes	20,894,969	29,604,341
Tomato catsup	24,079,436	28,364,305
Tomato juice	28,483,261	32,620,613
Tomato puree	3,456,349	3,396,672
Tomato sauce	6,863,107	10,978,814
Vegetables (mixed)	1,598,036	2,319,712

[1] Packing seasons are 1956–57 and 1957–58. [2] Packing seasons are 1957–58 and 1958–59.

CANOEING. See SPORTS, GAMES, AND SHOWS.

CAPE VERDE ISLANDS. See PORTUGUESE TERRITORIES.

CARIBBEAN COMMISSION. Established in 1946 by the United States, France, the United Kingdom, and the Netherlands, this organization initiates projects in the Caribbean areas of member governments and acts as an advisory body on problems of agriculture, communications, cooperatives, education, fisheries, health, housing, industry, tourism, and trade. Its headquarters are at Port of Spain, Trinidad. Associated with the commission is the West Indian Conference, composed of delegates from the countries served. Activities of the commission in 1959 included a conference

of information officers, held in Surinam in March; a conference on the financing of agriculture, held in Trinidad in April; and the 3d Caribbean Fisheries Seminar, held in St. Martin (Sint Maarten), Netherlands Antilles, in July.

Because of the increasing autonomy of many political units in the area, revision of the Caribbean Commission agreement was undertaken at meetings held at St. Thomas, Virgin Islands of the United States, during July and August 1959. At this time, plans were laid for a successor organization, to be known as the Caribbean Organization, with headquarters at San Juan, Puerto Rico. A budget of $316,000 was decided on by the prospective members; these include France (for the overseas departments of French Guiana, Guadeloupe, and Martinique); the Netherlands Antilles; Surinam; British Guiana; The West Indies federation; Puerto Rico; and the Virgin Islands of the United States. British Honduras, the Bahamas, and the British Virgin Islands also are eligible for membership. It was anticipated, subject to appropriate constitutional steps being taken by each of the member metropolitan governments, that the commission would be replaced by the Caribbean Organization late in 1960 or early in 1961; the transfer to new headquarters was to occur early in 1960.

CAROLINE ISLANDS. See PACIFIC ISLANDS.

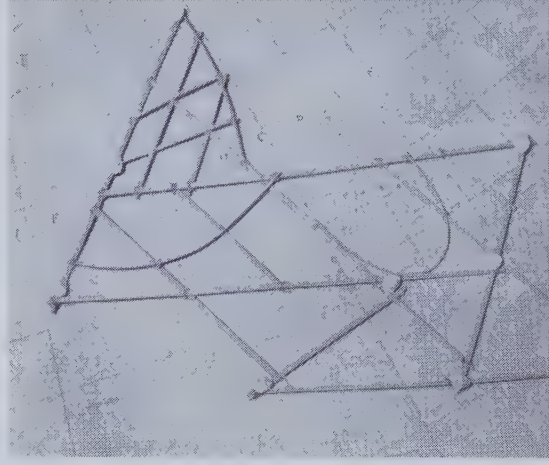
CARROTS. See VEGETABLES.

CARTOGRAPHY. Accelerated mapping of the United States, mapping programs in undeveloped areas in other countries, and new emphasis on the polar regions highlighted cartographic activities in 1959.

Mapping the United States.—The Geological Survey (q.v.) published 1,700 new topographic quadrangles during 1959, and also collaborated with the Tennessee Valley Authority in publishing 50 maps of areas in the TVA watershed. The Forest Service published new maps of about 40,000 square miles of national forest units. The Mississippi River Commission accelerated its program of producing aerial mosaics of various areas in the Mississippi River basin. Four large-scale city area maps, significant in civil defense planning, were added to the Geological Survey series. The Weather Bureau has introduced a new series of jet-age weather charts which are transmitted by facsimile circuit to major airports throughout the country. The Soil Conservation Service added 35 county units to the new series of soil maps employing a photo-mosaic base. The granting of statehood to Alaska and Hawaii has added over 150 sheets to the Army Map Service series of medium-scale maps of the United States, bringing the total number of sheets to 620. The series was about 80 per cent complete at the end of 1959.

Antarctic Mapping.—Long-range plans have been made by the Department of the Interior for mapping the Antarctic continent. Under the auspices of the National Academy of Sciences, a plan for Antarctic mapping was submitted at the third meeting of the Special Committee on Antarctic Research (SCAR) in Australia in 1959. The American Geographical Society's 4-sheet map of Antarctica was revised periodically during the year to incorporate new data, and a new reduced-size edition was printed in one sheet at the scale of 1:6,000,000.

World Mapping.—World isogonic charts for the 1960 epoch have been completed by the Coast and Geodetic Survey (q.v.) for publication by the U.S. Navy early in 1960. Seven new sheets were added in 1959 to the World Atlas Series of the



U.S. COAST AND GEODETIC SURVEY

This Polynesian stick chart, superimposed on a modern sailing chart of a section of the Pacific, has been found to be highly accurate. Devised by the South Sea islanders to aid them in navigation, the stick chart consists of a framework of wood, with shells strung at various crossings to represent islands. Strings may be stretched over frame to depict trade winds and waves at right angles to the wind.

National Geographic Society (q.v.), bringing the total number of sheets to 14; the atlas will ultimately include 60 maps. The collaborative mapping program in 17 Latin American republics was accelerated during 1959 by the Inter-American Geodetic Survey. In Mexico, necessary field work was completed for the production of medium-scale maps between the United States border and the 24th parallel. The American Geographical Society's 5-sheet Map of the Americas is being augmented by 4 additional sheets covering Europe, Africa, and the Near East, to be distributed in 1960. Five more are in preparation, covering all of Asia and Indonesia on the same type of format. The Arabian Peninsula is being mapped by the Geological Survey in collaboration with the Saudi Arabian government. The Army Map Service is engaged in a cooperative program to map the world, at a scale of 1:1,000,000, in about 950 map sheets.

Navigation Maps and Charts.—Yachtsmen and small-boat operators of the United States have been provided with an entirely new type of small-craft chart by the Coast and Geodetic Survey. The first of the series, covering the Potomac River, has been published, and other areas will be programed for the future. The Navy Hydrographic Office has published new charts of sections of the new St. Lawrence Seaway, extending the series of existing charts of a part of the seaway previously published by the Lake Survey. The Navy Hydrographic Office has issued new loran (long-range navigation) charts of the Caribbean, the Mediterranean, and the Atlantic. Important coordination is being achieved between the Lake Survey and the Canadian government in standardizing basic data on the Great Lakes, including the establishment of an international datum upon which to base chartable data. The Air Force Aeronautical Chart and Information Center has produced a new series of 1:1,000,000-scale operational navigation charts. The Coast and Geodetic Survey has published an experimental radio facility chart for user evaluation, and has continued the program of modifying the sectional aeronautical charts.

New Contributions.—The territorial sea has been delimited for the first time in a comprehensive set of measurements developed during 1959 by the Office of the Geographer of the U.S. Department of State. Lunar topographic maps are being prepared by the Army Map Service to portray coordinate points over the face of the moon. Conversion of these coordinates into heights, latitude, and longitude is achieved through the use of high-speed electronic computers. Precise glacier maps are being produced by the American Geographical Society to provide accurate measurements and evaluation of fluctuations of selected

WIDE WORLD

Fidel Castro addresses huge crowd in Havana, Cuba, after his triumphal entry into city on January 8 signaled victory of his revolutionary movement over the Batista regime.

Alaskan glaciers. The Navy Hydrographic Office has issued a new *Oceanographic Atlas of the Polar Seas* as the first of a series of similar atlases planned ultimately to cover all ocean areas.

Cartographic Techniques.—An improved method developed by the Navy Hydrographic Office will effect considerable saving in time and expense in constructing azimuthal equidistant projections. Extensive tests are being conducted by mapping agencies in the development of various improvements in lithographic processes and compilation-scribing techniques. The Army Map Service is now using the Variamat, an attachment to the copy camera lens, which operates on the vibration principle to vary line weights when photographically reduced or enlarged. The U.S. Army Engineer Research and Development Laboratory has developed a cartographic grid-ruling instrument capable of producing rectangular grids of high accuracy. The laboratory has also developed a multiplex reduction printer for use in preparing diapositives from aerial photographs.

Cartographers are receiving an important assist from the tiny Vanguard I satellite in eliminating errors on world maps. By tracking the radio signals of the satellite at various points, scientists are able to make major corrections on existing maps. For example, several Pacific islands which were found to have been mapped as much as a mile out of position were relocated by this method to an accuracy of about 250 feet. Another device for improving map accuracy has been developed by the U.S. Army Corps of Engineers. This instrument fixes the location of various points by observing the occultation of stars by the moon, and provides an accuracy to within 90 feet in distances between geographical locations. The device has shown that nearly all Pacific islands are misplaced from ½ to 2 miles on present charts.

(For additional information, see the Index entry, *Cartography.*)

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CASTRO, Fidel (FIDEL CASTRO RUZ), Cuban revolutionary leader and premier: b. Mayarí, Oriente Province, Cuba, Aug. 13, 1927. Seemingly a study in contradictions—to his admirers, idealistic and dedicated; to his detractors, impractical, ruthless, demagogic—Fidel Castro is the Cuban rebel leader, who, after two years of guerrilla warfare in the country's eastern Sierra Maestra Mountains, brought about the downfall of the dictatorial regime of Gen. Fulgencio Batista on Jan. 1, 1959.

The son of a wealthy sugar plantation owner, Fidel Castro was educated in Jesuit schools in Santiago de Cuba and Havana. During further study at the University of Havana (from which he received a doctor's degree in law in 1950), he joined in an abortive attempt in 1947 to invade the Dominican Republic, whose totalitarian regime is a prime target of Caribbean revolutionaries. Between 1950 and 1953 he practiced law in Havana.

In an army coup on March 10, 1952, General Batista seized power from President Carlos Prío Socarrás and canceled the elections scheduled for the following June—elections in which Castro had planned to run for Parliament. On July 26, 1953 (the date was to become the symbol of Castro's subsequent movement against the Batista regime) a group of young men, led by Castro and his brother Raúl, attacked the Moncada Barracks at Santiago de Cuba. The attack failed, and Castro, together with his brother, was captured and sentenced to imprisonment on the Isle of Pines. Released in the general political amnesty of May 1955, Castro went first to New York City and then to Mexico, where he began to build a force for a second strike against the Batista government.

On Dec. 2, 1956, Castro and about 80 followers attacked Cuba's Oriente coast. Many of the band were killed, but Castro, his brother, and a small group of revolutionaries escaped into the Sierra Maestra Mountains, from which they launched unceasing attacks against government outposts. The Batista government claimed that Castro had died in the original assault, but his existence became known to the world in February 1957 when the New York *Times* published a series of articles based on interviews with the rebel leader by *Times* reporter Herbert L. Matthews. From then on, amid sympathetic approval from people in the United States and elsewhere, the rebellion gained momentum. Finally, on Jan. 1, 1959, as his defense became more and more disorganized, Batista was forced to resign and flee Cuba.

Almost immediately the high hopes raised by the Cuban revolution were dashed by the spectacular executions that began early in January. During the year, after summary military trials, more than 500 Batista followers ("war criminals") met death before firing squads. Answering charges of excess, Castro is quoted as saying (*Time* magazine, Jan. 26, 1959): "If we have to oppose world opinion to carry out justice, we are ready to do it." In defending his decision not to hold elections for at least four years, Castro said (April 22) that free elections might lead to a return of "oligarchy and tyranny." On May 22, in one of his marathon television appearances (it is not uncommon for Castro to speak for three or four hours), the Cuban leader declared that the drastic agrarian reform law, which many observers believed would harm the country's shaky economy, "will be imposed to the letter regardless of consequences."

Castro became premier of Cuba on Feb. 16, 1959. He resigned on July 17 in order to force the ouster of President Manuel Urrutia, who had voiced disapproval of some of the government's more extreme measures, because Urrutia was "delaying the action of the revolution." Castro resumed the premiership on July 26, during a rally of an estimated 500,000 persons in Havana.

Through a year of turmoil there ran a thread of anti-American sentiment in Castro's utterances. In a news conference on December 10, U.S. Secretary of State Herter expressed what appeared to be the official American attitude toward Cuba: "I think that when the revolution took place in Cuba we were all very hopeful that it would bring to Cuba a new and badly needed regime. [Since then] our relations with Cuba . . . have deteriorated."

(For a detailed account of Fidel Castro's first year in power, see CUBA.)

CATHOLIC CHURCH. See RELIGION—*Catholicism;* ROMAN CATHOLIC CHURCH.

CATTLE. See the Index entry, *Livestock.*

CAULIFLOWER. See VEGETABLES.

CELERY. See VEGETABLES.

CEMENT. According to the U.S. Bureau of Mines, cement production in the United States in 1958 fell just short of the peak established in 1956. In 1958, output was 321,490,000 barrels, compared with 308,255,000 barrels in 1957. Shipments in 1958 were 317,263,000 barrels, as against 299,189,000 in 1957. Cement was produced in 164 plants, of which the estimated annual capacity in December 1958 was 6% greater than in the preceding year. Of the total production capacity, 77.3% was used in 1958, compared with 78.2% in 1957. Imports in 1958 were 3,390,000 barrels

(4,427,000 in 1957), and exports were 641,000 barrels (1,330,520 in 1957). World output in 1958 reached 1,541,996,000 short tons, of which the United States supplied 21%. In the first nine months of 1959, the United States output of cement totaled 257,189,000 barrels, a 13% gain over the same period in 1957. (See MINERAL PRODUCTION for output of major producing countries.)

CENSORSHIP. A sweeping federal court opinion declaring an unexpurgated edition of *Lady Chatterley's Lover* (1928) to be salable in American bookstores, and an equally decisive ruling that the State Department is within its power in denying passports to news correspondents seeking entry to Communist China, balanced the books on the subject of censorship in the United States during 1959.

In setting aside, on July 21, a post office order banning the D. H. Lawrence book from the mails, Judge Frederick Bryan cited past decisions of the U.S. Supreme Court, beginning with *United States v. the Book "Ulysses"* in 1933, evolving the test of "whether to the average person, applying contemporary community standards, the dominant theme of the material taken as a whole appeals to prurient interests." To apply the test, the court considered the reputation of the author for serious writing, the record of the publisher for printing important works, and the general public tolerance for frank discussion of sexual details. (*Grove Press, Inc.* v. *Christenberry et al.*)

The passport case arose when William Worthy, Jr., a newspaper and radio correspondent, challenged the State Department's right to refuse him a passport to return to Communist China on news assignments. The department instituted a newsman's passport ban on travel behind the "bamboo curtain" in 1956, but modified it slightly in 1958. Upholding the department's power to fix or relax the ban, a U.S. Court of Appeals, on June 9, found it a proper implementation of an established policy of nonintercourse. "In foreign affairs," the court contended, "especially in . . . today's world of jets, radio and atomic power, an individual's yen to go and to inquire may be circumscribed. . . ."

A third major development of 1959 was the passage by Congress in September of the so-called Equal Time Act, modifying the section of the Federal Communications Act which had been strictly interpreted to require radio and television stations to grant equal time on the air to all bona fide candidates for political office, if any one candidate is given time. The amendment exempts from this requirement cases in which a candidate appears on a bona fide newscast or is interviewed for such a newscast, is featured in a documentary program, or appears on the scene of a bona fide news event being covered by the broadcaster as part of routine reporting. The new rule on "equal time" had yet to face the test of a court review. (See also LAW.)

Magazines and Books.—The decision in the case of *Lady Chatterley's Lover* seems to have brought American courts full circle from the rule handed down in the British case of *Regina* v. *Hicklin* in 1868, where the right of censorship was based on whether anyone in the community, rather than the average person, might be corrupted morally by a publication on a sex subject. In line with this general current philosophy, courts continued to strike down local ordinances aimed at banning comic books and similar periodicals handling sensational subjects. The California courts led the way in 1959 with an attack on a Los Angeles County ban of this nature. But in Oregon, the state Supreme Court upheld a statute which sought to lay down specific definitions of obscenity and to authorize censorship of violations. This law did not, the court maintained, violate the state constitutional provision of freedom of expression.

Motion Pictures.—Before the decision on the Lawrence book, the U.S. Supreme Court declared unconstitutional a portion of a New York State motion-picture licensing law which was used to ban a French motion picture version of the novel. After this decision and the ruling on the book, local actions on the film were also adverse to censorship efforts. In the case of another picture, *The Naked Maja,* some boards of censorship followed the rule in the *Chatterley* book case and cited the reputation of the artist whose painting was the subject of the picture in denying a ban; others objected to advertising for the picture which took the form of postcards reproducing the nude, and upheld local rulings prohibiting their circulation.

A Massachusetts court upheld a ban on a picture study of a nudist colony, under the state obscenity statute. But in Pennsylvania the Supreme Court held a similar state law unconstitutional under the 14th Amendment of the U.S. Constitution. The Pennsylvania statute prohibited the exhibiting of pictures "such as are sacrilegious, obscene, indecent, or immoral." Over vigorous dissent, a majority of the court held that this law failed for vagueness. (*Commonwealth* v. *Blumenstein.*)

International Developments.—The Cuban revolution spawned a rash of charges and countercharges of censorship, after Premier Fidel Castro announced the ending of the press control laws of the Batista regime. Periodic reports of counterrevolutionary activity were cited in justification of several press bans imposed by the Castro government in the months immediately following the triumph of his forces.

Similarly, in France the touchy issue of the Algerian rebellion was cited to justify French action in seizing an issue of *France-Observateur* and the cancellation of radio newscasts commenting on the Algerian question. *France-Observateur* and *L'Express,* both leftist publications, were the object of formal prosecution on subsequent charges of undermining public confidence in the army. Continued criticism of the government in Pakistan was generally believed to be the reason for the government's seizure of the chain of newspapers operated by the *Pakistan Times,* the dismissal of its management, and the operation of the chain by the government pending selection of a new management more acceptable to it.

British news agencies figured in censorship developments in Egypt and in India. In the former, a relaxation of the ban on foreign control of news dissemination resulted in the return of the Arab News Agency to British ownership. In India, dissatisfaction with the news policies of several independent agencies brought about a temporary ban on all distribution of foreign news except by the British-owned Reuters. During the critical period of Chinese invasion of Tibet and the flight of the Dalai Lama to asylum in India, the Indian government appealed to the press to refrain from "inflammatory" editorial comment; this appeal was renewed at the time of the Chinese invasion of isolated regions on the Indian frontier. No general censorship was imposed, however.

Elsewhere, rigid censorship continued in many eastern European, Asian, and Latin American countries, a fact documented by the publication in 1959 of *The Press in Authoritarian Countries,* prepared by the International Press Institute.

(For additional information, see the Index entry, *Censorship.*)

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CENSUS DATA, U.S. The estimated population of the United States, including armed forces overseas, totaled 178,500,000 on Oct. 1, 1959. This estimate includes the population of the new states of Alaska and Hawaii, which were admitted to the Union in January 1959 and August 1959, respectively. The nation's population has increased by more than 27 million, or at an average annual rate of about 1.7%, since the beginning of the 1950 decade, and the total is expected to reach 180 million before mid-1960.

Table 1 shows provisional estimates of the total population by states as of July 1, 1959.

Table 1—PROVISIONAL ESTIMATES OF THE TOTAL POPULATION OF STATES AND SELECTED OUTLYING AREAS OF THE U.S.: JULY 1, 1959.

(Total population figures include persons in the armed forces stationed in each state and exclude members of the armed forces abroad. Each estimate has been independently rounded to the nearest thousand from figures computed to the last digit; hence, the sums of parts shown may differ slightly from the totals shown. Amounts and percentage of change are based on unrounded numbers. The figures for the United States for July 1, 1959, include Alaska and exclude Hawaii, in accordance with the status of these areas on that date. Alaska was admitted to the Union on Jan. 3, 1959, and Hawaii was admitted on Aug. 21, 1959.)

State	Total Population		
	July 1, 1959 (provisional)	April 1, 1950 (census)	Per cent increase (+) or decrease (−), April 1, 1950 to July 1, 1959
UNITED STATES[1]	176,365,000[2]	150,697,361[3]	+17.0
Alabama	3,193,000	3,061,743	+4.3
Alaska	191,000	128,643	+48.2
Arizona	1,233,000	749,587	+64.5
Arkansas	1,744,000	1,909,511	−8.7
California	14,639,000	10,586,223	+38.3
Colorado	1,682,000	1,325,089	+26.9
Connecticut	2,415,000	2,007,280	+20.3
Delaware	454,000	318,085	+42.7
District of Columbia	840,000	802,178	+4.7
Florida	4,761,000	2,771,305	+71.8
Georgia	3,838,000	3,444,578	+11.4
Idaho	664,000	588,637	+12.8
Illinois	10,205,000	8,712,176	+17.1
Indiana	4,638,000	3,934,224	+17.9
Iowa	2,809,000	2,621,073	+7.2
Kansas	2,140,000	1,905,299	+12.3
Kentucky	3,125,000	2,944,806	+6.1
Louisiana	3,166,000	2,683,516	+18.0
Maine	949,000	913,774	+3.9
Maryland	3,031,000	2,343,001	+29.4
Massachusetts	4,951,000	4,690,514	+5.6
Michigan	7,960,000	6,371,766	+24.9
Minnesota	3,399,000	2,982,483	+14.0
Mississippi	2,185,000	2,178,914	+0.3
Missouri	4,243,000	3,954,653	+7.3
Montana	687,000	591,024	+16.2
Nebraska	1,456,000	1,325,510	+9.8
Nevada	280,000	160,083	+74.9
New Hampshire	592,000	533,242	+11.0
New Jersey	5,930,000	4,835,329	+22.6
New Mexico	879,000	681,187	+29.0
New York	16,495,000	14,830,192	+11.2
North Carolina	4,530,000	4,061,929	+11.5
North Dakota	642,000	619,636	+3.6
Ohio	9,700,000	7,946,627	+22.1
Oklahoma	2,276,000	2,233,351	+1.9
Oregon	1,766,000	1,521,341	+16.1
Pennsylvania	11,323,000	10,498,012	+7.9
Rhode Island	875,000	791,896	+10.5
South Carolina	2,417,000	2,117,027	+14.2
South Dakota	687,000	652,740	+5.2
Tennessee	3,501,000	3,291,718	+6.3
Texas	9,513,000	7,711,194	+23.4
Utah	880,000	688,862	+27.7
Vermont	372,000	377,747	−1.4
Virginia	3,992,000	3,318,680	+20.3
Washington	2,823,000	2,378,963	+18.7
West Virginia	1,965,000	2,005,552	−2.0
Wisconsin	4,010,000	3,434,575	+16.7
Wyoming	319,000	290,529	+9.9
Puerto Rico	...[4]	2,210,703	...[4]
Hawaii	656,000	499,794	+31.2
American Samoa	...[4]	18,937	...[4]

[1] Includes Alaska. The estimated total population of the United States (with Alaska) including armed forces abroad, for July 1, 1959, is 177,103,000. [2] Total excludes Alaska. [3] Increase includes the population of Alaska on July 1, 1959, reflecting the addition of Alaska to the United States population between the 1950 Census and July 1, 1959. [4] Data are not available for July 1, 1959. Estimated total population for July 1, 1958 for Puerto Rico is 2,321,000; for American Samoa, 20,800.

In an estimated total population of 177,103,000 on July 1, 1959 (including Alaska but excluding Hawaii) there were 87,651,000 males and 89,452,000 females, or an excess of more than 1¾ million females.

According to the July 1, 1959, estimate, the white population numbered 157,290,000, and the nonwhite population 19,813,000. The proportion of nonwhite persons in the population in 1959 was 11.2%, as compared with 10.4% in 1950.

Table 2 shows estimates of the population as of July 1, 1959, by broad age groups, with changes since April 1, 1950.

Table 2—COMPOSITION OF THE U.S. POPULATION BY AGE, 1959 AND 1950

Age	Population, including armed forces overseas		Per cent change, April 1, 1950 to July 1, 1959
	July 1, 1959	April 1, 1950	
All ages	177,103,000	151,132,000	+17.2
Under 5 years	19,795,000	16,164,000	+22.5
5 to 13 years	32,388,000	22,180,000	+46.0
14 to 17 years	10,990,000	8,409,000	+30.7
18 to 24 years	15,872,000	16,081,000	−1.3
25 to 44 years	46,825,000	45,385,000	+3.2
45 to 64 years	35,853,000	30,720,000	+16.7
65 years and over	15,380,000	12,195,000	+26.1
21 years and over	106,908,000	97,698,000	+9.4

Households.—In March 1959 there were an estimated 51.3 million households in the United States, an increase of 7.7 million, or 18%, over the 43.6 million in March 1950. During the 1950–59 period the total number of households increased by about 861,000 a year, on the average. (See HOUSING.)

Family Income.—The median income of families in the United States was estimated at $5,100 in 1958, according to a March 1959 sample survey. A gain of $120 in money income between 1957 and 1958 did not represent a significant change in purchasing power for the average family, because prices also rose during this period. Of the nation's 44 million families, about 4½ million, or one in ten, received incomes of $10,000 or more in 1958; and an additional 18 million families, or two of every five, had incomes ranging between $5,000 and $10,000. At the other end of the income scale, 10½ million, or about one in four had incomes under $3,000. The remaining 11 million families were in the $3,000–$5,000 bracket.

Teachers and School Enrollments.—A sample survey made in October of the 1958–59 school year showed 1.6 million teachers in public and private schools below the college level, with about 80% of the total teaching in public schools. There were an estimated 42.9 million persons 5 to 34 years old enrolled in public, private, or parochial schools in the regular school system in October 1958.

Availability of Dwelling Units.—A sample survey made in the third quarter of 1959 indicated that 3.0% of all dwelling units were vacant and available for rent or for sale, with the "for rent" portion amounting to 2.4% and the "for sale" portion, 0.6%. Of available vacant dwelling units for sale, more than one half had three or more bedrooms; nine tenths were single-family houses; and about four tenths had been vacant for at least six months. The median price asked for nonfarm vacant dwelling units available for sale in the third quarter of 1959 was $12,700. Of the vacant dwelling units available for rent, only one tenth had three or more bedrooms; nearly four tenths were single-family houses; and about three tenths had been vacant for six months or longer. The median monthly rent asked for available nonfarm vacancies was $53.

Retail Store Sales.—Cumulative sales of all retail stores for the first eight months of 1959 amounted to $139.7 billion, about 9% above the $128.5 billion reported for the comparable period in 1958, according to the Census Bureau's monthly retail trade surveys. Wholesale trade surveys indicated cumulative sales of $83.6 billion for merchant wholesalers for the first eight months of 1959, 14% above sales of $73.6 billion in the comparable period of 1958.

Manufacturing.—In 1957 a record high of $12.1 billion was expended by manufacturers for new plant and new equipment, according to figures

from the 1957 Annual Survey of Manufactures which were published in 1959. The survey showed that of the $144.5 billion in value added by manufacture for the entire country, $92.4 billion, or approximately 65%, was accounted for by establishments located in the 62 largest standard metropolitan statistical areas. The 10 largest areas—New York–northeastern New Jersey, Chicago, Los Angeles, Detroit, Philadelphia, Pittsburgh, Cleveland, St. Louis, Boston, and San Francisco, in that order —accounted for $55.8 billion in value added by manufacture, or approximately 40% of the United States total.

External Trade.—Total United States exports, including military shipments, were valued at $10.1 billion in the first seven months of 1959, about 3% less than the $10.4 billion for the comparable period of 1958. Excluding military shipments, the export total for the first seven months of 1959 was $9.3 billion, also about 3% below the total of $9.6 billion for the comparable period of 1958. Total general imports amounted to $8.7 billion for the first seven months of 1959, compared with $7.3 billion for the corresponding period of 1958, an increase of about 18%.

Government Finance.—Total revenue of federal, state, and local governments in the United States in the fiscal year 1958 amounted to $130.4 billion. During the same year, governmental expenditure totaled $134.9 billion, or $4.5 billion above revenue, with the expenditure excess accounted for almost entirely by state and local governments, which expended $53.7 billion and had revenue of $49.3 billion during their fiscal years that ended in 1958.

Taxes.—Taxes collected by all governments in the United States in the fiscal year 1958 amounted to $98.4 billion, or $568 per capita, in comparison with total collections of $98.6 billion, or $579 per capita, in 1957. A 5% rise in tax revenue of state and local governments from $28.8 billion in fiscal 1957 to $30.4 billion in fiscal 1958 was more than offset by a drop in federal tax revenue from $69.8 billion to $68.0 billion in the same period.

The 1960 Census.—Preparations for the April 1, 1960, Census of Population and Housing—the 18th Decennial Census of the United States—were a major project at the Census Bureau in 1959. Field tests were made of the procedures and questionnaires to be used. The huge job of preparing the maps of more than 300,000 enumeration districts continued, forms and supplies were assembled, final plans were made for the field organization, and electronic computer systems were made ready for the tabulation of the results. An Advance Census Report Form would be mailed to each householder in March 1960 with the request that the answers to basic questions about the family and dwelling be filled in and made ready for the census taker's visit. At every fourth household on the census taker's rounds, a Census Household Questionnaire, listing additional questions, would be left. The householder would be asked to complete this form and send it to the census office in a postage free envelope.

Other Censuses.—During 1959 the tabulation and publication of the 1957 Census of Governments materials were completed. The 1958 censuses of Business, Manufactures, and Mineral Industries were conducted early in 1959, and later in the year many of the preliminary reports were issued. The Census of Agriculture was taken in the fall of 1959. The responsibility for the publication and analysis of labor force statistics, based on the Census Bureau's Current Population Survey, was transferred to the U.S. Department of Labor on July 1, 1959. Also effective on July 1, the collection and release of current construction statistics were centered in the Census Bureau by transfer from other agencies.

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CENTRAL AFRICAN FEDERATION. See RHODESIA AND NYASALAND, FEDERATION OF.

CENTRAL AFRICAN REPUBLIC. An autonomous republic of the French Community (q.v.), situated in west-central Africa north of the Belgian Congo. Estimated area, 241,700 square miles; pop. (est. mid-1958), 1,150,000, including (in 1956) 5,939 nonindigenous persons, mainly French. French is the official language. Chief towns are Bangui, the capital (est. pop., 84,638), Berbérati, and Bambari.

Government.—The Central African Republic was formerly the French overseas territory of Ubangi-Shari, included within the federation of French Equatorial Africa. On Dec. 1, 1958, the territory chose the status of autonomous republic of the French Community. As a member of the Community, the republic has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic materials, and certain other matters. The republic adopted its constitution on Feb. 9, 1959. The Legislative Assembly consists of 50 members elected for a five-year term by universal suffrage. Executive power is vested in a president (elected by the assembly), who appoints his ministry. David Dacko was elected president on April 30, 1959.

Education and Religion.—In 1958 there were 275 schools with a total of 47,254 pupils (28.1% of the school-age population. Government expenditure on education amounted to 693.8 million metropolitan francs, or 19.3% of the budget. The natives are mainly animists of the Bantu and other ethnic groups, although Christianity has penetrated in many areas.

Transportation.—The Central African Republic is landlocked and has no railroads. Roads and trails total 10,565 miles (1956), including 1,046 miles of hard-surfaced and improved dirt roads, and 2,575 of all-weather trails. The Ubangi River is navigable for 370 miles. The principal airport is at Bangui.

Production.—The majority of the population is engaged in subsistence agriculture, producing millet, sorghum, peanuts, pulses, and other foodstuffs. Chief commercial crops are cotton (est. 1957–58 output, 65,000 bales), coffee, peanuts, and palm kernels. The few existing industries include vegetable-oil refineries, cotton gins, soapmaking plants, and breweries. Gold deposits and diamond fields are worked in the southwest. Forest resources are extensive, although exploitation is still only on a small scale.

Foreign Trade.—Exports in 1958 totaled 7.4 billion metropolitan francs; imports, 10.3 billion. Chief exports in 1958 were: cotton, 37,500 metric tons; coffee, 5,500; lumber, 3,524; and diamonds, 85,700 carats. France is the republic's chief trading partner.

Principal Events, 1959.—Barthélémy Boganda, founder of the Movement for the Social Emancipation of Africa (MESAN) and first head of the newly autonomous republic, was killed in an air crash near Bangui on March 29. Boganda was virtually uncontested as leader and spokesman of the republic, and his death left a void in leadership. The first elections to the Legislative Assembly under the new constitution took place on April 5 and 25, the MESAN winning a substantial majority of seats. Prior to the election, however, the Boganda government had passed electoral laws which virtually assured one-party rule. David Dacko, a cousin of Boganda, was elected president by the assembly on April 30.

CENTRAL AMERICA. The southern end of North America, from the Isthmus of Tehuantepec (Mexico) to the Isthmus of Panama. The term Central American States usually denotes the five republics of Costa Rica, Guatemala, Honduras, Nicaragua,

GENERAL ELECTRIC COMPANY

Dr. Robert L. Coble, inventor of a new ceramic material named Lucalox, compares translucent disk of the material with a conventional ceramic. Lucalox is valued for its strength and ability to withstand very high temperatures.

and El Salvador, but may also include British Honduras, Panama, and the Canal Zone (qq.v.). (See also INTER-AMERICAN AFFAIRS.)

CENTRAL TREATY ORGANIZATION. See MIDDLE EAST.

CERAMICS. Most of the ceramics industry enjoyed a better year in 1959 than in 1958, although labor unrest and the effects of the steel strike hindered some segments. Recovery of most of the market losses suffered in the 1958 recession, combined with outstanding technological successes, brought the industry to high business and technical levels. Because of its close alliance with the building and automotive fields, however, the industry was sharply hit by metal shortages in the last quarter of 1959 as a result of the steel strike. Imports of a variety of ceramic products continued to claim greater portions of the domestic market.

Whitewares.—Dinnerware, sanitaryware, floor and wall tile, hotel and institutional china, electrical porcelain, artware, and lamp bases all experienced improved sales and increased production in 1959. Wall tile, dinnerware, and electrical porcelain came under pressure of imported goods, but markets previously lost to products using plastic materials were recaptured. Manufacturers of semivitreous dinnerware, which suffered production losses from an extended strike, began producing a vitrified product designed to replace a substantial part of their normal semivitreous output. Wall tile and sanitaryware production rose in pace with increased residential and commercial construction, but electrical porcelain output fell below expectations because of a lag in expansion of electrical generating capacity.

Glass.—The flat glass industry was hit by a crippling strike in early 1959, but recovered and finished the year on a strong basis. The year also witnessed the amalgamation of a top European producer and the fourth largest United States flat-glass manufacturer, with the announcement of plans for a new plate-glass facility in the United States in 1960. The container-glass producers also suffered a strike, which in its later stages reduced production. The technological highlight of the year was the announcement by Pilkington Brothers, Ltd., an English plate-glass producer, of a new process to manufacture high-quality plate glass without the costly grinding and polishing operations. These were eliminated by floating the liquid glass ribbon on a molten bath of metal, resulting in a smooth, natural surface after the glass cooled to a solid.

Brick and Structural Clay Products.—The brick industry suffered market losses as a result of competitive building materials which were available at lower in-the-wall costs. Efforts to promote the use of brick panels to reduce construction costs met with little success. Sewer pipe output continued at high production levels, and benefited from the marketing of longer unit pipe lengths and of patented joints which reduced in-the-ditch costs. Increased use of glazes and glaze colors helped all structural clay product markets, and the lightweight clay block ("Burns Block") introduced in 1958 made spectacular production gains.

Electronic and New Ceramics.—This section of the ceramics industry reported its most successful year in 1959. High levels of business in the transistor, dielectric, and high alumina fields brought rapid expansion of production facilities. One of the most important developments of the year was the recovery of nose cones from two full-range (5,000–6,000 miles) Thor-Able rockets on April 8 and May 21. The nose cones, which were fabricated from a ceramic material, survived re-entry into the atmosphere at full speed. Equally noteworthy was the longest space communication ever accomplished by the United States, made possible by the use of a ceramic diode transmitting tube in the Pioneer IV space vehicle launched on March 3, 1959 (see SPACE FLIGHT).

A new ceramic material, called Lucalox, was announced by the General Electric Co. The company said that the material marked the first time that a polycrystalline ceramic that readily transmits light had been made from powders. It said that Lucalox, made of aluminum oxide, also has great strength, is able to withstand high temperatures, and can be pressed into any shape.

General Electric also announced the development of a revolutionary new electronic component, the "tunnel diode," which in some forms utilizes ceramic-type materials. The tunnel diode is reported to be capable of surpassing even the transistor in its electronic capabilities.

Porcelain Enamels.—The porcelain enamel industry, which had been losing some of its business to other finishes, was encouraged in 1959 by a new type of porcelain enameling iron, which, at competitive prices, makes possible high-quality finishes and reduced losses. Another important development was the continued expansion of production and marketing of electroluminescent products, including dash panels by Sylvania for the 1960 Chrysler and Imperial automobiles. Short supplies of metal, caused by the steel strike, reduced some annual outputs of porcelain enameled goods to below 1958 levels.

Refractories.—This industry, with its close ties to steel, also was hard hit in late 1959. Those companies producing refractories for the glass and ceramics industries and for other fields not directly related to steel managed to finish the year with production only slightly below 1958 figures, but other major producers suffered greatly. Technological developments involved the creation of higher-temperature refractory materials with space age applications.

(See also CHEMISTRY.)

GEORGE L. VINCENT,
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CEREAL GRAINS. See AGRICULTURE; GRAINS.

CEYLON. A self-governing country (independent since Feb. 4, 1948, within the Commonwealth of Nations) and a member of the United Nations, Ceylon lies directly south of India in the Indian Ocean. With outlying islands, its area is 25,332 square miles. Exclusive of nonresidents in the armed services and on ships, the population totaled 8,097,895 (8,154,580 when adjusted for underenumeration) at the 1953 census, and was officially estimated at 9,388,000 on July 1, 1958. Major ethnic groups (1953 census) are the Sinhalese, 5,616,705; Indian Tamils, 974,098; Ceylon Tamils, 884,703; Ceylon Moors, 463,963; Indian Moors, 47,462; and Burghers and Eurasians, 45,950. Buddhism is the prevailing religion; the official language is Sinhalese. Colombo (pop., 426,127 in 1953) is the capital and chief port.

Government.—A governor general (Sir Oliver Goonetilleke since 1954) represents the British crown. Parliament consists of a House of Representatives of 101 members (95 elected and 6 appointed);[1] and a Senate of 30 members, half of whom are elected by the House and half appointed by the governor general. S. W. R. D. Bandaranaike, head of the Sri Lanka Freedom Party, who became prime minister on April 12, 1956, died on Sept. 26, 1959, as the result of four shots fired at him on the previous day by an assassin. He was succeeded by Wijayananda Dahanayake. (See also below, *Principal Events, 1959.*)

Finance.—Government expenditure in the 1959–60 budget was estimated at Rs.1,399.9 million (1 rupee = U.S.$0.21); loan fund expenditure, at Rs.336.5 million. Revenue was estimated at Rs.1,342.5 million, leaving an overall deficit of Rs.393.9 million, to be reduced by additional tax revenue, domestic loans, and foreign aid.

On March 13, 1959, Ceylon undertook to purchase United States rice and wheat flour to the value of Rs.40 million, which money was subsequently to be made available to Ceylon for economic and business development. On July 16, an agreement was signed with West Germany for assistance of 6 million Deutsche marks for the repair of flood damage.

Education.—On May 31, 1958, government and assisted schools numbered 7,591, and enrollment totaled 1,852,077. Education is free from kindergarten to the university level. In 1958 government expenditure on education was Rs.183,657,556. Higher education is provided by the University of Ceylon and by the Vidyodaya University of Ceylon, inaugurated by the governor general on Feb. 18, 1959.

Transportation and Communications.—There are about 17,000 miles of roads, of which 9,744 miles are motorable. On June 30, 1958, motor vehicles numbered 108,003, including 65,937 private cars and cabs. There are 897 miles of railways (810 miles broad gauged). Air Ceylon Limited operates internal and international services, and Indian Airlines, British Overseas Airways Corporation, Qantas Empire Airways, Trans World Airlines, and K.L.M. (Royal Dutch Airlines) also serve Ceylon.

Ceylon has 162,134 radios (1956) and 30,017 telephones (1958).

Production.—The economy is primarily agricultural, a large proportion of Ceylon's exports consisting of coconuts and their products (grown in 1958 on 1,239,180 acres); rubber, of which Ceylon is the world's fourth largest producer (100,196 tons produced on 664,000 acres in 1958); and tea, which is grown on 572,000 acres (413,160,000 pounds in 1958). The 1,240,000 acres given over to rice, the staple cereal, yielded 36,600,000 bushels of paddy in 1958. Also grown are cacao, citronella, cotton, and tobacco, along with corn and sorghum as secondary food crops.

Mineral production includes graphite (8,256 tons in 1957), sapphires, rubies, and aquamarines. The manufacture of salt is a government monopoly. The important fishing industry engaged over 13,800 registered boats in 1957.

Foreign Trade.—Exports were valued at Rs.1,711 million in 1958 (Rs.1,682 million in 1957); imports, at Rs.1,717 million (Rs.1,804 million in 1957). During 1958, Ceylon exported 27,700 tons of copra, 56,736 tons of dried coconut, and 44,336 tons of coconut oil. Exports of rubber totaled 207,201,059 pounds, valued at Rs.258,108,629; those of tea, 410,773,414 pounds, valued at Rs.1,130,969,156. The chief customers were the United Kingdom, Communist China, and the United States; principal suppliers, the United Kingdom, Australia, India, Burma, and Communist China.

In the first half of 1959 exports were valued at Rs.833 million, and imports at Rs.878 million. Between Dec. 31, 1958, and Sept. 30, 1959, Ceylon's foreign exchange reserves declined from $172 million to $149 million. On June 13, 1959, Ceylon and Communist China signed contracts for the purchase of 230,000 metric tons of rice by the former and 30,000 tons of rubber by the latter.

Principal Events, 1959.—Recurrent political crises marked the year. Rancorous debates were frequent in the House of Representatives, and on March 3 the leader of the Trotskyite opposition, Dr. N. M. Perera, called a one-day strike against the proposed amendments to the Public Security Act. Nonetheless, the amendments were approved by the Senate on March 12. On the following day, after he had given his assent to the new law, which greatly enlarged the government's emergency powers, the governor general proclaimed an end to the state of emergency which had been in effect since May 27, 1958. On May 18 a cabinet crisis resulted from the resignation of two Marxist ministers, and on June 9 a new cabinet, composed entirely of members of the Sri Lanka Freedom Party, was sworn in.

[1] The new House of Representatives to be elected in March 1960 was to have 151 members.

- UNITED NATIONS; WIDE WORLD

Wijayananda Dahanayake (right) was sworn in September 26 as premier of Ceylon, succeeding S. W. R. D. Bandaranaike (left), who died on that date from an assassin's bullets.

Described by his victim as "a foolish man dressed in the robe of a monk," a Buddhist physician (later identified as Talduwe Somarama Thero) gained entrance to the private residence of S. W. R. D. Bandaranaike on September 25, and shot and fatally wounded the prime minister, who died on the following day. His assailant was wounded and arrested by a police sentry. From his deathbed the prime minister urged restraint and patience on the nation. Himself a Buddhist convert, he appealed for clemency for the assassin. A national emergency was declared on September 25 (it was not ended until December 2), and a search began for parties to a possible conspiracy. On November 26, seven persons, including Mrs. Vimala Wijewardene, formerly minister of local government and housing, were indicted. Bandaranaike's body lay in state for two days of official mourning, during which sympathy with the Ceylonese in the loss of a respected leader was voiced in many nations.

Wijayananda Dahanayake, minister of education in the Bandaranaike cabinet, was sworn in by the governor general on September 26 as prime minister. A Marxist earlier in his political career, he later became strongly anti-Communist. On taking office, he pledged his government to continue unchanged the policies of his predecessor. Dissension soon arose, however, and Dahanayake barely survived votes of confidence on October 30 and November 27. On his advice, therefore, the governor general dissolved Parliament on December 5 and called for new elections on March 19, 1960. On December 7, Dahanayake resigned from the Sri Lanka Freedom Party, which voted instead to expel him. He in turn replaced five party members of his cabinet on December 8. Dr. Charles P. de Silva, new party president, unsuccessful in his request to the governor general to appoint him prime minister in place of Dahanayake, resigned from the cabinet on December 14.

Visitors to Ceylon during the year included President Tito of Yugoslavia, with whom, on January 25, Prime Minister Bandaranaike issued a communiqué reaffirming their policy of nonalignment. A new American ambassador, Bernard Gufler, arrived in Ceylon on August 23. On October 12, Ceylon was elected to the U.N. Security Council.

DONOVAN ROWSE,
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CHAD. The Republic of Chad is an autonomous republic of the French Community (q.v.), situated in central Africa. Estimated area, 495,400 square miles; pop. (est. mid-1958), 2,600,000, including (in December 1956) 4,884 nonindigenous persons, mainly French. The official language is French. Chief towns are Fort-Lamy, the capital (est. pop., 30,600), Fort-Archambault, Moundou, and Abéché.

Government.—A former French overseas territory included within the federation of French Equatorial Africa, Chad chose the status of autonomous republic of the French Community on Nov. 26, 1958. As a member state of the Community, Chad has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. The republic adopted its constitution on March 31, 1959. Legislative power is vested in a Legislative Assembly of 85 members elected for a five-year term by universal suffrage. Executive power is exercised by a premier chosen by the assembly (by simple majority); investment of the premier and his cabinet must be approved by a two-thirds majority of the assembly. François Tombalbaye, leader of the Chad Progressive Party, was chosen premier on June 18.

Education and Religion.—As of Jan. 1, 1958, only 8.6% of the school-age population was attending school. Schools numbered 163, with a total of 33,312 pupils. Expenditure on education amounted to 581.2 million metropolitan francs, or 11.5% of the budget. The population is sharply divided ethnically and religiously, with Arabized Moslems predominating in the north, and Christianized and pagan Bantu tribes in the south.

Transportation.—Chad is landlocked and has no railroads. Roads and trails total about 18,000 miles, including (in 1956) 188 miles of hard-surfaced and improved dirt roads, and 299 miles of all-weather trails. The principal airport is at Fort-Lamy.

Production and Trade.—Chad is the chief cattle-breeding country of the tropical Sahara region, cattle numbering an estimated 3.5 million head. The government has fostered the industry by building watering stations and providing veterinary and marketing services. The major cash crops are cotton (est. 1957–58 output, 120,000 bales) and peanuts (est. 1956, 150,000 metric tons). Millet, rice, wheat, beans, and dates are also grown. The few existing industries include chiefly cotton gins (25 in operation) and meat-packing plants. Chad's exports in 1958 totaled 13 billion metropolitan francs; imports, 17 billion. Principal exports were cotton (4.2 billion francs), live animals and meat products, fish, and peanuts.

Principal Events, 1959.—Religious and regional rivalries were responsible for a succession of governments in early 1959. Premier Gabriel Lisette, a leader of the Chad Progressive Party, was defeated in the Legislative Assembly on February 10 and succeeded by Gontchome Sahoulba, of the Chad Rural Independent Group. The Sahoulba government was followed on March 13 by a short-lived coalition regime, which was in turn succeeded in late March by a government headed by François Tombalbaye, of the Chad Progressive Party. In the elections of May 31, the Chad Progressive Party won 57 of the 85 seats in the Legislative Assembly, and Tombalbaye was renamed premier on June 18.

CHAMBERLAIN, Owen, American physicist: b. San Francisco, Calif., July 10, 1920. For their discovery in 1955 of the antiproton, an important element in the concept of antimatter, Chamberlain and Emilio Segrè (q.v.) were named co-winners of the 1959 Nobel Prize in physics, awarded to them at Stockholm, Sweden, on December 10. The two University of California scientists shared prize money of $42,600.

After studying at Dartmouth (B.S., 1941), Chamberlain worked from 1942 to 1946 on the government's wartime Manhattan Project (which built the atomic bomb), first at the University of California's Berkeley campus and later, with Segrè, at Los Alamos, N. Mex. He did research in nuclear physics at the Argonne National Laboratory, near Chicago, after the war, and in 1949 took his doctorate in physics at the University of Chicago. In 1948 he became associated with the Department of Physics at the University of California at Berkeley. At the time of the award, he was on leave as Loeb lecturer in physics at Harvard University.

The existence of an antiproton had been surmised many years before Chamberlain's and Segrè's discovery. Paul A. M. Dirac, English Nobel laureate in physics in 1933, offered the hypothesis that to each electrically charged subatomic particle there corresponds an antiparticle of the same mass but of opposite charge. The existence of a positron (or anti-electron) was shown in 1932 by Carl David Anderson, an American physicist who shared the Nobel Prize in physics in 1936. But the antiproton eluded scientific investigators for more than 20 years until the University of California team produced and observed the particle in the powerful atom-smasher (bevatron) at the university's radiation laboratory.

The antiproton is equal in mass and strength of charge to an ordinary proton, but it carries the opposite (negative) electrical charge. Chamberlain and Segrè demonstrated that when the antiproton strikes a proton or neutron of ordinary matter, both particles in the collision are annihilated and their energy released. Although antimatter does not exist naturally on earth, some scientists theorize that somewhere in the universe whole galaxies are composed of this material. The discovery of the antiproton, while without any immediate practical application, marks an important advance in the study of the universe.

CHANNEL ISLANDS. Situated in the English Channel near the northwest coast of France, these British islands have a total area of 75 square miles and a population of 100,000 (mid-1958 est.). Principal islands are Jersey (area, 27,717 acres; 1954 pop., 55,288) and Guernsey (15,654 acres; 1957 pop., 40,721); dependencies of Guernsey include Alderney (1,962 acres; 1957 est., 1,350) and Sark (1,274 acres; 1957 pop., 437). St. Helier is the principal town on Jersey, and St. Peter Paul, on Guernsey. Government is administered by committees chosen by each island's elected states (legislative assemblies), under lieutenant governors (for Jersey, Gen. Sir George Erskine; for Guernsey, Vice Admiral Sir Goeffrey Robson). Alderney and Sark have their own constitutions. On Jan. 21, 1959, Sark's assembly repealed a 400-year-old law requiring each adult to work two days a year on road maintenance.

Revenue for Jersey in the fiscal year 1958 was £4,154,123, and expenditure, £3,351,910; revenue for Guernsey in fiscal 1957 was £2,423,812, and expenditure, £2,139,492. In Jersey, schools of all types enrolled 7,958 pupils in 1958; in Guernsey, pupils totaled about 6,500. Total exports to the United Kingdom in 1958 were valued at £17,558,215; imports, £27,120,917. Principal exports are potatoes, tomatoes, flowers, grapes and the islands' famous cattle (427 head in 1957). Tourism is an important industry.

CHECKERS. See SPORTS, GAMES, AND SHOWS.

CHEESE. Production of marketed cheese in 1958 and earlier years, in major countries for which data are available, is shown in the accompanying table. According to the Food and Agriculture Organization of the United Nations, cheese production in these countries has increased by 70% over the prewar period. The greatest increase has occurred in the USSR, which in 1958 ranked sixth among all cheese-producing countries. The United States is the leading producer, followed in order by France, Italy, West Germany, and the Netherlands.

CHEESE PRODUCTION, BY MAJOR COUNTRIES[1]
(In thousands of metric tons)

Country	Average, 1948–52	1956	1957	1958
Europe				
France	242	320	390	400[2]
Italy	272	314	316	320[2]
Germany, West	184	260	268	263[2]
Netherlands	129	166	176	186
Denmark	69	84	98	107
United Kingdom	44	102	115	97
Greece[3]	39	67	64	65[2]
Switzerland	49	56	59	58
Sweden	57	51	52	51
Spain	42	31[2]	33[2]	34[2]
Norway	25	33	31	36
Poland	8[4]	22	28	33
Austria	16	25	28	27[2]
Finland	14	28	24	23
Belgium	13	15	19	15
Portugal	9	10	10	10
Ireland	3	3	3	3
North America				
United States	528	630	637	639
Canada	44	43	42	40
Latin America				
Argentina	94	124	120	...
Brazil	24	36	34	44
Venezuela	25	15	13	...
Peru	9	8	9	...
Chile	11[5]	11	11[2]	...
Honduras	8	9[2]	9[2]	...
Uruguay	6	6	5[2]	...
Oceania				
New Zealand[6]	101	98	96	98
Australia[6]	44	39	46	35
Union of South Africa	9	12	12	12
USSR	63	123	136[2]	150
Total, above countries	2,181	2,741	2,884	2,912

[1] Figures include only cheese which is domestically or internationally marketed, and relate mainly to cheese produced in dairy plants. [2] Estimate. [3] Mostly goat cheese. [4] 1946–49. [5] 1952. [6] Year ending June 30. (Source: *Monthly Bulletin of Agricultural Economics and Statistics*, July 1959, Food and Agriculture Organization of the United Nations.)

Leading consumers of cheese, on a per capita basis, in 1957 were Norway, 8.9 kilograms (1 kg. equals 2.2046 lbs.); Switzerland, 8.5 kg.; France, 8 kg.; Denmark, 7.3 kg.; Sweden, 7 kg.; and Italy and the Netherlands, 6.5 kg. each. United States and Canadian consumption per capita amounted to 3.5 kg. each. (See also DAIRY PRODUCTS.)

CHEMISTRY. Nuclear Chemistry.—A new process for making thorium metal of very high purity was developed in 1959 and may contribute to the ultimate selection of the thorium-uranium fuel cycle (regarded as the best one) for use in thermal reactors. Although more plentiful than uranium, thorium generally is less concentrated in ores, and also suffers from the detrimental effects of oxygen. The new method involves the conversion of thorium nitrate to oxalate and finally to chloride, after which sodium or magnesium reduces the chloride to thorium metal of 99.8% purity. The purer the metal, the more likely it is to be used as a nuclear fuel.

While uranium-235 is in very general use as a fuel element in power reactors, a new fuel fabrication plant began producing plutonium in 1959 for the same purpose. Only 0.7% of the naturally occurring uranium is U-235, while plutonium can be made directly from uranium-238, which comprises over 99% of the natural material. When plutonium is made from U-238 in a fast reactor, more plutonium is produced from the blanket of U-238 which surrounds it. Plutonium is an extremely dangerous material, since it gives off 5 million times as many alpha particles as does U-238 or thorium. In the new plant, all work is done in hoods, using glove boxes and remote control, and the operations are carried on in an atmosphere of helium.

Krypton-85 is a gas, and as such would not be regarded as a convenient source of beta emissions. However, a form of hydroquinone functions as a "clathrate," or a sort of cage which traps this krypton isotope, so that the mixture may have as much as 30 times the radioactivity of the gas alone at atmospheric pressure. In preparing the clathrate with its trapped krypton, the alpha form of hydroquinone is heated with 5% of its weight of krypton-85 in an autoclave until it melts. As it cools, the hydroquinone assumes the beta structure and traps the radioactive gas in the cage-like crystals. Typical uses of the material are in the detection of such atmospheric pollutants as sulfur dioxide and ozone. In this process the air is drawn through a tube containing the clathrate, and the hydroquinone (in powder form) is oxidized and releases the radioactive krypton-85; its activity is then measured by a Geiger counter.

Very dilute radioactive wastes may be disposed of by dilution with sea water at great distances from shore. In addition to the practice of storing more concentrated materials in worked-out salt mines and other cavities that can be sealed off permanently, several processes have been developed to lock the wastes into permanently insoluble clays, gels, and glasses. Recently, lime and a complex silicate have been fused with the more active wastes to form a glass which is said to lose not more than one millionth of its weight a year when exposed continuously to water. (See also RADIATION; SANITARY ENGINEERING.)

New peacetime applications of nuclear energy include the following. Toxic materials in the atmosphere that are not radioactive but are difficult to detect because of their great dilution may now be converted to solid particles by chemical means. These particles, which are given an electrical charge by exposure to radioactive substances in an ionization chamber, may then be readily detected and their concentration measured in terms of parts per billion. A linear accelerator is capable of driving finely divided metallic particles of one metal into the lattice structure of another metal to form alloys that cannot be made by fusing the two metals together. By employing harmless radioactive isotopes, blood cells may be tagged to determine blood volumes in studies of food metabolism, the role of blood-volume expanders, and various functions of the blood stream. Highly radioactive elements such as cobalt-60 are being used increasingly in chemical industries to bring about vulcanization of certain synthetic rubbers in the cold, and to produce nitrogen dioxide from nitrogen and oxygen at relatively low temperatures. In regions where fuels cannot be readily transported, nuclear energy may be used to distill brackish water or sea water through the heat of fission reactions in power reactors. (See also ATOMIC ENERGY.)

Metals.—A plant with over 70,000 cubic feet of internal space, completely filled with argon gas, is processing high-temperature refractory and reactive metals, which require temperatures of 4,000°F. Among the metals handled in this plant are nio-

bium, tantalum, and molybdenum. The argon used is of the highest purity and contains less than 0.0005% of other elements. The plant is equipped with air locks, safety controls, and an argon purification apparatus. Operators wear "space suits," which are fed with conditioned air through one hose while exhaled air is removed through another. All finished products are coated to prevent the action of oxygen and nitrogen when they are exposed later to air at high temperatures.

In order to obtain an extremely pure chromium for use in high-temperature alloys for gas turbines and nuclear reactors, a process was developed in 1959 to employ a volatile iodide. As the iodide decomposes, the iodine is returned to the process as the highly purified metal is deposited. Impurities are said to be as low as 10 ppm. (parts per million) of oxygen and 5 ppm. of nitrogen.

Molybdenum in sheet form that has five times the ductility of ordinary sheets of this metal is produced by pressing the powdered metal into an ingot, sintering the particles together in a high-frequency induction furnace, and rolling to the desired thickness. Such sheets range from 0.001 inch to 0.750 inch, can be bent practically double, and can be formed into parts at low temperature. The largest single use of this metal in sheet form is in electron tubes and transistors; it is also used in various shapes where high-temperature strength is required.

Rhenium, one of the more recently discovered natural elements, was produced in 1959 at the rate of 1,000 pounds per year, but its many special applications probably will require a great increase in production. Rhenium is removed along with much larger amounts of molybdenum in the production of copper. As molybdenum flue dust is roasted, much of the rhenium escapes as an oxide dust. By use of water sprays, the oxide, Re_2O_7, is recovered and converted to potassium perrhenate, $KReO_4$.

As little as 0.25% of beryllium serves as a precipitation hardener in titanium alloys which have very high tensile strength at temperatures up to 1,000°F. The alloys also contain aluminum and molybdenum, and are heat-treatable. The decomposition of the beta phase to the alpha-plus compound is said to be very rapid. In the field of heat treatment of titanium alloys, an aluminum silicone paint has been developed which is applied to titanium sheets before they are sent to the furnace. When the organic ingredients of the paint burn out, the coating, which has the appearance of a glass, is removed by a caustic solution. The function of this coating is to prevent oxidation of the metal during heat treatment.

Titanium may be alloyed with as little as 0.1% of palladium to produce a material that resists corrosion nearly as well as tantalum. The technique involves mixing powdered titanium and powdered palladium, compressing it very heavily, and melting the alloy by electric heat. Galvanic couples, which have hydrogen overvoltage, are assumed to be formed on the surface.

Metals are being applied to nonmetallic materials by allowing vapors from a metal heated in a high vacuum to condense on a cold surface. Paper may be coated with aluminum to be employed in heat insulation. Heat-reflective coatings are put on the back of a transparent material, so that they are visible through the glass or plastic. The coatings are retained by a protective paint on the back of the object. Metal coatings of only a few millionths of an inch in thickness are applied to outer surfaces, which are then covered by a transparent lacquer. Aluminum is deposited (by a vacuum process) in relatively thick films on steel; such films are nonporous, so ductile and adherent that 180° bending is possible, and they also have a high resistance to abrasion. Chromium, tungsten, and molybdenum are applied as coatings by a vapor-phase method involving the use of volatile compounds which decompose on a heated surface, in atmospheres of helium and argon. (See also IRON AND STEEL; METALLURGY; MINING.)

Glass and Ceramics.—Semiconducting devices may be coated with a low-melting glass in order to protect them from moisture. Sulfur, selenium, arsenic, and thallium are components of these glasses, the first two predominating. They are said to bond well to ceramics and silicate glasses, and except for the effects of alkaline solutions, their durability is about the same as ordinary glasses. Coating is accomplished either by dipping or by vaporization and condensation; the fluid range is between 125°C. and 350°C.

The new field of "glass-ceramics," introduced in 1957, has been expanded by a complete discussion of the principles and processes underlying the conversion of glass to a fine-grained crystalline material. The size and properties of the new glass-ceramic material are rigidly controlled by the use of a catalyst which forms submicroscopic crystals. These in turn act as nuclei for another crystal phase, made up of the major components of the molten material. The catalyst crystals are said to amount in number to between 10^9 and 10^{15} per cubic millimeter, but the size of the crystals formed on them ranges from 1 micron to 100 angstrom units. The products have greater tensile strength and hardness than ordinary ceramics, and many have very low thermal expansion coefficients. Chemical resistance is about the same as in the ordinary chemical glasses, and most are also electrical insulators. The most common of many nucleating agents is titanium dioxide, TiO_2. In the production of household articles and high-temperature industrial glassware, the main composition of the glass-ceramics is a lithia-alumina-silica system. For use in electrical insulation and guided missile radomes, magnesia is substituted for lithia.

In addition to zirconia, or zirconium oxide, which has a melting point of 4,850°F. and excellent strength properties, a number of combinations of metals and ceramics are being employed in high-temperature equipment. Small amounts of metals are being added to refractory oxides to produce a new class of ceramics. If the thermal expansion of a ceramic is about the same as that of a metal, the two may be used together by fabricating them through brazing or hot-pressing. Materials so used include molybdenum-alumina; a stainless steel and fosterite; and an alumina-mullite, reinforced by molybdenum. (See also CERAMICS.)

Inorganic Chemicals.—Two methods have been suggested for lessening the danger of strontium-90 fallout. One of these is based on the fact that strontium finds its way into the bones of animals and humans in somewhat the same way as calcium. If a calcium compound, free of strontium, is added to the food of a child, that much less strontium is built into bone growth. Another possibility is the use of an organic chelating agent, which will take up strontium in the body to form a complex compound and cause its elimination through the urine. Since strontium does not form an integral part of bone-crystal nuclei but is deposited on the outside of calcium phosphate nuclei to become ultimately a component of bone, chelating agents have a more immediate access to strontium before it becomes firmly attached to the calcium phosphate microcrystals.

It has been found that potassium bicarbonate

in finely divided form puts out fires faster than the same grade of sodium bicarbonate. Tests have shown that gasoline and oil fires have been extinguished in half the time required by the best agents now available. Dense white clouds are formed by chemical action (the color of the flame becomes lavender), and the amount of heat given off by the fire is greatly reduced, thus permitting firefighters to come in closer to flames. The size of the potassium bicarbonate particles must be controlled, and additives such as tricalcium phosphate are required to prevent caking. The petroleum industry is regarded as the largest possible user of the new extinguisher, which also has potential uses in fighting fires in shops and homes.

Magnesium nitrate is being employed in the production of concentrated nitric acid (up to 99% material) from the acid made by the catalytic oxidation of ammonia. The salt is placed in columns through which the vapors of nitric acid pass. The nitrate is made by the action of dilute nitric acid on magnesium carbonate and subsequent evaporation. The common process of dehydration of ammonia-oxidation nitric acid involves sulfuric acid, and the reconcentration of this dehydrating material.

Rocket Fuels.—Two new plants for producing liquid hydrogen (a rocket fuel with the highest thrust) in large quantities were put into operation in 1959. A very pure variety of hydrogen is made by partial oxidation of heavy fuel oil, the oxygen being derived from the distillation of liquid air. The nitrogen, also obtained in this process, is employed in cooling the hydrogen in the liquefaction process. Orthohydrogen is converted to the more effective parahydrogen in the presence of ferric oxide as a catalyst.

Liquid fluorine as an oxidant for rocket fuel was reported in 1959 as being close to operational use; this material gives very high specific impulse, particularly with liquid hydrogen. Nitrogen tetroxide as an oxidant with hydrazine is said to equal the performance of liquid oxygen with petroleum distillate fuels.

In the field of solid propellants, aluminum powder was employed in 1959 both in missiles and meteorological research rockets. Other ingredients of such propellants include polyvinyl chloride and ammonium chlorate, with a plasticizer oil. The plastic is introduced into the mix in the form of microscopic spheres suspended in the plasticizer oil. As the soft dough is heated, the plastic spheres fuse to form a tough mass in which the aluminum and oxidant are embedded. With aluminum, such propellants have a theoretical flame temperature of about 5,000°F.

Looking far ahead to goals yet unattained, some of the rocket power proposals of 1959 included the use of cesium as a plasma for ion propulsion motors; atomic power plants with a nuclear pile and hydrogen and helium, free radicals; and a metastable form of helium yielding ten times the power of present high-energy fuels. (See also MISSILES; SPACE FLIGHT.)

Synthetic Resins and Plastics.—Microporous plastics, which have been in commercial use for several years as battery separators, now will be applied extensively to textiles. A thin film of such a plastic will be laminated to a regular fabric. The advantage of such a dual material is that it will transmit vapors and at the same time hold back water. Polyethylene and polyvinyl chloride plastics are the first materials to be developed into microporous products, but practically any thermoplastic resin can be used. The technique of their manufacture is to mix resin powder with starch, and to shape and cook the mixture. The starch swells and produces a cell structure in which there are tiny, interconnected holes. The swelled material is passed through a hot bath of dilute sulfuric acid; the starch is hydrolyzed to sugars, which dissolve; and the plastic resin then shrinks, but is now honeycombed with an infinite number of fine holes of the size of the original starch granules. Possible uses of this material include protective clothing, filters, bandages that permit rapid healing of small cuts as well as burns, membranes for blood oxygenation, solar stills, and electrodialysis membranes for purification of saline water.

Photosensitive plastics showed great promise in the field of photography in 1959, and some authorities considered these materials as the greatest development since the invention of the daguerreotype. A grainless and silver-free plastic copying film has been put on the market. The film may be placed against a negative, exposed briefly to fluorescent light, and dropped into boiling water. The product may be used either as a projection slide or a negative. Another potentially important product (in the development stage in 1959) is a plastic printing plate, made by exposing the plastic, in contact with a photographic negative, to ultraviolet light, and washing it with a solution of an alkaline substance. The time required for finishing and mounting on a press is about 20 minutes. (See also GRAPHIC ARTS.)

Lighter-than-water liquids are being satisfactorily transported in seagoing barges made of woven nylon and coated inside with a synthetic rubber of the acrylonitrile-butadiene type. In one test, 40 tons of liquid hydrocarbons were conveyed at sea a distance of 500 miles, successfully riding nine-foot waves. Such barges, which are towed by tugs adapted to ocean travel, costs only about one fifth as much as steel barges.

After 100 years of effort, production of a stable polymer from formaldehyde reached large-scale manufacturing operations in 1959. The material, known as polyoxymethylene, or paraformaldehyde, is a product whose strength approaches that of metals, and it will probably be used to replace brass, aluminum, and zinc to a certain extent. In producing this material, very pure formaldehyde is necessary, and solvent polymerization is brought about by an ionic catalyst. Capping the ends of the linear polymer (by making either esters or ethers) provides stability—the purpose being to prevent attack by water. Each chain is regarded as having as many as 1,000 formaldehyde units. Two grades are available—one for molding, and the other for extrusion. Its dense crystalline structure is said to be responsible for hardness, rigidity without brittleness, resistance to solvents and water swelling, and a low coefficient of friction.

Pentacrythrytol reacts with hydrogen chloride, the product being converted by ring closure to a cyclic ether, which polymerizes to form a thermoplastic resin. It is classed as a chlorinated polyether, and is said to have excellent mechanical, electrical, and chemical properties, as well as high resistance to the action of chemicals. It will accordingly take its place along with nylon, fluorocarbons, and similar materials, as well as metals and alloys, in anticorrosion equipment.

Pigmented resin powder may be fluidized with air as the carrier gas, and introduced into a chamber in which there are hot metallic objects to be coated. The resins fuse to the metal and have remarkable adherence. This technique permits the coating of irregular objects to almost any desired film thickness, and does away with solvent losses. Several types of plastics may be used, the best known being those of the epoxy type.

Smokes whose rate of fallout can be regulated

by the size of their particles are being made by melting such foam-forming plastics as polyether- and polyester-based urethanes, as well as phenol-formaldehyde resins. The droplets of molten resin are injected into a hot gas stream, such as those produced by gas turbines, jets, and rockets. The particles (by metallizing them) may be made to serve as tracers for rockets and satellites. Smoke screens of this type will shield against thermal radiation from nuclear attacks, and in peacetime may protect orchards against frost, cut evaporation losses at reservoirs or petroleum storage tanks, decontaminate air, and serve as carriers for insecticides. (See also PLASTICS.)

Rubbers, Natural and Synthetic.—The drying of rubber, both natural and synthetic, after pressing as much water as possible from the material precipitated from the coagulated latex, has the disadvantages of drying outside with seepage to the exterior, as well as exposure to large volumes of air. A process developed in 1959 involves use of a Banbury mixer of a special type. The shearing action applied to the raw rubber heats the material to a point above the boiling point of water. Steam is flashed off, and preliminary pressing is eliminated. Such materials as carbon black, silicates, whitings, oils, and other additives may be worked into the rubber at the same time. Synthetic rubbers that ordinarily require vacuum drying may be handled by this process.

A research of purely theoretical interest in the field of both natural and synthetic rubber, which may, however, give some insight into the behavior of this material under deformation and infrared radiation, is based on the substitution of deuterium for every hydrogen atom in the molecule of *cis*-1, 4-polyisoprene. When this product is polymerized, it is more elastic than natural rubber, which is made up of units of this hydrocarbon containing ordinary hydrogen. This difference is explained by the assumption that deuterium atoms do not attract each other to the extent characteristic of hydrogen atoms.

Air has been replaced successfully in tubeless tires by injecting urethane foams, the liquid material being introduced through a hole in the tire rim. The foam sets and bonds both to the tire and the rim, and softens only after a temperature of 300°F. is reached. No difference in heat build-up in hot weather is observed in comparison with air-filled tires. All sorts of deliberate damage has been inflicted on such tires without interfering with their performance on cars for a fairly long period of time, indicating immunity to flats and blowouts.

Butyl rubber, largely employed in the manufacture of inner tubes, will be utilized in the manufacture of auto tires. Butyl rubber is made by mass polymerization of isobutylene and isoprene. In making tires, the polymer is distributed in water to form a synthetic latex. By this means the rubber bonds to tire cord, rayon, or nylon. Butyl tires are said to give a smooth ride, have excellent stopping ability on wet pavement, and are largely free of squeal on turning corners. Lesser uses of butyl rubber include insulation of wire and cable, and the manufacture of wading pools, medical goods, and auto parts. (See also RUBBER.)

Petroleum Products.—In the recovery of petroleum from oilfields by removal of material from rock and sand surfaces, a detergent must be easily adsorbed. Nonionic detergents of the ethylene oxide-propylene oxide type show considerable superiority over other types. The area covered by a molecule of this detergent is of the order of 2,880 square angstroms, as compared with 35 to 200 of these units for other materials used for the same purpose. The structure of this kind of nonionic detergent is characterized by large hydrophobic groups which are centrally located.

Branching and cyclic hydrocarbons have higher octane ratings than paraffinic hydrocarbons, which are being removed by the use of molecular sieves. These are made up of crystalline aluminosilicates which have a high percentage of pores of molecular dimensions. In this process the paraffins are selectively adsorbed, and may be recovered later and used as feed in isomerization operations. Octane ratings are further increased by such additives as tertiary butyl acetate. By use of a catalyst containing a Friedel-Crafts component, it has been found commercially possible to produce very high yields of branched-chain hydrocarbons from straight-chain paraffinic raw material. The operation is carried on at relatively low temperatures, from 80°F. to 120°F. The product has a high research octane rating, the new process markedly extending the supplies of both aviation and premium motor fuels.

An acetic anhydride treatment, followed by a caustic rinse, was developed in 1959 to remove from petroleum distillates those impurities which cause corrosion, form sludge, and give rise to unpleasant odors. Esters are formed with oxygen, thioesters with sulfur, substituted amines with nitrogen, and harmless reaction products with complex organic impurities.

Commercial jet planes, which began large-scale operations in 1959, and the military rocket program both depend on synthetic lubricants. Diesters and complex esters of dibasic acids are the principal materials for such lubricants, which are also employed as hydraulic fluids and greases. These lubricants, which include polyphenyl ethers, are not only quite stable under nuclear radiation, but are much more resistant to heat than present synthetic lubricants. In this field, greases operating over a wide range of temperatures use aryl-substituted urea as a thickener in a nonpetroleum fluid.

(For further references, see the Index entry, *Chemistry;* and for prizes and awards in the field of chemistry, see PRIZES AND AWARDS.)

W. T. READ,
Consulting Chemist.

CHEMOTHERAPY. Madribon.—A major contribution to the chemotherapy of bacterial infections is the low-dosage sulfonamide, Madribon (2,4-dimethyl-6-sulfanilamido-1,3-diazine). Laboratory studies have demonstrated that the substance is effective against a wide variety of microorganisms, including streptococci, pneumococci, staphylococci, meningococci, bacillary influenza, pseudomonas, and numerous enteric bacteria. Clinical reports have substantiated the laboratory results, in that Madribon was found to be highly effective in respiratory, urinary tract, and soft tissue infections.

A single daily dose of the drug is reported to be sufficient for full therapeutic action. Mild and transitory side effects, consisting chiefly of nausea, vomiting, skin rash, or headache, have been observed in less than 2 per cent of the individuals receiving the medication. Madribon differs from the other sulfonamides in that it is present in the body primarily as the free and active form, and is excreted in the urine as a highly soluble glucuronide. It is believed that this metabolism minimizes the possibility of crystalluria or kidney damage, the principal drawback of the early sulfonamides.

Triburon.—*Staphylococcus aureus, Streptococcus pyogenes* and *Escherichia coli* are known to be the most common bacteria which cause skin and wound infections. Of particular concern has been the dis-

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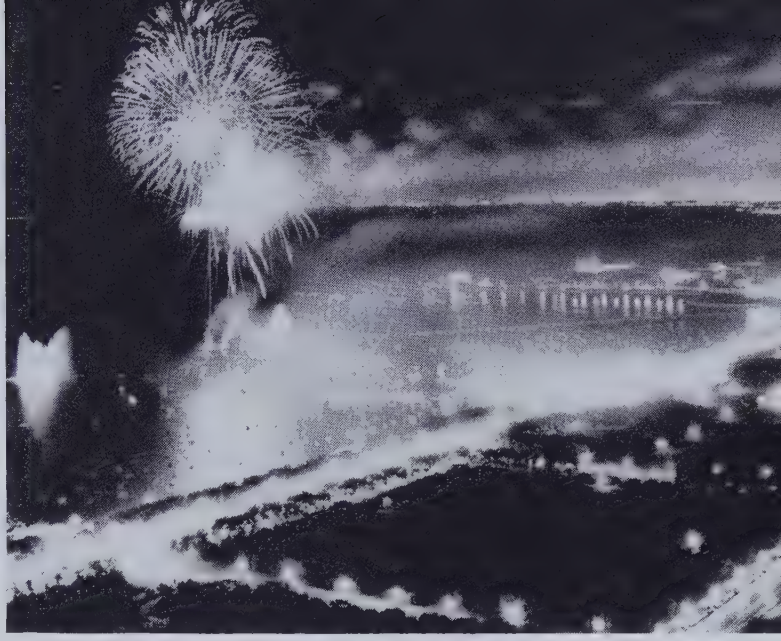

(Above) Queen Elizabeth II smiles to crowd lining route of her tour of Chicago, July 6. (*Right*) Fireworks light up the sky in gala climax to queen's one-day visit to the city.

semination of strains of staphylococci insensitive to many of the modern chemotherapeutic agents. It is, therefore, not surprising that investigations have continued for new chemical agents for the treatment of surface infections.

The most recent contribution has been a synthetic chemical compound, Triburon, a bis-quaternary diamine derived from β-ionone. In the laboratory the substance is characterized by high in vitro and local in vivo activity against the bacteria of skin and wound infections, including staphylococci resistant to other therapeutic agents. Moreover, the drug is also active against the parasite, *Trichomonas vaginalis,* and the fungus, *Candida albicans.* In the clinic, Triburon was found effective for the prevention and treatment of numerous dermatologic disorders, including such conditions as infected burns, pyodermas, infected dermatoses, folliculitis, and postoperative infections. It has also been found to be clinically effective against trichomonal, nonspecific, and monilial vaginitis. The incidence of skin irritation or sensitivity is considered to be low and consists chiefly of burning, itching, or erythema.

Griseofulvin.—Griseofulvin ushers in a new era in the treatment of mycoses caused by dermatophytes, in that for the first time oral therapy is effective. The antibiotic was isolated originally from *Penicillium griseo-fulvum Dierckx* and is now extracted from the mycelia of this fungus. Other species of *Penicillium,* such as *patulum* and *janczewski,* also produce the active principle. In test tubes the substance was shown to be active in low concentrations against all the common dermatophytes. The first experiments in a living host were carried out in guinea pigs infected with the fungi commonly causing ringworm in humans, namely *Microsporum canis* and *Trichophyton mentagrophytes.* Clinical improvement occurred as early as four days after administration of the compound. After eight days very little of the disease process was discernible, even by laboratory criteria.

It is claimed that patients with *Tinea corporis, Tinea pedis,* and *Tinea capitis* usually clear within one to three weeks. Although fungus infections of the nails take as long as four months to clear, normal nail growth is seen much earlier. Infections caused by *Candida albicans, Blastomyces dermatitidis,* and *Malassezia furfur* are reported to be uninfluenced by the drug. (See also Dermatology.)

Tennecetin.—Tennecetin is a new antifungal antibiotic isolated from *Streptomyces chattanoogensis.* In vitro it has a wide antifungal spectrum, being effective against the dermatophytes, many species of *Candida,* the pathogens causing deep mycoses, and numerous apathogenic fungi. It has little or no activity in the test tube against bacteria. In animals the drug is highly toxic when given by the intraperitoneal, subcutaneous, or intravenous route. Orally it seems to be poorly absorbed. At the present time it is claimed that topical administration has been effective in the treatment of various types of ringworm and vaginal infections. Because of the poor absorption from the intestinal tract, the drug has been suggested as a possible treatment for yeast and fungal overgrowths of the intestines.

Psicofuranine.—Isolated from *Streptomyces hygroscopicus* var. *decoyicus,* Psicofuranine (6-amino-9-D-psicofuranosyl purine) is inactive in vitro by traditional methods but in mouse protection studies is effective against *Streptococcus hemolyticus, Staphylococcus aureus,* and *Escherichia coli* when administered by the oral or subcutaneous routes. Experimental infections with *Diplococcus pneumoniae, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella,* nematodes, and viruses do not respond to the antibiotic. More recently Psicofuranine has been claimed to exhibit high anti-tumor activity in rats, although its usefulness for controlling tumors in humans is as yet undetermined.

Emanuel Grunberg,
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CHERRIES. See Fruits.

CHESS. See Sports, Games, and Shows.

CHEWING GUM. The United States chewing gum industry in 1957 employed 5,006 persons (3,855 of them in production) whose wages totaled $22,280,000, according to the latest figures in the *Annual Survey of Manufactures: 1957.* Value added by manufacture was $105,274,000, compared with $97,840,000 in 1956. Shipments of chewing gum products were valued at $175,501,000 in 1957, an increase of almost $10 million over 1956.

CHICAGO. Second most populous city in the United States and center of the second most popu-

lous standard metropolitan area, Chicago, Ill., covers a land area of 221.4 square miles. Its estimated population in mid-1958 was 3,769,500, while that of the metropolitan area in mid-1959 was 6,651,400.

Statistical data for the Chicago area in the first eight months of 1959: births, 99,944, against 163,345 in all of 1958; steel production, 13,298,200 tons, compared with 16,800,000 in full year 1958; investment in industrial building and land, $210,501,000, a figure that exceeded the entire previous year's total of $198,930,000; new dwelling units, 35,900, compared with 40,587 for the 12 months of 1958; foreign ships arriving, 797, a total well beyond the 683 in all of 1958; passengers cleared at airports, 7,719,648, compared with 11,240,111 during the previous full year.

Major city improvements continued to be in the planning stages in 1959. Although a final decision on the location of the University of Illinois Chicago branch had not been made by late 1959, there were indications that consolidation of the South Side railroad terminals could not be achieved in time to meet the university's timetable calling for opening by 1963, and that the Chicago Park District would be likely to make Garfield Park available as an alternate site. The University of Chicago in June announced a five-year, $49.5 million building program within the proposed 819-acre Hyde Park–Kenwood Community urban renewal project. On October 5 the university dedicated its new $4.1 million law center on Midway Plaisance.

Plans were also announced for the construction of a $25 million group of buildings, made up of two 40-story apartment towers and an office building, which will be built under auspices of the Building Service Employees Union. The project will occupy the North Bank of the Chicago River between State and Dearborn Streets, and is scheduled for completion in 1962. (See also HOTELS.)

Visiting royalty, baseball, municipal elections, and the Great Lakes water issue were among highlights of the year for Chicago. Queen Elizabeth II (q.v.) and Prince Philip sailed into the city on July 6 for the first visit to Chicago by a reigning British sovereign. Accompanied by Canadian Prime Minister Diefenbaker and British Ambassador Caccia, the queen arrived from Canada aboard the royal yacht *Britannia*. She told a luncheon audience that the St. Lawrence Seaway (q.v.), linking Chicago with the Atlantic Ocean, would be a new bond between Canada and the United States and between Great Britain and the American Midwest.

Illinois members of Congress again sought passage of a bill authorizing an increase in the diversion of Lake Michigan water at Chicago. Such legislation has been vetoed twice by President Eisenhower, although the city and the Chicago Sanitary District claim that an increased diversion beyond the 1,500 cubic feet per second now authorized would make sewage dilution more effective. Great Lakes states have consistently opposed any increase, arguing that it would tend to lower the lake levels to the disadvantage of shipping, and the Canadian government has been adamant in its opposition. Although Congress enacted no new law on the subject in 1959, the U.S. Supreme Court did decide to order the first full-scale review of its 1930 decision, which is the basis of the present diversion limitation. The high court named Judge Albert B. Maris as special master to review the entire situation.

A Democratic sweep of the municipal elections took place on April 7, resulting in the re-election by overwhelming majorities of Mayor Richard J. Daley, City Clerk John Marcin, and City Treasurer Sidney Deutsch. In addition, 46 of the 50 City Council seats were won by Democrats. In November, six contested area judgeships were also won by Democrats, and the voters approved administration-sponsored issues of general obligation bonds totaling $66 million to finance street lighting ($25 million), sewers ($15 million), bridges and viaducts ($15 million), slip and dock facilities ($6 million), fire alarm boxes ($3 million), and police and fire stations ($2 million). A bond issue of $9.5 million for rehabilitation of the Cook County Hospital was also approved.

A special commission of the Illinois legislature, charged with studying the problems of the Chicago metropolitan area and especially the adequacy of local government services, reported itself opposed to the creation of any kind of metropolitan government at this time. The commission urged instead that increased attention be paid to the possibility of voluntary cooperation between the many governments in the Chicago area. The legislature implemented this proposal by a general authorization for any two or more municipalities to exercise jointly any powers which they are otherwise authorized to exercise individually.

Chicago was cheered by victories of the Chicago White Sox baseball team as it achieved its first American League pennant in 40 years, but then was depressed by the White Sox loss to the Los Angeles Dodgers in the World Series. (See also SPORTS, GAMES, AND SHOWS.)

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CHILD HEALTH. See CHILD WELFARE; PEDIATRICS; UNITED NATIONS CHILDREN'S FUND; WORLD HEALTH ORGANIZATION.

CHILD LABOR. Child labor in the United States is regulated by three federal acts and by individual state laws. The federal Fair Labor Standards Act sets the minimum age at 14 for employment outside of school hours in nonmanufacturing occupations except agriculture, at 16 for employment during school hours in interstate commerce, and at 18 for occupations declared hazardous by the secretary of labor. For children employed in firms that supply goods under federal contract, the federal Public Contracts Act sets the minimum age at 16 for boys and at 18 for girls. The federal Sugar Act sets the minimum age at 14 for employment in cultivating and harvesting sugar beets and cane. State child labor laws vary greatly both in standards and in coverage. They govern the ages, hours, and conditions of employment and prohibit certain occupations for minors.

Child Labor Violations.—The most frequent type of violation of child labor provisions is the illegal agricultural employment during school hours of children under 16. Most of those involved are under 14. (In 1958, 3,115 of the 4,399 children found working illegally in the fields instead of attending school were in this age group.) They are most often employed on farms growing cotton, strawberries, tomatoes, and potatoes.

Many of those illegally at work are migrant children who are employed in commercial agriculture and rarely attend school. Numerous studies have shown that they are educationally retarded, although they have as much ability to learn as any other children. According to the U.S. Office of Education, they constitute the nation's largest illiterate group.

Legislation.—Since 1950, there have been no substantial changes in the federal law. Of the 47 state legislatures (including Alaska and Hawaii) that met in regular session during 1959, 41 considered bills to modify child labor and related school attendance laws. Bills aimed at strengthening existing laws were about equaled by those aimed at relaxing them.

The growing concern about the need to improve job opportunities for youth without breaking down protections was apparent in an unusual number of bills altering work-permit requirements or procedures. Protective measures were strongly retained in the form of compulsory school attendance laws. New York averted a serious threat by de-

feating bills which would have exempted from existing laws "incorrigible" or "problem" children, "unable to profit" from further schooling, and both New York and Illinois defeated measures that would have lowered the minimum age for employment during school hours to 14. Nebraska and New Hampshire strengthened their school attendance laws. But attempts to raise the minimum age for employment above 16 were defeated in New York, Indiana, Kansas, Texas, and Hawaii. In Hawaii, an emergency measure (limited to June 1961) was enacted permitting the employment of minors under 14 by coffee growers in areas where sufficient adult labor is unavailable. North Dakota lowered its compulsory school attendance age from 17 to 16 years, and Tennessee to 15 (when recommended by the school board).

Twenty states considered minimum wage bills affecting minors, most of them intended to exempt youths, especially students employed for relatively few hours, from minimum wage provisions. New Mexico set a 12-year age minimum (with parents' consent) for newsboys, exempting them from work certificate, hour, and night work provisions of its child labor law. Maine established night work prohibitions for youngsters under 16 years between 9 P.M. and 7 A.M.

Youth and Work.—According to a joint population report issued in June 1959 by the U.S. Department of Commerce and the Bureau of the Census, the job situation for students and other young persons was not so favorable in 1958 as in other recent years. Jobs were fewer; more young people were looking for work; and those who had jobs were working shorter hours, on the average. The total number of students of high school age who were working full or part time in October 1958 was estimated at 1.9 million, compared with 2 million the year before. Most severely affected by the year's downturn, however, were young people 14 to 17 years old not enrolled in school. In October 1958 their rate of unemployment, always relatively high, was 23%, 10 percentage points higher than the level of the two previous years. It is becoming increasingly difficult for teenagers who drop out of school before graduation to get jobs. Nevertheless, about 880,000 young people left school in 1958 without receiving their diplomas.

EMPLOYED MINORS, AGES 14–17

Date (April)	14 and 15 years		16 and 17 years	
	Agricultural	Nonagricultural	Agricultural	Nonagricultural
1954	190,000	462,000	255,000	1,068,000
1955	149,000	450,000	278,000	1,003,000
1956	216,000	588,000	272,000	1,176,000
1957	151,000	600,000	274,000	1,162,000
1958	169,000	622,000	282,000	1,023,000
1959	200,000	573,000	279,000	1,183,000

(Source: U.S. Bureau of the Census.)

Job losses for those aged 14 to 17 were far out of proportion to their representation among the total employed during the recession. Fewer students of high school age in rural farm areas were in the labor force in the summer than in former years, but there was an increase in private household employment, especially among girls. Among the boys, there was a tendency to replace hard-to-find manufacturing jobs with work as sales or stock clerks. On the whole, however, the outlook for teenagers improved with the general recovery in the latter part of 1958.

Hours of Employment.—Average weekly hours for high school student workers were affected by the business decline more than was the workweek for other age groups. The hours they normally worked were cut back more than three times as much as those of all nonfarm workers. Their workweek in nonfarm jobs averaged only 18.4 hours (less than half the 40.1 average for all nonfarm workers).

LILA ROSENBLUM, *Director of Public Information, and* LAZELLE ALWAY, *Field Service, National Committee on Employment of Youth of the National Child Labor Committee.*

CHILD WELFARE. The year 1960 will be unusual in the history of child welfare, both internationally and within the United States, for the concentrated study of children, their needs, and the conditions and services essential to their wholesome development.

International Services.—During 1959 the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), and other agencies cooperated in extensive campaigns to improve the lot of children. Antimalaria campaigns reached some 35 million children and mothers in 51 countries where malaria remains one of the most common causes of death to children; campaigns against tuberculosis resulted in the vaccination of 13.5 million children in 25 countries; and 400,000 mothers and children afflicted with leprosy were treated in 25 projects.

A typical example of UNICEF emergency relief was the organization's response early in 1959 to a request from the government of Somaliland for supplies to protect 250,000 children and mothers from famine due to extreme drought. UNICEF promptly arranged for the shipment of 1,500 tons of rice and 600 tons of skim milk powder (a gift from Canada, with UNICEF paying only for ocean freight), and planned to ship 500 tons of lentils and beans.

Realization of the need for such widespread efforts, and confidence in agencies of the United Nations, led 16 countries to increase their contributions to UNICEF in 1959. Allocations totaling $28 million were received from 87 countries, and even more significant was the $70 million in matching funds provided by the countries aided by UNICEF. The U.S. Congress increased its appropriation from $11 million in 1959 to $12 million in 1960.

In 1960, UNICEF, WHO, and other international organizations will collaborate closely on even more sweeping projects for reducing illnesses and deaths among children and for enriching the lives of those surviving the pestilences and other health hazards still threatening the lives of the very young in many of the most densely populated countries of the world.

The 1960 objectives of UNICEF include 23 projects in child feeding, nutrition education and related activities, milk conservation, and promotion of the use of protein foods; 20 basic maternal and child health projects, including environmental sanitation, and care of handicapped children and premature infants; and 15 projects for prevention and control of tuberculosis, yaws, venereal diseases, trachoma, leprosy, and typhus. Four emergency projects approved for 1960 were to provide blankets for refugee mothers and children in Morocco and Tunisia; to supply vitamins and pay for the transportation of 1 million pounds of skim milk powder to victims of floods in Taiwan; and to continue feeding of 50,000 children in Jordan border villages.

Typical of the 1960 objectives of WHO are programs aimed at eradicating yaws (a highly infectious disease which cripples many children) from Africa south of the Sahara Desert, and at eradicating malaria and smallpox from the Amer-

icas. Another WHO program to be stressed in 1960 is its work towards creating safe water supplies. Frequently, WHO supplies the personnel needed in such efforts, while UNICEF provides equipment and supplies.

In October 1959 the U.N. General Assembly's Social, Humanitarian and Cultural Committee unanimously approved a children's charter, a set of principles declaring that children are entitled without discrimination to special care and protection and to equal educational opportunities. The charter was approved by the General Assembly on November 20.

The World Refugee Year, designated by a resolution of the United Nations General Assembly, began on June 30, 1959. Fifty-nine nations pledged themselves to ease the plight of refugees living in displaced persons' camps or under other unsettled conditions. About one third of the world's 47 million refugees are children. (See also REFUGEES AND DISPLACED PERSONS; UNITED NATIONS CHILDREN'S FUND; WORLD HEALTH ORGANIZATION.)

Canada.—Manitoba's Child Welfare Act was amended in 1959 to protect children whose parents deny them essential medical treatment. The death of a child due to such deprivation was one of several cases arousing the popular concern which led the provincial legislature to pass a bill allowing courts, on the evidence of three or more licensed physicians, to declare children neglected if the parents have refused or neglected to provide necessary medical care or treatment. If immediate medical care must be given to save the child's life or to avoid serious injury, the court may make the child a ward without informing the persons normally entitled to receive notice of the court hearing.

Amendments in programs for mothers' allowances were made in four provinces, including Manitoba, where benefits were extended to several categories of mothers not previously covered, and the age-limit for eligibility for children's benefits was raised by one year to the 16th birthday.

In Saskatchewan, the responsibility for committing delinquent children to training schools was transferred from the courts to the minister of social welfare and rehabilitation. A child adjudged to be delinquent may be declared neglected and made a ward of the minister, who may at his discretion commit the child to a correctional institution.

United States.—The sixth White House Conference on Children and Youth is to be held in Washington, D.C., from March 27 to April 2, 1960. In 1909, when the first of these conferences was called by President Theodore Roosevelt, the care of dependent children was the principal subject considered. Establishment of the federal Children's Bureau was the most significant outgrowth of this first White House conference. The 1919 conference, focusing on minimum health and welfare standards for mothers and children, reflected the worldwide ferment in social planning following World War I. Extensive research and improved practices in the field of child welfare during the prosperous 1920's enabled the 1930 conference to produce several volumes impressive for their extensive consideration of education, child health, and delinquency. The next decade, overclouded by economic depression and the ascendancy of dictators in Europe, was followed by the 1940 conference, which emphasized the special needs of children in a democracy. The 1950 conference, at which delegates advocated teamwork among the various professions concerned with child welfare, was followed by a period of inquiry into child development by leaders in many professions, with consequent improvement of many services to children.

Preparation of children and youth for participation in a world of change is a definite goal of the 1960 conference. Preliminary studies by conference planning committees listed 40 subjects to which attention was being directed. The three most frequently mentioned were: juvenile delinquency (prevention and/or treatment), emotionally disturbed children (diagnosis and treatment), and retarded children (treatment and training).

Juvenile delinquency, as never before, commanded the attention of the general public, news writers and broadcasters, religious and civic bodies, law-enforcement authorities, and legislatures in 1959. The U.S. Congress, through two subcommittees, heard volumes of testimony on juvenile delinquency, and more than 20 bills dealing with different aspects of delinquency were introduced during 1958–59. In communities of all sizes, adults and young people considered the problem of waywardness in youth, convening for this purpose forums of citizens and high school students. A 1959 publication, *Predicting Deliquency and Crime,* by Sheldon and Eleanor Glueck, received widespread attention from those whose duties require them to be familiar with theories of children's behavior. (See also CRIME).

The number of children born out of wedlock was on the increase in 1959, as was the number of junior and senior high school girls who became unmarried mothers. Federal and national agencies and many state and local groups were united in their concern about this problem, which has increased in seriousness during the decade since 1950; and the problem will probably be on the agenda of the 1960 White House Conference on Children and Youth.

Child health authorities were alarmed in 1959 about a definite increase in the occurrence of poliomyelitis. More than 60 million children need inoculation against this disease. Data released in 1959 by the Children's Bureau (Department of Health, Education and Welfare) listed accidents as the leading cause of death for children of all ages; for children over five years of age, deaths from cancer ranked second. Marked progress had been made by 1959 in the diagnosis and treatment of congenital heart disease, and early in 1959 Congress earmarked $1.5 million for care of children suffering from this disease. (See also PEDIATRICS.)

Among the publications of the Children's Bureau most widely circulated during the year were *The Mentally Retarded Child at Home* (1959) and the latest revision of *Infant Care,* which since its first edition has had a total circulation of 40 million copies.

(See also CHILD LABOR and the Index entry, *Child Welfare.*)

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CHILDREN'S BUREAU. See Index entry.

CHILDREN'S FUND, United Nations. See UNITED NATIONS CHILDREN'S FUND.

CHILDREN'S LITERATURE. Superabundance was the word in the children's book field in 1959, as the number of titles published (1,647) rose to the highest on record. The year saw an expansion of those trends which have been growing for the past half-dozen years or so, with few major innovations in subject matter or style.

There was increased emphasis on books about foreign lands, both factual and fictional, as well as on translations of European books. In the latter

category were *The Land of Foam,* by Ivan A. Efremov (Yefremov), a long, colorful, meaty, but sometimes tedious novel by a Russian scientist concerning a young sculptor of ancient Greece and his adventures in Africa; and Hertha von Gebhardt's *Girl From Nowhere,* a haunting, rather disturbing, beautifully written story from Germany. Among American authors presenting aspects of the foreign scene were Elizabeth Janet Gray (Mrs. Morgan Vining), who drew on her own experiences for *The Cheerful Heart,* a story of postwar Tokyo, and Harry Behn, whose story of Mexico, *The Two Uncles of Pablo,* was much admired by the critics.

There were also several new bilingual volumes of stories for young children, including the three Berlitz Language Books for Children (in French, Italian, and Spanish), each of which contains two nursery tales. Each line of foreign language text is accompanied by a phonetic transcription and by a translation, in separate lines. A gay contribution to this new cosmopolitanism is made by *This Is Paris* and *This Is London,* in which Miroslav Sasek, a Czech artist, catches the essence of those cities in bright, witty pictures and captions, providing a fine new kind of travel book.

It was a big year for picture books, and although many of them were mediocre, the general level was higher than in 1958. Among the outstanding newcomers were Leo Lionni, whose *Little Blue and Little Yellow* (a very unusual story about color mixing, with sophisticated, abstract illustrations) baffled some adults and delighted the children; Ann Kirn, with two books, *Leopard on a String* and *Full of Wonder*—the latter a beautifully designed and colored introduction to the hobby of rubbings; and Walter T. Cummings, whose slight but evocative story, *The Girl in the White Hat,* was enhanced by rhythmically patterned, decorative pictures.

To everyone's pleasure, three popular authors brought out new books: Ludwig Bemelmans, *Madeline and the Gypsies* (not quite top-drawer Bemelmans, but good fun); Phyllis McGinley, *Lucy McLockett,* a charmer for little girls; and Dr. Seuss, *Happy Birthday to You!* In *Do You See What I See?,* Helen Borten guides young children to an appreciation of line, form, and color as seen in everyday objects. Madeleine Gekiere's stylized, elegant drawings for John Ciardi's engaging nonsense verses, *The Reason for the Pelican,* were judged the best illustrations of the year by *The New York Times Book Review* jury.

Poetry was even more plentiful than in 1958. There were at least a dozen volumes of original verse, including *The Blackbird in the Lilac* by the English poet, James Reeves; Mary Ann Hoberman's *Hello and Goodbye,* childlike and funny; and Robert Frost's *You Come Too,* a collection of Robert Frost's poems selected especially for young people by the poet himself.

Factual books, which have been one of the major trends in recent years, continued to mount in numbers, especially in aeronautics, space, astronomy, and other scientific fields. Outstanding science books included *Exploring Science* by Jonathan N. Leonard; *Discovering Chemistry,* a brilliant introduction to experimentation, by Elizabeth K. Cooper; and such specialized items as Rosemae W. Campbell's *Tops and Gyroscopes,* explaining the principles of gyroscopic devices. In *People and Places,* Margaret Mead introduces young people to some of the problems, methods, and conclusions of anthropologists.

Even the very young reader was more generously supplied with scientific information than ever before. Millicent E. Selsam's *Seeds and More Seeds,* a nature study, was added to Harper & Brothers' I Can Read series; and Mae and Ira Freeman's *You Will Go to the Moon,* which sold nearly 60,000 copies in six months, was added to the Beginner Books series, distributed by Random House.

The output of historical studies, which had boomed in 1958, increased again in 1959. Among the most interesting were: *America Is Born,* an account of the first three centuries of the making of the United States, by the eminent historian Gerald W. Johnson; *The Byzantines,* by Thomas Caldecot Chubb, a brilliant treatment of a rather abstruse subject; and Lynn Montross' *Washington and the Revolution.* Biography was, as usual, in large supply.

As a corollary to this interest in history, there was a new emphasis on the classical era. Of the 10 volumes of myths and legends in The Legacy Books (still another new series from Random House), five—including Robert Penn Warren's *Gods of Mount Olympus* and Clifton Fadiman's *Voyages of Ulysses*—deal with Greek and Roman mythology; and the major portion of Anne Terry White's *Golden Book of Myths and Legends* (magnificently illustrated by Alice and Martin Provensen) was devoted to adaptations of the Greek myths.

Three volumes were added to the comparatively small shelf devoted to archaeology: Raymond Holden's *Secrets in the Dust,* a kind of junior-level *Gods, Graves and Scholars;* Anne Terry White's *All About Archaeology,* written for a somewhat younger audience than was her popular *Lost Worlds,* and less distinguished; and a translation from the German, *The Golden Pharoah,* in which Karl Bruckner mingled factual and fictional techniques in the old-fashioned European manner to tell of the discovery of Tutankhamen's tomb. Olivia Coolidge's volume of short stories, *Roman People,* portrayed a cross-section of life in the imperial city during the reign of Caesar Augustus with a real sense of immediacy; and Rosemary Stucliff, the English author, added another panel to her fictional studies of ancient Britain with her colorful, carefully wrought *The Lantern Bearers,* which deals with the struggle to keep civilization alive in that lonely island despite the Jutes and Saxons.

So crowded was the fiction field in 1959 (with something for everyone, including numerous new titles for the beginning reader), that it was difficult to see the peaks among the foothills. However, Mary Norton's third volume in her Borrowers series, *The Borrowers Afloat,* proved her to be a consistent and gifted performer in the great tradition of fantasy. Gene Inyart's first book, *The Tent Under the Spider Tree,* a deceptively simple, everyday story of three little girls, revealed a fresh talent, suggestive in its perceptiveness and detail of Elizabeth Enright.

Books for teen-age girls were legion, but far too many were merely trite reworkings of old themes of adolescent literature. However, Beverly Cleary (*Jean and Johnny*), Elisabeth Ogilvie (*How Wide the Heart*), the new author Elizabeth Allen (*The In-Between*), the ever-dependable Mary Stolz (*Some Merry-Go-Round Music*), and Laura Rendina (*Trudi*), among others, proved that the teen-age novel can say something worthwhile to girls and say it well.

(See also CANADIAN LITERATURE; and for literary prizes and awards in this field, see PRIZES AND AWARDS.)

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CHILE. Lying along the southwest coast of South America, Chile is a long (2,653 miles), narrow (average width, 109 miles) land wedged between the Pacific Ocean and the continental divide high in the Andes Mountains. The fertile agricultural and commercial section around Santiago, the capital, is Chile's "Mediterranean" region. To the north lies "desert Chile," comprising the rainless provinces of Tarapacá, Antofagasta, and Atacama, which is a source of natural sodium nitrates and copper. South-central Chile (extending from Concepción to Llanquihue provinces) is a lake, forest, and farming region, which gives way to the broken territories of Chiloé, Aysén, and Magallanes provinces of the cold southern frontier. Chile's area totals 286,396 square miles, not including the Antarctic sector which it claims (longitude 53°–90°W.) and strategic islands such as Juan Fernández and Easter, respectively about 440 and 2,300 miles from Chile in the Pacific. Chile also commands the strategic Strait of Magellan.

Population.—The 1958 population estimate was 7,298,000, less than 6% of whom live in "desert Chile" and only 3% in the extreme south. Principal cities (with 1954 est. pop.) are Santiago (1,546,884), Valparaíso (247,212), Viña del Mar (102,206), Concepción (134,549), Antofagasta (62,272 in 1952), and Punta Arenas (34,440 in 1952). Most Chileans are of mixed Indian and Spanish blood. For 1956 the birth rate was listed at 35.4 per 1,000 inhabitants; death rate, 11.5; and infant mortality, 113 per 1,000 live births.

Government.—Under the 1925 constitution, Chile is organized as a unitary state with separation of powers (executive, legislative, and judicial). Freedom of the press and of association help make Chile one of the few practicing democracies in Latin America. The president (Jorge Alessandri, inaugurated Nov. 3, 1958) is elected by popular vote for a 6-year term and may not be re-elected immediately. The 45 senators (5 from each of 9 groups of provinces) are elected directly for 8-year terms (one half of the Senate is renewed every 4 years); the 147 deputies of the lower chamber (1 for each 45,000 persons) serve 4-year terms. As a consequence of proportional representation and a multiparty system, the president must seek coalition support in the Congress. The 13-justice Supreme Court has the constitutional power of "judicial review."

Religion and Education.—Religious affiliation is as follows (1952 census): Roman Catholic, 5,313,473; Protestant, 240,856; Jewish, 11,496. State support of Roman Catholicism ceased with the 1925 constitutional reform, but papal representatives and clergy figure prominently in national life and ceremonial functions. Freedom of worship, however, is observed.

Between the ages of 7 and 15, education is free and compulsory; basic literacy has now spread to nearly 80% of the population. As of 1954 the public and private primary schools enrolled 943,000 pupils, and secondary institutions, 115,500. The University of Chile in Santiago had 8,329 students; the Catholic University at Santiago, 2,753. Other institutions of higher education are the Universidad Técnica "Federico Santa María" and the Catholic University, both at Valparaíso; the Universidad Técnica del Estado, the University of Concepción, and the University Austral at Valdivia (founded in 1954).

Finance.—During the first 4 months of 1959 the means of payment increased 26.9 billion pesos, or 9.5%, compared with 7.9% for the corresponding period of 1958. Central Bank gold and foreign exchange holdings rose from $58.8 million at the end of 1958 to $149.0 million by September 1959. Total revenue for 1958 was 378 billion pesos (up from 286 billion in 1957); expenditures amounted to 413 billion pesos (1957, 317 billion). The 1959 budget programed income of nearly 390 billion pesos and expenditures of over 407 billion (including 80.5 billion for education, 93.5 billion for direct military establishment, 44 billion for public works, 41 billion for health and social welfare, 5 billion for agriculture, and 0.4 billion for the Ministry of Mines).

In January 1959, Chile converted to a single-rate "free" exchange for all transactions (1,053 pesos to the U.S. dollar during most of 1959). By statute, a new monetary unit, the *escudo*, is to replace the badly depreciated peso in 1960; one *escudo* is the equivalent of 1,000 pesos. The president's proposed budget for 1960 was 644.7 million *escudos*.

The cost-of-living index (1953 = 100) moved from 870 for January 1959 to 1,110 by August. Food prices especially were up. This alarming increase of 29% (the entire rise for 1958 was 33%; for 1957, 17%) caused President Alessandri to reinstate some of the price controls which were abolished in November 1958.

Transportation.—Chilean railways (totaling 5,500 miles of 7 different gauges) carried 2.15 billion ton-kilometers of freight in 1958 (2.22 billion in 1957); air cargo totaled 9.55 million ton-kilometers (1957, 11.28 million). Air passenger-kilometers flown amounted to 386.7 million (1957, 438.2 million). Five Chilean and 7 foreign airlines served the country in 1958. Surfaced highways (1954) totaled 10,895 miles, and there were 16,320 miles of graded and drained roads; vehicle registrations for 1957 totaled 53,913 passenger autos, 54,830 trucks, and 4,417 buses.

Mineral Production.—A firm international copper market (33 cents per pound as of November 1959) and the modification of Chile's foreign trade regulations stimulated copper production in 1959 (amounting to 251,900 metric tons in the first 6 months, well ahead of 1958's total of 439,200 metric tons). Nitrate production in 1958 totaled 1,280,065 metric tons (1957, 1,309,554) and early figures for 1959 showed a continued decline of some 9%. Iron ore (production in 1958, 3,633,355 metric tons; 1957, 2,679,663) may soon replace nitrate as the second highest foreign exchange earner after copper; exports of iron ore in the first half of 1959 totaled 1.5 million metric tons (25% over the 1958 period) with the United States, Germany, and Japan the chief buyers. Port and rail modernization contributed by lowering marketing costs. Crude petroleum production (885,198 cubic meters in 1958; 689,499 in 1957) also has been rising. The 1959 yield is expected to surpass 1 million cubic meters. Coal production declined further to 2 million tons (1957, 2.1 million).

Agricultural and Industrial Production.—Meat production in 1958 fell to 77,280 metric tons (1957, 90,360), necessitating heavier shipments from Argentina. Subsistence crops produced a bumper harvest in 1958. Wheat production totaled 1,257,300 metric tons, compared with 988,430 in 1957; potatoes, 857,900 metric tons (1957, 635,510); and corn 118,500 metric tons (1957, 100,030). The expanding beet sugar industry produced 235,600 metric tons in 1958, but 85% of the annual consumption must still be imported. Total farm output has risen some 40% (comparing 1935–39 and 1956–57 averages), but because of population increases the per capita output has declined about 12%. Furthermore, frost and storm damage in 1959 probably reduced yields by 20% to 25%.

The depressed commercial situation was reflected in 1958 industrial statistics: pig iron, 304,800 metric tons (1957, 381,600); cotton fabric, 44 million meters (1957, 47 million). The construction picture was poor; cement production remained the same as for 1957 (727,200 metric tons). The business outlook for 1959 was for a modest upturn in most sectors.

Foreign Trade.—Exports in 1958 were valued at $386 million (1957, $455 million). Copper was the principal foreign exchange earner; mining products as a whole accounted for nearly 75% of the total. Imports in 1958 totaled $414 million (1957, $441 million). Leading import items are machinery, vehicles (and parts), chemicals, agricultural products (Chile imports 25% of her food), and various manufactures.

Exports to the United States dropped to $128 million in 1958, the lowest level since 1947 ($196 million in 1957). Purchases from the United States also were reduced, to $147 million ($199 million in 1957).

The drastic system of advance deposits against imports was partially replaced by special surcharges ranging from 10% to 150% of the value of the merchandise. Chile is becoming an important regional supplier of paper products; receipts for exports (27,559 tons) in the fiscal year 1959 amounted to $4.3 million.

Principal Events, 1959.—Relatively stagnant development, coupled with a serious inflationary spi-

ral, continues to be Chile's primary economic problem. Urban labor vigorously opposed the government's program of austerity which gave wage increases chiefly to the unorganized, long-suffering agricultural worker. Sharp price increases—for example, in gasoline, bread, potatoes, and bus and rail fares—evoked more protests. Nevertheless, a coalition of Conservative, Liberal, and Radical Party congressmen in May voted President Alessandri special powers for one year, including authority to direct the economy and reorganize the bureaucracy without referral to Congress. The powers were sought after opponents succeeded in crippling by amendment the administration's Law of Economic Consolidation (final version promulgated April 6 with over 100 provisions vetoed).

Finance Minister Roberto Vergara, by personal negotiations abroad, arranged $282 million in loans and credits (from the United States, $132 million; West Germany, $100 million; France, $50 million).

"El Salvador," the new, high-efficiency Anaconda Company's copper mine 7,800 feet up in the Andean foothills, began full operations in July. Nearby Potrerillos, after having produced 1,850,000 tons of copper during the last 32 years, was reduced to refining only. The new works is producing at the rate of 100,000 tons of copper annually (from 375 million tons of 1.5%-or-better proven reserves), or 60,000 tons more than was being secured from Potrerillos.

In August, economic nationalists attacked the requirements of the International Monetary Fund (and the finance minister for accepting them) for an additional $8.1 million support to Chile's stabilization program. The prominent Christian Democrat, Senator Eduardo Frei Montalva, denounced what he called the "subjection of the Chilean economy"; the conservative *El Diario Ilustrado* newspaper claimed the national sovereignty had been "invaded."

The Popular Action Front (FRAP), a combination of extreme left-wing groups including the growing Communist Party (legalized Aug. 5, 1958, after a ten-year ban) had 9 seats in the Senate and 21 in the Chamber of Deputies in 1959. FRAP factions, however, are frequently at odds over specific tactics. In July 1959, after a visit to Communist China (and guidance from Mao Tse-tung), Communist Secretary General Luis Corvalán proclaimed Cuba's "march with the bourgeoisie" as the correct example. Trotskyite Socialists (for a pure working class movement), disapproving of such fraternization with the bourgeoisie and rejecting Peking-Moscow domination, placed themselves in the neutralist camp.

(See also INTER-AMERICAN AFFAIRS).

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CHINA, Nationalist. See TAIWAN.

CHINA, People's Republic of.[1] A Communist-ruled republic of Asia, the largest in population and third largest in area of the countries of the world. Estimated area, 3,768,727 square miles; pop. (est. 1957), 640 million, with an estimated rate of increase of about 2% per year. Han Chinese comprise about 94% of the population. Minority groups include the Chuang, in the southeast (about 6.5 million); the Hui, a Moslem people, in the northwest (3.5 million); and Uigur, Yi, Tibetan, Miao, Manchu, Mongolian, and Korean groups. Peking (formerly Peiping, pop. 1953 census, 2,768,149) is the capital; Shanghai (6,204,417) is the largest city; and Tientsin (2,693,831) the third largest city. Other large cities are Mukden (2,299,900), Chungking (1,772,500), Canton (1,598,900), Wuhan (1,427,300), Harbin (1,163,000), and Nanking (1,091,600). The urban population in 1956 was about 14% of the total (about 11% in 1950).

Government.—The People's Republic of China was inaugurated on Oct. 1, 1949. The constitution adopted in 1954 terms the republic "a people's democratic state led by the working class." The National People's Congress is designated as the supreme organ of state power, although in practice it serves merely to ratify decisions taken by the Communist Party leadership. The Congress has some 1,200 members elected every four years by provincial congresses, and meets once a year. Acting for the Congress between sessions is the Standing Committee, a working body of 79 members.

The chief executive officer and titular head of the state is the chairman of the republic, elected by the National People's Congress. He serves also as commander in chief of the armed forces and chairman of the National Defense Council. Lui Shao-ch'i, a leading Communist theoretician, was elected chairman of the republic on April 27, 1959, succeeding Mao Tse-tung. Mao, a principal figure of the Chinese Communist movement since the 1920's, retained his position as leader of the Communist Party. The executive body and highest administrative organ of government is the State Council, or cabinet, consisting of about 40 ministries. Chou En-lai, premier of the republic since its inception, heads the State Council, and Marshal Ch'en Yi serves as foreign minister. There is also a Supreme State Conference, a sort of inner cabinet of the different branches of government, which can be summoned by the chairman of the republic when he sees fit. Under the central government are the 21 provinces, 3 special municipalities (Peking, Shanghai, and Tientsin), and 5 autonomous regions (Tibet, Inner Mongolia, Sinkiang, Ningsia, and Kwangsi Chuang).

Dominant political power is wielded by the Communist Party. A few non-Communists parties participate in the government, but their role is negligible. At the head of the Communist Party is the Politburo, consisting of Mao Tse-tung (chairman), Liu Shao-ch'i, Chou En-lai, Marshal Chu Teh, and other top political and military leaders. The Politburo is elected by the Communist Party Central Committee, consisting of about 97 members and an equal number of alternates. There is also a National Party Congress, which meets once a year, and a National Party Conference, which is an extension of the Central Committee and deals with party matters between meetings of the congress. Communist Party power is exercised through the control of key posts in the government and the army, industrial and trade enterprises, trade unions, youth and women's groups, and communes. Communist Party membership is estimated at about 12.7 million.

Religion.—Confucianism, though lacking a formal church organization, has been an important determinant of the Chinese way of life. Taoism and Buddhism are the other principal faiths. There are a few million Moslems, mainly in the northwest, and relatively small Roman Catholic and Protestant minorities. Communist theory is essentially antireligious. The Communist emphasis on group rather than family life, the emancipation of women, and other reforms have considerably altered the social basis of traditional religious practices (such as veneration of ancestors). The Peking regime has severely curtailed Christian missions in China and persecuted missionaries as agents of Western imperialism.

Education.—The Peking government in 1959 claimed to have established, during its decade of rule, about a million schools and other educational institutions, in which some 200 million persons received education. Primary education begins at the age of 7 and lasts 5 years. According to Peking, 85% of school-age children attended school in 1958. About 31 million children received preschool education and 86 million attended primary schools. In 1959, 12 million children were in middle schools (87% of the age group), and 815,000 full-time students attended China's 815 higher institutions. Some 60 million persons reportedly attended literacy classes in 1958, and 30 million were in spare-time schools. Technical and engineering training is emphasized, and students on the higher levels perform a few months of manual labor each year. Communist indoctrination proceeds on all levels.

Finance.—The draft budget for 1958 balanced revenue and expenditure at 33,198 million yuan (2.343 yuan equal U.S.$1 at the official rate). On Dec. 17, 1958, the Communist Party reported that government revenue for 1958 had exceeded the budget estimate by 42%, or about 14 billion yuan. The 1959 budget adopted by the National People's Congress on April 28, 1959, balanced revenue and expenditure at 52,010 million yuan. Defense outlays for 1959 were set at 5.8 billion yuan, a rise of 16% over 1958. (It is widely believed that many defense items are budgeted under other headings.) Projected outlays on economic construction for 1959 comprised 61% of anticipated

[1] Data given in this article, unless otherwise specified, pertain to the Chinese mainland, or Communist China. For information on Nationalist China, see TAIWAN.

UPI

Army tanks roll through Peking on October 1 during Communist Chinese government's 10th anniversary celebration.

expenditure; outlays on social services, culture, and education, 11%. As in previous years, the emphasis in economic expenditure was on heavy industry development. On Feb. 7, 1959, a Sino-Soviet agreement signed in Moscow provided for Soviet financial and technical aid to China aggregating some 5 billion rubles in the next 8 years.

Industry.—Having substantially achieved the goals of the First Five-Year Plan (1953–57)—socialist transformation of production and establishment of a heavy industry base for industrialization—China inaugurated the Second Five-Year Plan with redoubled efforts in 1958, the year of "the great leap forward." The entire population—almost a fourth of the world total—was mobilized by propaganda and emulation campaigns, promises of plenty and threats against laggards, under the single slogan of increasing production. Peasants became part-time producers of pig iron in thousands of back-yard furnaces, children and old people gathered scrap for iron and dung for fertilizer, urban workers gave up their holidays. The results of this effort, as initially reported by Peking, seemed to confound all orthodox theories of economic growth. Overall industrial and agricultural output was alleged to have risen by 65%. Steel production was said to have doubled, and output of food grains to have climbed by over 100%.

Reports emanating from unofficial sources in 1959, however, conflicted strangely with official claims of success. Food shortages were said to exist in the cities, Chinese exports to Southeast Asian markets were dwindling, and discontent was reported widespread in the communes. On Aug. 26, 1959, the Peking regime announced that its earlier claims for 1958 had been grossly overstated and that target levels for 1959 would be considerably below previously stated goals. Of the 11,080,000 metric tons of crude steel originally claimed to have been produced in 1958, only about 8 million was termed usable for industrial purposes, and the Peking planners decided to abandon the makeshift rural furnaces as uneconomical. The 1959 target for steel was reduced from 18 million to 12 million metric tons, and the coal target from 380 million to 335 million, or about 24% over claimed output for 1958.

CHINA: PRODUCTION OF MAJOR INDUSTRIAL ITEMS[1]
(Tons shown are metric tons.)

Item and unit	1952	1956	1957	1958
Electricity (billion kw.-hr.)	7.3	16.6	19.0	27.5
Coal (million tons)	63.5	105.9	123.9	270.0
Petroleum (million tons)	0.44	1.16	1.44	2.23
Steel (million tons)	1.35	4.47	5.35	8.00[2]
Chemical fertilizer (million tons)	0.19	0.66	0.75	0.81[2]
Machine tools (1,000 units)	13.7	26.0	29.1	90.0
Cement (million tons)	2.9	6.4	6.7	10.0
Timber (million cubic meters)	10.0	24.5	29.2	34.5
Cotton yarn (millon bales[3])	3.6	5.2	4.6	6.1[2]
Cotton cloth (million bolts)	111.6	170.8	156.2	176.5[2]
Sugar (million tons)	0.45	0.80	0.84	0.90[2]
Salt (million tons)	4.9	...	8.1	10.1
Edible vegetable oil (million tons)	0.98	2.32	2.32	2.70
Paper, all types (million tons)	0.54	...	1.20	1.60

[1] Data given are official Peking figures, and their reliability is regarded by many experts as questionable. This is particularly true for 1958, since the Peking government itself stated in August 1959 that many of its figures for 1958 had been greatly overstated. [2] Revised downward from earlier claims. [3] Of 400 pounds each. (Chief sources: *Economic Survey of Asia and the Far East*, United Nations; and New York *Times* reports of official Peking announcements.)

Despite this deflation of success claims for "the great leap forward," it appeared that gains in many industries had been substantial, and the Communist leaders decided to continue the all-out drive toward industrialization. On Aug. 28, 1959, Peking reported that steel production for the first half of 1959 had totaled 5.3 million metric tons, a rise of 65% over the like period of 1958; pig iron, 9.5 million (up 160%); coal, 174 million (up over 100%); electricity, 18.4 billion kw.-hr. (up 55%); and cotton yarn, 4.1 million bales (up 46%).

Minerals.—Mineral surveys conducted under the First Five-Year Plan revealed China to have among the world's largest deposits of tungsten, antimony, tin, iron ore, copper, lead, aluminum, and coal. In the case of iron ore, however, much of the reserves is of low grade. Chinese petroleum production, estimated at 15 million barrels in 1958, is considerably below needs. Chief sources are the shale mines at Fushun and the Yümen oil fields in Kansu; newly opened fields are chiefly those at Karamai and Tushantze in Sinkiang, the Tsaidam basin in Tsinghai, and the Nanchung area of central Szechwan. Output of tin concentrates in 1958 was estimated at 18,200 metric tons, tungsten ore (1957), 12,000; and antimony ore (1957), 15,000. China also produces molybdenum concentrate, mercury, bauxite, magnesite, pyrite, gypsum, and phosphate.

Agriculture.—The revolutionary transformation of the Chinese countryside began with the abolition of landlordism, proceeded with the organizing of the peasant tillers into cooperatives and collectives, and reached its most extreme form thus far with the introduction of the communes in 1958. In the cooperatives and collectives the traditional peasant household had been largely effaced as a producing unit; in the communes it has further lost many of its functions as a consuming and child-rearing entity.

Organization of the communes began on an experimental basis in July 1958, and was accelerated following a Communist Party decision of Aug. 29, 1958. One year later Peking reported that 99% of peasant families had been organized in some 24,000 rural communes averaging about 5,000 households each. The communes handle not only economic and social matters—agriculture, industry, trade, education, cultural affairs, propaganda, and military training—but also local government functions. The communal organization generally descends from a top-level administrative committee, which formulates general policy, to intermediate administrative districts (production brigades), and finally to production teams. Many communes were still in the formative stage in 1959 and differed in size, details of organization, modes of payment to members, and in other respects.

The objective of the communes is to obtain maximum advantage of China's greatest resource, labor power. Communal nurseries, kitchens, mess halls, and tailor shops release women for work in field and factory. Optimum labor mobility is attained by the shifting of work teams, as needed, from harvesting to road construction, from land improvement projects to communal factories and

shops. The tightly knit communal life makes possible a concentration of propaganda and the strict control of the activities of members. The communal apparatus facilitates crop deliveries to the state and makes for more efficient centralized planning.

Peking's initial claims for success of "the great leap forward" in agriculture were as extravagant as in industry and had to be revised downward equally drastically. The figure for 1958 output of food grains (paddy, wheat, coarse grains, and potatoes), initially announced at 375 million metric tons (185 million in 1957), was revised to 250 million; and the 1959 target was reduced from 525 million to 275 million. Cotton production was revised downward from 3.3 million metric tons to 2.1 million (1.64 million in 1957), and the 1959 target was reduced from 5 million to 2.3 million. Other revised figures on 1958 yields were: soybeans, 10.45 million metric tons; peanuts, 2.18 million; flue-cured tobacco, 379,000; and jute and kenaf, 309,000.

Activities in irrigation, reforestation, water conservation, and reclamation were intensified in 1958. Between September 1957 and October 1958 a reported 32 million hectares were placed under irrigation, raising total irrigated area to 66.6 million hectares, or 59.5% of cultivated area. Of the 11 major water-conservation projects under way, the largest is the Sanmen Gorge project in Honan Province, which will have a power capacity of 1.1 million kw., and is expected to eliminate flood dangers in the lower Yellow River. Four irrigation and canal systems along the Yellow River in northern China came into operation in 1958.

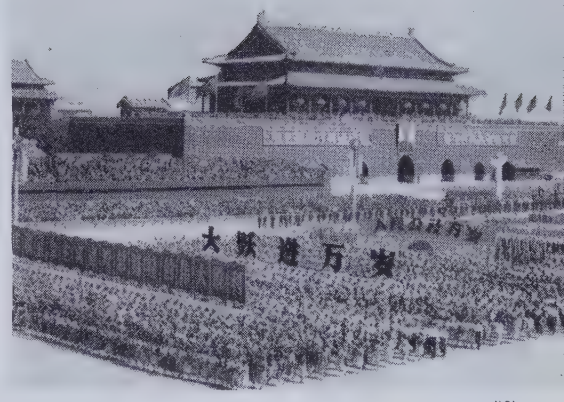
Foreign Trade.—China's foreign trade in 1958 was about 14% greater than in 1957. Exports in 1958 were estimated at 6,235 million yuan; imports, 5,312 million. During the First Five-Year Plan approximately 75% of China's trade was with other Communist countries, 16% with non-Communist Asian and African countries, and 9% with Western nations. Over half of China's trade in the 1953–57 period was with the Soviet Union. In 1958, imports from the USSR totaled about 2,437 million rubles (up 12% from 1957); exports, 3,632 million (up 23%). China's chief imports from the USSR are machinery and equipment, petroleum products, and metals and products; chief exports: food and agricultural products, textiles, and metal ores and concentrates. In addition to China's traditional export items (foodstuffs, minerals, raw silk, tung oil, hemp, and other agricultural products), exports recently appearing in Asian and other markets have included coal, cotton, rubber tires, steel products, chemicals, textiles, machine tools, and other manufactures.

Transportation and Communications.—Under the First Five-Year Plan, railway mileage increased about a fifth. In 1958 over 1,300 miles of new track was reported to have been laid, bringing total mileage open to traffic to about 20,000. Inland waterways provide an important means of transport. In 1958 about 6,200 miles were added to inland shipping routes, and work commenced on dredging the Grand Canal, silted up for over 100 years (see CANALS). Two major roads to Tibet were completed during the First Five-Year Plan, and the target figure of 6,214 miles of new highway construction was reported to have been greatly exceeded. China had 18 domestic airlines in operation in 1957.

M. J. G.

THE YEAR 1959 IN COMMUNIST CHINA

Economic Developments. *Production.*—On Aug. 26, 1959, Communist China amazed the world by announcing that the production figures for 1958, issued earlier in 1959, had been greatly exaggerated. Peking now declared that the 1958 grain output, originally given as 375 million metric tons, was in fact only 250 million tons; steel production, previously announced as 11,080,000 tons, included only 8 million tons of industrial quality; and cotton production, reported to total 3,350,000 tons, actually amounted to 2,100,000 tons. The revision of the production figures for 1958 was accompanied by a lowering of the targets for 1959. Thus the goal for grain output in 1959 was reduced to 275 million metric tons, or little more than half the figure set earlier. Similarly, the 1959 steel goal was reduced from 18 million to 12 million tons, that of cotton from 5,000,000 to 2,310,000 tons, and that of coal from 380 million to 335 million tons.



UPI

A massive parade of civilians on October 1 opens the celebration in Peking of the 10th year of the Communist regime.

The Communist government blamed the errors in 1958 agricultural figures on the haste with which unusually large crops had been harvested, and insisted that despite the deflated figures the overall gains in 1958 constituted the promised "big leap forward." Nevertheless, the impact of the revelations was felt by the peoples of the underdeveloped countries of Asia. The Communist magic formula for rapid economic development lost much of its appeal. Of equal significance was the admission by Peking that the steel produced in the small back-yard furnaces which had been built all over the country was suited only to rural use. This process of manufacture, hailed just a year before as an ingenious invention, was now abandoned as a national enterprise.

The acknowledgment of statistical exaggeration and the downward revision of production goals, while indicating the difficulties which Peking had been encountering, should not be taken as signs of failure in the Communist economic plans. According to Premier Chou En-lai's report of August 28, 1959, production increases for the first half of the year were substantial. The output of steel rose by 65% over that of the first half of 1958; production of iron, by 160%; that of coal, by over 100%; that of cotton yarn, by 46%; that of electricity, by 55%; and the number of metal-cutting tools, by 100%. While the new figures should be received with reserve, it would seem that Peking was still in a position to fulfill the goals established for the first two years of the Second Five-Year Plan (1958–62).

Agricultural Development.—Among the difficulties which caused the Chinese Communists to lower their 1959 target for grain production were natural disasters. In April and May, heavy rains inundated wide areas of Kiangsu, Anhwei, Hupei, and Honan provinces. The worst flood occurred in June in Kwangtung Province, where 2 million acres of arable land were ruined and 2 million per-

ELLINWOOD IN THE TUCSON (ARIZ.) DAILY STAR

"Home Wrecker"

sons lost their homes. In the same month, locusts caused considerable damage to the crops of five provinces of northern and central China. Later, 50 million acres in Manchuria, the center, and the southwest were affected by drought. As Chou En-lai admitted, however, such disasters were only part of the reason for the failure to meet agricultural production goals. A major cause was the adoption of the theory that intensive cultivation would make it possible to grow larger crops on smaller acreages. Such crops could be produced only with the machinery, chemical fertilizers, and other modern aids which China lacked.

The net result was a shortage of food that was felt especially in the cities. It had long been known that the exports to Soviet bloc countries in exchange for raw materials and to neutralist Asian and African nations as a means of extending Peking's influence were draining China's food supplies. Now the newly organized communes tended to aggravate the situation. Confusion arising from the revolutionary changes in the rural districts interfered with the distribution system, and the communes themselves were unwilling to sacrifice food for the maintenance of the crowded cities.

Communes.—In the early months of 1959 the Chinese Communist authorities seriously proposed industrialization of the communes as a means of integrating agriculture and industry. Their enthusiasm was, however, soon dampened by Soviet criticism and by the discontent of the Chinese peasants with the regimentation of communal life. In July, steps were taken to ease the regulations of the communes: a government directive gave permission to families to cook their own food and eat it in privacy, and stated that in future the use of mess halls would be voluntary.

Political Developments. *Communist Leadership.*—On April 27, 1959, the 2d National People's Congress elected Liu Shao-ch'i chairman of the people's republic to succeed Mao Tse-tung, who had expressed a desire to step down. A leading Communist theoretician, Liu had long been considered second in the line of leadership. His replacing Mao as chief executive did not, however, affect the latter's position as supreme leader. Mao retained the powerful post of chairman of the Politburo of the Chinese Communist Party, and in that capacity remained the dominant figure in the country. Nor did his popularity suffer any decline: at the celebration of Communist China's 10th anniversary on October 1, he received enthusiastic acclaim from his followers.

Administrative Shake-up.—On September 17, Peking announced a number of changes in major offices. Marshal Lin Piao was named to replace Marshal P'eng Teh-huai as minister of national defense, and Marshal Lo Jui-ch'ing to succeed Gen. Huang K'e-ch'eng as army chief of staff. In addition, Wang Chia-hsiang and Chang Wen-t'ien were relieved of their positions as deputy foreign ministers. The military shift was believed to reflect the growing dissatisfaction of the armed forces with the extensive employment of soldiers in nonmilitary tasks in the communes. The appointment of Marshal Lo, who had been minister of public security for 10 years, signified the desire of the Communist government to tighten its control over the army.

The shift of key officials did not, however, lead to the purge which had been predicted in some quarters. It is true that an article in an August issue of *Hongqi,* ideological journal of the Chinese Communist Party, severely attacked "rightist opportunists" for "criminal activity" against socialist construction by "disseminating . . . pessimism among the masses." But this was an exhortation to the people to do their best to meet production goals rather than a call for a purge. On December 4 it was announced that 25 rightists purged in 1957–58 had been pardoned, together with 20 former Nationalists, 2 leaders under the Japanese, and Henry Pu Yi, former emperor of China and of Manchukuo.

Tibetan Revolt.—Since the Chinese Communists first assumed control over Tibet in 1950, their attempts at socialization had been resisted by Tibetans. On March, 10, 1959, when the Dalai Lama was invited to attend a cultural show at the Chinese headquarters in Lhasa, thousands of Tibetans, fearing that harm might be done to their leader, gathered around Norbulingka Palace to prevent him from attending the function. Simultaneously, large crowds demonstrated in Lhasa against Chinese Communist rule. On March 19, the Tibetan Army clashed with Chinese Communist forces, which brought machine guns and artillery into action. The rebels were soon put to rout, and the Chinese took 4,000 Tibetan prisoners. On March 28, Peking ordered the dissolution of the local government of Tibet and transferred its functions to the Preparatory Committee for the Tibet Autonomous Region, which was henceforth to be headed by the Panchen Lama rather than by the Dalai Lama.

Meanwhile, the Dalai Lama fled to India, where he was granted political asylum on March 31. In a statement issued at Tezpur, Assam, on April 18, he declared that Communist China had violated the Sino-Tibetan agreement of 1951, especially the provisions concerning noninterference with the Tibetan religion. On June 20, he demanded the restoration of self-government in Tibet and the withdrawal of Chinese administrators and troops. Failing to secure Indian intervention, he appealed on September 9 to the United Nations. On October 21, the U.N. General Assembly passed a resolution expressing grave concern "at reports . . . that the fundamental human rights and freedoms of the people of Tibet have been forcibly denied them" and calling "for respect . . . for their distinctive cultural and religious life." Two days later Peking denounced the resolution as illegal interference in its domestic affairs. (See also Tibet.)

Foreign Relations. *Asia and Africa.*—Communist China's prestige in Asia suffered in 1959 when the Tibetan revolt broke out. The suppression of the revolt provoked criticism in such neutralist countries as Burma, Cambodia, and Indonesia. Nevertheless, Indonesia and Communist China managed to reach an understanding (October 11) whereby each country would support the other's claim to Netherlands New Guinea and Taiwan, respectively. (See also INDONESIA.)

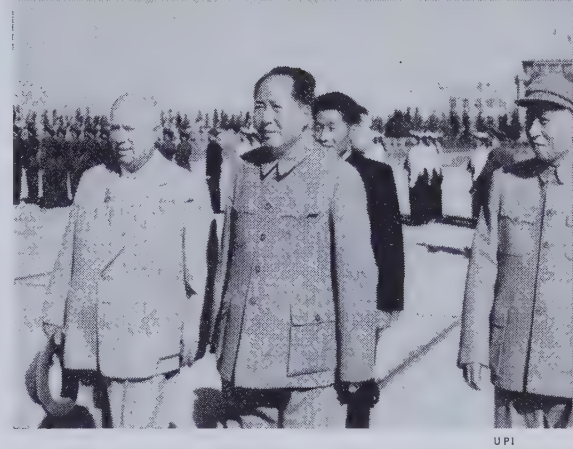
In the Middle East, Communist China's efforts to extend its influence were opposed by the United Arab Republic (UAR). On October 3, the UAR charged the Chinese with delaying the cables sent by its embassy in Peking. Meanwhile, the Cairo press embarked on a campaign of warning the Arab world against Peking's subversive activities.

It was with India that Communist China's foreign relations took the most serious turn. The Indian grant of political asylum to the Dalai Lama was bitterly resented in Peking, and the press, radio, and members of the National People's Congress joined in attacking "Indian expansionists" who supported the Tibetan revolt. When the Indian press reciprocated, a cold war developed between the two Asian countries.

Tensions were soon aggravated by border incidents. Speaking in Parliament on August 28, Prime Minister Jawaharlal Nehru charged that Chinese Communist forces had entered Indian territory at two places in the North-East Frontier Agency, Assam, and stated that India would be obliged to defend its borders. Peking's position was that it was India that had encroached on Chinese territory. In a note of September 8, Chou En-lai maintained that the McMahon Line, which the Indian government considered had been the legal boundary between Tibet and India since 1914, was "never agreed to by any Chinese central government." The Chinese territorial claims were rejected by Nehru in a note of September 26. On October 21, Chinese and Indian forces clashed in the Ladakh section of Kashmir; 9 Indians were killed, and 7 others were captured by the Chinese. On October 24, Peking offered to free the 7 men with 3 others captured earlier, but in a statement issued two days later renewed and enlarged its claims to Indian territory. In a letter to Nehru on November 7, Chou proposed that both sides withdraw their troops a certain distance in the disputed areas, but his proposal would still leave Chinese forces in Ladakh. Nehru's reply, published on November 20, proposed instead that the Chinese withdraw from all Indian territory and that both sides discontinue forward patrols. Meanwhile, on November 14, the 10 prisoners were returned to India. (See also INDIA.)

Soviet Union.—Relations between Communist China and the Soviet Union showed signs of strain in 1959. The rapid organization of the Chinese communes met with outspoken criticism from the Soviet leaders, who were anxious to maintain Soviet pre-eminence in Communist ideology. On January 12, First Deputy Premier Anastas I. Mikoyan remarked that Russia had tried communes in 1918–19, but had soon discovered that they were unworkable. Addressing the 21st Congress of the Soviet Communist Party on January 27, Premier Nikita S. Khrushchev declared that there were no short cuts to communism, but that each country must pass through a socialist stage in which incentive pay would be necessary for the rapid development of production. The Chinese Communists acquiesced in the Soviet assertion of ideological leadership, but they continued their communes after making some modifications.

A more serious threat to the solidarity of Moscow and Peking arose from their divergent policies toward the United States. It was apparently to keep Communist China in line with his policy of peaceful coexistence with the United States that Khrushchev flew to Peking on September 30. Chou En-lai commended the Soviet premier on his successful visit to the United States, but while Khrushchev and Mao Tse-tung discussed the relaxation of international tension, the official Communist organ *Jenmin Jihpao* carried an article by Foreign Minister Ch'en Yi that called on all peoples to wage an unrelenting struggle against "American imperialism."



UPI

Soviet Premier Khrushchev (left) is accompanied by Mao Tse-tung (center), leader of the Chinese Communist Party, and Lui Shao-ch'i (right), chairman of the Chinese People's Republic, as he leaves Peking on October 4 after attending 10th anniversary festivities of the Chinese government.

Khrushchev left Peking on October 4 without issuing a communiqué, and it was not known whether he had reached any agreement with Mao. But if Communist China did not find the maintenance of the status quo and the relaxation of tension attractive, there was no sign that it would break with the USSR. Ideology, the need for a common front against the West, and Chinese reliance on Soviet aid required cooperation between the two countries.

United States.—To the Chinese Communists the United States remained the implacable foe of their foreign policy aims. Washington stood in the way of their conquest of Taiwan, sponsored embargoes against trade with mainland China, and frustrated Communist schemes in Korea, Vietnam, and Laos. If Peking played down its hostility toward the United States after Khrushchev's visit, this was a temporary measure to save the Soviet premier embarrassment rather than a radical change of policy. Peking was too deeply committed to its

Members of a people's commune near Peking are exhorted to greater effort by a speaker who reads them a communiqué and resolution of the Communist Party's Central Committee.

SOVFOTO

anti-American propaganda to call suddenly for a policy reversal.

(See also FAR EAST.)

CHESTER C. TAN,
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CHIROPRACTIC. Chiropractic—the diagnosis of human ailments and the treatment of these ailments by the adjustment of the articulations (joints) and the manipulation of the adjacent tissues, and the use, as indicated, of clinical nutrition, psychotherapy, and physiotherapy—is classified by the federal government as one of the four major healing professions. Chiropractic care is offered by some 25,000 practitioners in the United States and abroad.

The 64th anniversary convention of the National Chiropractic Association (NCA) was held in Chicago, July 5–10, 1959. National councils on roentgenology, public health, hospitals and sanitaria, psychotherapy, research, education, and physiotherapy, as well as the National Auxiliary, met at the same time, with some 1,200 persons attending. A new Council on Chiropractic Orthopedics, for research in basic procedures, was established. In addition, convention highlights included a series of symposia on important developments in diagnostic procedure, adjusting technic, X-ray interpretation, poliomyelitis treatment, physiotherapeutic practices, and public health problems.

Among the important NCA activities during 1959 were: (1) the establishment of several new departments to cover insurance relations, public relations, industrial relations, professional relations, and labor relations; (2) vocational guidance exhibits at the national conventions of the American Association of Junior Colleges and the American Personnel and Guidance Association; (3) the appropriation by the House of Delegates of $100,000 per year to be devoted to education and research through the eight chiropractic colleges accredited by the National Council on Education; (4) the first examinations and certification of qualified chiropractic roentgenologists by the Board of Certification; (5) cooperating with President Eisenhower's Council on Youth Fitness by administering Kraus-Weber fitness tests to American school children; (6) extending grants-in-aid to seven accredited chiropractic colleges in the United States through the new Foundation for Accredited Chiropractic Education (the National Chiropractic Insurance Company contributed the first $50,000 to this program); and (7) conducting district educational seminars to acquaint all doctors of chiropractic with the latest scientific developments in the field. Also important in 1959 was the publication of *Medicine and Chiropractic* by Dr. Clarence Weiant, dean of the Chiropractic Institute of New York, in association with Dr. Sol Goldschmidt, a practicing chiropractor.

The National Chiropractic Association has headquarters at the National Building, Webster City, Iowa.

L. M. ROGERS,
Executive Secretary,
National Chiropractic Association, Inc.

CHOCOLATE. See COCOA; CONFECTIONERY.

CHOU EN-LAI. See Index entry.

CHRISTIAN SCIENCE. Increased emphasis on overseas activities highlighted progress of The Mother Church, The First Church of Christ, Scientist, in Boston, Mass., during 1959.

Colorful new quarterly editions of the *Herald of Christian Science* were published in Danish, Dutch, Italian, Norwegian, Portuguese, Spanish, and Swedish. Another important development was the production of the full-length Technicolor motion picture, *The Mother Church in Action.* German, French, and Spanish versions of the film were also produced.

Special conferences for military personnel in Korea, Japan, and Germany—as well as Christian Science lectures and informal talks in some eight overseas areas—were arranged by Christian Science Activities for the Armed Forces. Annual (instead of biennial) visits to the Middle East, South Asia, and the Far East were made by Christian Science lecturers.

New branches of The Mother Church established during 1959 included those in Utrecht, Netherlands; Kaiserslautern and Duisburg-Hamborn, Germany; Guadalajara, Mexico; Queensland, Australia; and Papaparaumu, New Zealand.

Carefully authenticated accounts of healing in Christian Science of asthma, glaucoma, diphtheria, stomach ulcer, rupture, broken bones, and other serious conditions were read at the annual meeting of The Mother Church held in Boston on June 8, 1959. A substantial increase in the sales of the Christian Science textbook, *Science and Health with Key to the Scriptures* by Mary Baker Eddy, discoverer and founder of Christian Science, was reported.

On June 8, 1959, Mrs. Kathryn Cook of Boston, Mass., was named president of The Mother Church for a one-year term. She succeeded Leonard T. Carney, a member of the board of trustees of The Christian Science Publishing Society. Also announced at the annual meeting was the election of Arthur P. Wuth of Denver, Colo., as first reader and Mrs. Josephine Carver of Brookline, Mass., as second reader.

In 1959 the denomination's daily newspaper, *The Christian Science Monitor,* published an unprecedented series of "summit interviews" based on around-the-world visits with the heads of governments. The series "How Christian Science Heals" completed its fourth year on television and its sixth year on radio.

WILL B. DAVIS,
Manager of Committees on Publication,
The First Church of Christ, Scientist, Boston.

CHRISTMAS ISLAND. The two islands with this name are:

(1) A British possession and the largest atoll in the Pacific Ocean (area, 234 square miles; pop., 258 in 1954), constituting with Fanning and Washington the Line Islands, a group in the Gilbert and Ellice Islands Colony (see WESTERN PACIFIC ISLANDS, BRITISH). An area of the Pacific centered about Christmas Island was the site for British nuclear weapons tests in 1957 and 1958. A copra plantation is worked by the government.

(2) An Australian dependency situated in the Indian Ocean, about 190 miles south of Java Head and 259 miles northeast of the Cocos (Keeling) Islands. This former dependency of Singapore (area, 260 square miles; mid-1958 est. pop., 3,000) was formally transferred to Australia as of Oct. 1, 1958. Large deposits of lime phosphates are worked by the Christmas Island Phosphate Company, Ltd., which employs most of the island's labor force (chiefly Chinese and Malayans).

CHROMITE. World production of chromite in 1958 was estimated at 4,050,000 short tons, compared with 5,125,000 tons (a revised figure) in 1957, according to the U.S. Bureau of Mines. The United States produced only 144,000 tons, or 4% of world output, in 1958. Its chromite ores and

concentrates were from 90 mines and mills in five states. Since the domestic output is small and of substandard quality, the United States depends upon imports. In 1958, imports for consumption totaled 1,263,000 short tons, compared with 2,283,000 tons (revised) in 1957. Exports were only 717 tons. Consumption was 1,221,000 tons, of which 778,000 tons was used in metallurgical work. The refractory industry used 312,000 tons, and the chemical industry consumed 131,000 tons.

In the first nine months of 1959, domestic output (shipments) of chrome ores totaled 83,321 short tons; imports were 1,149,987 tons; and consumption was 1,035,307 tons. The U.S. Bureau of Mines reported that all domestic chromite mines except one (in Montana) ceased production in the first half of 1958, because the government's purchase program for chromite was terminated. (See MINERAL PRODUCTION for output of major producing countries.)

CHRONOLOGY, 1959. A list of the important dates of 1959, and a Chronological Index of the more important events of the year may be found at the front of the volume.

CHURCH MEMBERSHIP, U.S. The *Yearbook of American Churches for 1960* reports that in 1958 there were 109,557,741 members of 251 religious bodies in the continental United States, including Alaska. This membership is an increase of 5,368,063—or slightly more than 5%—over 1957. Local churches (parishes and congregations) numbered 309,449 in 1958.

Statistics for 83 religious bodies with memberships of 50,000 or more (representing 98.8% of all members) are given in the following table.

U.S. CHURCH MEMBERSHIP, 1958[1]
(Churches of 50,000 or more members)

Religious body	Members
Protestant Bodies	
Adventists, Seventh-day	301,826
Apostolic Overcoming Holy Church of God	75,000[2]
Assemblies of God	505,552
Baptist Association, American	630,000
Baptist Association, North American	261,202[2]
Baptist Association of America, Conservative	275,000
Baptist Churches, General Association of Regular	126,268
Baptist Convention, American	1,555,360[3]
Baptist Convention of the USA, National Primitive	80,983[3]
Baptist Convention, Southern	9,202,205
Baptist Convention, USA, Inc., National	5,000,000
Baptist Convention of America, National	2,668,799[2]
Baptist Evangelical Life and Soul Saving Assembly of USA, National	57,674[4]
Baptist, Free Will	184,287
Baptist, General	56,773
Baptist General Conference of America	65,507
Baptist General Conference, North American	50,010
Baptist, Primitive	72,000[5]
Baptist, United	63,641[6]
Baptist, United Free Will	100,000
Brethren, Church of the	200,282
Christian and Missionary Alliance	56,523
Church of Christ, Scientist	268,915[7]
Church of God	71,777[3]
Church of God (Anderson, Ind.)	133,214
Church of God (Cleveland, Tenn.)	155,541
Church of God in Christ	380,428
Church of Jesus Christ of Latter-day Saints	1,394,729
Church of Jesus Christ of Latter-day Saints, Reorganized	146,336
Church of the Nazarene	291,036
Churches of Christ	2,000,000
Congregational Christian	1,381,124
Disciples of Christ, International Convention	1,943,599
Evangelical Covenant Church of America	57,414
Evangelical and Reformed	806,365
Evangelical United Brethren	749,188
Federated Churches	88,411[8]
Friends, Religious Society of (5 Years Meeting)	68,399
Independent Fundamental Churches of America	65,000[3]
International Church of the Foursquare Gospel	79,012
Jehovah's Witnesses	226,797
Lutheran, American	973,951
Lutheran Church, Augustana Evangelical	582,560
Lutheran Church, Evangelical	1,092,866
Lutheran Church in America, United	2,293,902[3]
Lutheran Church, Missouri Synod	2,234,844
Lutheran Church, United Evangelical	63,718
Lutheran Free Church	80,248
Lutheran Joint Synod of Wisconsin and Other States, Evangelical	342,993[3]
Mennonite	71,365
Methodist	9,670,690
Methodist Episcopal, African	1,166,301[4]
Methodist Episcopal, Christian	392,167[4]
Methodist Episcopal Zion, African	780,000[9]
Methodist Church of North America, Free	54,942
Moravian Church in America	60,415
Pentecostal Assemblies of the World, Inc.	50,000
Pentecostal Church of God of America, Inc.	103,500
Pentecostal Church, United, Inc.	160,000
Presbyterian, Cumberland	87,531
Presbyterian Church in the U.S.	869,452
Presbyterian Church in the USA, United	3,094,633
Protestant Episcopal	3,042,286
Reformed, Christian	228,905
Reformed Church in America	216,096
Salvation Army	250,583
Spiritualists, Int. General Assembly of	164,072[2]
Triumph the Church and Kingdom of God in Christ	70,079
Unitarian Churches	108,396
Universalist Church of America	68,949
Total Protestants listed above	60,271,621
Non-Protestant Bodies	
American Carpatho-Russian Orthodox Greek Catholic	100,000
Armenian Church of North America, Diocese	122,000
Catholic, Polish National, of America	271,316
Catholic, Roman	39,509,508
Greek Archdiocese of North and South America	1,150,000
Jewish Congregations	5,500,000[10]
North American Catholic Church	78,278
Romanian Orthodox Episcopate of America	50,000
Russian Orthodox Greek Catholic Church of America	755,000[3]
Russian Orthodox Church Outside Russia	55,000[4]
Serbian Eastern Orthodox	150,000[3]
Syrian Antiochian Orthodox	110,000
Ukrainian Orthodox Church of U.S.A.	84,000
Total non-Protestants listed above	47,935,102
Total Protestants and non-Protestants listed above	108,206,723

[1] Mainly for the calendar year 1958 or a fiscal year ending in 1958; figures include Alaska. [2] 1956. [3] 1957. [4] 1951. [5] 1950. [6] 1955. [7] Data not reported; figure shown from *Census of Religious Bodies, 1936* (U.S. Bureau of the Census). [8] 1936. [9] 1959. [10] 1954. (Source: *Yearbook of American Churches for 1960.*)

Total church membership set a new record in 1958 and also represented a higher percentage (63%) of the population than in 1957. The population of the United States rose 1.7% in 1958, while church membership increased more than 5%. Roman Catholic membership showed a gain of over 10% during 1958 (the Military Ordinate, now with the status of a diocese, reported for the first time, with 2,000,000 persons); Protestants (reporting) gained 2.8%. Of the total of church members, 61,504,669 were Protestant; 39,509,508, Catholic; 5,500,000, Jewish; and 2,545,318, members of Eastern Orthodox churches.[1] (See also RELIGION.)

CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS. As of Jan. 1, 1959, church membership was 1,555,799, including 33,330 converts baptized in 1958. There were 2,513 wards and independent branches, 273 stakes, and 47 missions. New missions were organized in Germany, in Chile and Peru, and in Brazil. The church had approximately 5,750 full-time missionaries and more than 6,300 part-time missionaries throughout the world.

President Stephen L. Richards, first counselor in the First Presidency, passed away May 19, 1959. President J. Reuben Clark, Jr., formerly second counselor, was named first counselor, and Henry D. Moyle of the Council of the Twelve Apostles was

[1] Roman Catholics count all baptized persons, including infants; Jews count all those living in communities having congregations; the Eastern Orthodox churches count all persons in their nationality or cultural groups. Most Protestant bodies count only those who have attained full membership, although many Lutheran bodies and the Protestant Episcopal Church now report all baptized persons.

THE NEW YORK TIMES

Elephants and clowns of Ringling Brothers Circus, which began its 1959 season at New York's Madison Square Garden in March, enter Manhattan across an East River bridge.

named second counselor in the First Presidency. At the October Semi-Annual Conference (October 9–11), Elder Howard W. Hunter of Pasadena, Calif., was sustained as a member of the Council of the Twelve Apostles.

The Mormon Tabernacle Choir completed 30 years of continuous national broadcasting in July 1959. The program was voted America's favorite classical and religious program in the 12th annual listeners' poll conducted by *TV Radio Mirror Magazine* in April 1959. The Hill Cumorah Pageant, held at Palmyra, N.Y., on August 6–8, broke all attendance records; an estimated 135,000 persons witnessed this annual production.

The church's building program continued unabated with more than 750 chapels and schools under construction. The Church College of Hawaii at Laie, Oahu, was completed and dedicated in 1959.

The Brigham Young University in Provo, Utah, was host to an Indian Youth Council which brought to the campus representatives of 48 tribes for a three-day conference devoted to Indian problems.

The Genealogical Society of the Church greatly enlarged its collection of microfilm records in 1959, and now has in its library more than 300 million pages of records copied on microfilm. Many microfilm projects were under way in the United States, Europe, and Mexico, and the society acquired two very large collections of English records numbering thousands of volumes.

The activities of the Church Welfare Plan were given special emphasis in 1959, members throughout the church donating labor on farms and in factories and various industries.

JOSEPH ANDERSON,
Secretary to the First Presidency.

CIGARETTES AND OTHER TOBACCO PRODUCTS. See TOBACCO.

CIRCUSES AND RODEOS. **Circuses.**—During 1959 circuses were plagued by unusually hot and rainy weather and a polio scare, but they had a fair season nevertheless. The effect of the abandonment of outdoor showings by Ringling Bros.–Barnum & Bailey was counteracted by intensified publicity and enlargement and improvement of the shows, and interest in circuses has held up well in the face of many new competing attractions. The Circus World Museum, which opened July 1, 1959, at Baraboo, Wis., has played a part in making new circus enthusiasts, drawing more than 60,000 visitors in its first month.

Cristiani Bros., now a top-rated circus, had a successful year although attendance in Chicago, one of its principal stands, fell considerably below 1958. The Clyde Beatty–Cole Bros. Circus departed from its usual route, bypassing the Midwestern and Central states and doing an excellent business in the eastern United States and Canada. The Al G. Kelly–Miller Bros. Circus and the Mills Bros. Circus, both sizable tent shows, did quite well. Indoor dates of Ringling Bros.–Barnum & Bailey were spotty, but the season was considered satisfactory. There is little expectation that this circus will return to showing under canvas, but the organization is considering a European unit, to play auditoriums and arenas. Small circus units, of which there are some 30 or more on the road, had only a fair season, and a few of them closed in midseason.

Rodeos.—Tourists still keep the Pendleton, Oreg., Cheyenne, Wyo., and Calgary, Alberta, rodeos in the top brackets, these three cities having become identified with Wild West entertainment. But many rodeos are following the trend of the fairs and are booking top-ranking Western stars to supplement the contest features. In 1959 the "Days of '47" rodeo in Salt Lake City, Utah, featured Roy Rogers, Dale Evans, and their troupe and drew an attendance of 12,000 a day for eight days. Rex Allen and his troupe were responsible for attendance records at North Platte, Nebr.; Vernon, Texas; Nampa, Idaho; and Ogden, Utah. The "Pike's Peak or Bust" rodeo at Colorado Springs, Colo., with Dale Robertson featured, drew 9,000 a day for six days. The many small rodeos through the Southwest and West depended mainly on the Wild West contests and drew well when the weather was favorable.

NAT GREEN,
Chicago Representative, "Radio-Television Daily"; former Manager, Chicago Office, Ringling Bros.–Barnum & Bailey Combined Shows.

CITRUS FRUIT. See FRUITS.

CITY PLANNING. Problems of internal circulation, urban renewal, central business districts, and airport location and development were among the major concerns of city planners during 1959.

Internal Circulation.—The rapid development of suburbs beyond economical reach of public transit, the financial inability of railroads to provide good commuter service (see RAILROADS), and the expansion of the expressway systems all contributed to problems of circulation within cities and metropolitan areas. Major transportation planning studies were completed in several metropolitan areas, including Washington, D.C., where a system of expressways, major streets, and four rapid transit lines was recommended. By the end of the year a similar study was nearing completion in Chicago, one was under way in Pittsburgh, and another was begun in the Philadelphia-Camden metropolitan area. Unconventional methods of mass transportation were studied in several cities, including Detroit, where a monorail system was proposed and rejected.

In some cities the relative emphasis to be placed upon public transit, expressways, and surface streets became a controversial issue. In the Boston area a former commuter railroad line was converted to rapid transit in 1959, but other suburban lines were abandoned. In the New York, Boston, and Chicago regions extensive reductions in suburban rail service were made, and further reductions were in prospect. Expressways were being rapidly extended, and major links were opened during the year in the metropolitan areas of Chicago, San Francisco Bay, Seattle, Los Angeles, and other cities.

Urban Renewal.—In 1959, much progress was

made in urban renewal, in spite of the curtailment of federal funds the preceding year. In New York, many projects are under way, including the Lincoln Center program, an extensive area for cultural and educational institutions on the west side of Manhattan. In Chicago, the Prairie Shores and other projects are extending a comprehensive renewal area involving a substantial part of the South Side. Many renewal projects are essentially nonresidential, and the fact that the federal program is administered under a housing act is a handicap to many cities that desire aid in renewal of nonresidential areas.

Much encouragement was offered by the 1959 Congress, which authorized 37,000 new public housing units, $50 million in federal loans for housing for the elderly, $650 million in urban renewal grants to cities, and $10 million for grants to small cities for comprehensive planning. To be eligible for these last grants, a city must now have a maximum population of 50,000, as compared with 25,000 in previous years. (See also HOUSING.)

Central Business Districts.—Much attention has been given to the rehabilitation of central business districts in order to meet the competition of newer commercial centers in outlying sections of cities and in suburbs. Several cities are planning or constructing with public funds systems of peripheral parking on the fringes of their business districts. Major downtown streets are being closed to traffic in some cities in order to duplicate downtown the amenities of the outlying shopping plazas with center malls. In Kalamazoo, Mich., the main downtown shopping street was permanently replaced by a landscaped mall.

Although the central business districts of most cities face continued decline of retail activity, many downtown areas are experiencing a rapid expansion of office-building and hotel construction. In New York, Boston, Newark, Chicago, San Francisco, Oakland, and other large cities, modern office buildings are reinforcing the importance of central areas as business headquarters. Large hotels are planned or under construction in downtown New York, Chicago, Cleveland, Portland (Oreg.), Dallas, and other large cities.

Airports.—The advent of large-scale use of jet aircraft by commercial airlines in 1959 intensified problems of metropolitan airport location and development. Jets are noisy, and for that reason severe restrictions are placed on their use of some airports. One major airline is converting its jets to turbofan power, mainly to reduce noise levels. The comprehensive development of the New York International Airport continued during the year, and several new terminal buildings were opened. In Chicago, a shift of airlines to O'Hare International Airport was accelerated by the fact that jets cannot use the Chicago Midway Airport, which until 1959 was the world's busiest.

Other Planning Developments.—A comprehensive study of the New York metropolitan area (the first since the 1920's) was completed in 1959, and the first three of nine volumes on it were published late in the year. This study is expected to furnish a basis for metropolitan planning to solve several problems which were analyzed in detail. They include the changing functions of Manhattan, increases in the in-migrant population with related housing problems, and the changing role of the area as a port and transportation center, together with problems of re-use of areas where industrial activity is declining.

The opening of the St. Lawrence Seaway (q.v.) in April focused attention on port terminal and industrial development in cities on the Great Lakes, and on competitive adjustment in port cities of the Atlantic and Gulf coasts. In these cities much planning was devoted to terminals and waterfront land uses.

JOE CLARK—LIFE, © TIME, INC.

In Kalamazoo, Mich., a main business street has been converted into a 924-foot mall to allow shoppers to walk comfortably without interference from automobile congestion.

Prospects of greatly increased enrollments in colleges and universities stimulated planning of new campuses in a number of cities, including New York, Chicago, and Milwaukee. In some instances, elimination of blighted areas by urban renewal programs will provide the necessary land in the central parts of the cities.

The rapid expansion of suburbs has stimulated interest in preserving the remaining open spaces in and near cities for recreational use. Congress authorized a nationwide study of the problems of recreational land, and many local areas have initiated their own studies. In northern Indiana, near Chicago, the Dunes area has been selected by several steel companies as sites for large new plants, although it is one of the few remaining scenic shoreline areas of the Great Lakes accessible to large metropolitan populations.

City and regional planners are greatly concerned about the shortage of qualified persons entering the profession, and with the quality of training available to prepare them. In several states, bills have been introduced for the licensing or certification of professional planners, a step which some planners believe would prematurely narrow the range of professional qualifications. Meanwhile, the shortage of trained personnel continues to retard the development of planning in many communities.

(See also separate articles on the major cities of the United States and Canada.)

HAROLD M. MAYER,
Professor of Geography, University of Chicago.

CIVIL AERONAUTICS ADMINISTRATION. See FEDERAL AVIATION AGENCY.

CIVIL AVIATION. See AERONAUTICS; FEDERAL AVIATION AGENCY; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.

CIVIL DEFENSE. See OFFICE OF CIVIL AND DEFENSE MOBILIZATION and the Index entry, *Civil Defense.*

CIVIL ENGINEERING. See BRIDGES; CANALS; DAMS; FLOOD CONTROL; HIGHWAYS; RAILROADS; TUNNELS.

CIVIL LIBERTIES. As had been true of the nation's record on civil liberties for the period since World War II, the year 1959 showed both progress and retrogression. There were significant developments in the field sometimes spoken of as that of individual rights versus national security, as well as in the area of race relations.

Once again powerful voices were raised in protest against recent U.S. Supreme Court decisions concerned with internal security matters. The most spectacular attack came from the American Bar Association's special Committee on Communist Tactics, Strategy, and Objectives, whose report was approved by the association's House of Delegates on February 24. The committee refrained from attacking the motives of the justices and defended the court as an institution, but nevertheless went on to urge Congress to pass legislation modifying the effects of certain Supreme Court decisions which had "weakened our internal security."

This report elicited from the American Civil Liberties Union a vigorous defense of the court and its role in safeguarding fundamental rights. It charged that the American Bar Association's proposal would upset the "precious balance" between individual freedom and national security.

On June 24, 1959, the U.S. House of Representatives adopted (by a vote of 225 to 192) the proposal of Congressman Howard W. Smith of Virginia for "correcting" recent Supreme Court rulings on subversion and criminal procedure. The Senate took no final action on the House measure.

Ironically, during its 1958–59 term, the Supreme Court handed down a number of decisions which, in the eyes of many observers, seemed to "soften" or limit the effect of some of its most severely criticized rulings. Thus in *Barenblatt* v. *United States,* decided on June 8, 1959, the court upheld the conviction (for contempt of Congress) of a college teacher who had refused to tell a subcommittee of the House Committee on Un-American Activities whether he was or had been a member of the Communist Party. It rejected his claim that the committee's purpose was the unconstitutional one of "exposure for exposure's sake" and that the inquiry interfered with freedom of speech and association. "An educational institution," wrote Justice Harlan for the majority, "is not a constitutional sanctuary from inquiry into matters that may otherwise be within the legislative domain merely for the reason that inquiry is made of someone within its walls."

Chief Justice Warren and Justices Black, Douglas, and Brennan dissented, as they also did from the decision in *Uphaus* v. *Wyman,* which was handed down the same day. In this case Justice Clark led the court in holding that New Hampshire was not precluded by the Smith Act of 1940 from enacting legislation constituting its attorney general as a one-man committee for the purpose of investigating the presence of subversive groups or persons in the state. Justice Clark emphasized that the 1956 decision in *Pennsylvania* v. *Nelson,* which had struck down Pennsylvania's Sedition Act on the ground that it had been "superseded" by the Federal Smith Act, was not to be construed to strip the states of "the right to protect themselves."

Just before adjourning, the court, speaking through Chief Justice Warren, announced a decision hailed as a victory for individual rights. In *Greene* v. *McElroy* it ruled that without explicit authorization from either Congress or the president, the Defense Department could not require concerns with defense contracts to dismiss employees as security risks if such employees were not afforded the opportunity to confront and cross-examine their accusers. Only Justice Clark dissented.

The struggle over discrimination and segregation continued unabated during 1959. In Little Rock, Ark., the school situation took a more encouraging turn, as the city's four public high schools reopened in August, after having been closed since the previous September. Two of the schools enrolled both white and Negro pupils. Another major development was the collapse in Virginia of the program of "massive resistance" to integration of the state's public schools. (For further details on these developments, see ARKANSAS; EDUCATION; VIRGINIA.)

A survey released in August by the American Jewish Congress revealed continuing progress by state legislatures toward erasing racial and religious discrimination. In 1959 at least 14 states passed measures dealing with discrimination. A total of 16 states now have enforceable fair-employment laws, and 24 have enforceable laws prohibiting discrimination in places of public accommodation. In 1959, Connecticut, Massachusetts, Colorado, and Oregon became the first states to enact laws against discrimination in the general housing market.

To the future historian, however, the most significant event of the year may well have been the appearance of the first report of the U.S. Commission on Civil Rights. The commission was created by the Civil Rights Act of 1957, but its work was not launched until the following May. Its 668-page report, presented to President Eisenhower on Sept. 9, 1959, is a detailed and forthright document—so forthright, indeed, that it precipitated a concerted attempt in the Senate to liquidate the commission. But in a "rider" attached to the foreign aid appropriations bill, passed on the last day of the first session of the 86th Congress, the life of the commission was extended for another two years.

The commission, which is a fact-finding body, studied three problems: voting, education, and housing. Its investigations encountered official resistance from the very start. In Alabama its inquiry at the beginning of the year into denials of the right to vote was frustrated by both election officials and the courts. In Louisiana a court injunction in July restrained the commission from conducting hearings on the denial of voting rights.

On the subject of interferences with the right to vote, the commission concluded: "It has become apparent that legislation presently on the books is inadequate to assure that all our qualified citizens shall enjoy the right to vote. There exists here a striking gap between our principles and our everyday practices."

Among the commission's specific proposals are the recommendations that Congress enact a law requiring the states to keep voting records for at least five years; that the president be authorized to submit to the commission complaints of the denial of voting rights; and that he be permitted to appoint temporary registrars to facilitate the registration of Negroes in areas in which they have been kept from registering.

With respect to one of the commission's significant findings in the field of education, the report stated: "The Commission's studies, and particularly its conference with school officials from districts in border States and a few in the South that have in some measure desegregated since 1954, demonstrate that when local school officials are permitted to act responsibly in adopting plans that fit local conditions the difficulties of desegregation can be minimized."

The commission's attitude toward what it calls the "housing crisis" may be gleaned from this observation: "The need is not for a pattern of integrated housing. It is for equal opportunity to secure decent housing."

The Commission on Civil Rights was not content to put on record its findings. It proceeded to present a program calling for improvements in all three areas it surveyed, and

to establish the interrelationship of these fields. Its report ends with an eloquent reminder: "Through its studies of three particular aspects of civil rights—voting, education, and housing—the Commission has come to see the organic nature of the problem as a whole. The problem is one of securing the full rights of citizenship to those Americans who are being denied in any degree that vital recognition of human dignity, the equal protection of the laws."

(See also CENSORSHIP; EDUCATION; LAW; NEGROES, AMERICAN; and the Index entry, *Civil Liberties.*)

SAMUEL J. KONEFSKY,
Visiting Professor of Political Science, The Johns Hopkins University.

CIVIL SERVICE, U.S. On June 30, 1959, there were 2,382,781 civilian employees of the federal government. They were located as follows: 183,435 outside and 2,199,346 within the United States, including about 234,000 in the Washington (D.C.) metropolitan area. The Department of Defense employed 45%, the Post Office Department 23%, the Veterans Administration 7%, and all other agencies 25%. About 86% of all employees and 91% of those in the United States were in the competitive Civil Service.

On Feb. 28, 1959, Harris Ellsworth retired as chairman of the Civil Service Commission, and he was succeeded on March 9 by Roger W. Jones.

Major emphasis in the Civil Service during 1959 was on improvement of the government's personnel system and recruitment of high-quality career employees at the entrance level. An important suggested improvement of the system was the proposal for group health insurance coverage for federal employees. The government and employees would both contribute to the cost of this protection. This proposal was incorporated into the Federal Employees Health Benefits Act which was signed into law by President Eisenhower on Sept. 28, 1959. The following day, the Civil Service Commission announced that a Bureau of Retirement and Insurance would be set up to administer the act, which will take effect in July 1960.

Agencies moved ahead to provide job-related training to their employees as authorized by the 1958 training law. In the fall of 1959, 16 federal agencies in the Washington area offered 85 courses on an interagency basis in such areas as general management, administrative operations, supply and transportation, personnel administration, communications and language, and safety. This training is for the benefit of the government and supplements basic education requirements, on-the-job training, and employee self-development.

The federal service entrance examination was geared to the academic year in 1958–59. The change brought record numbers of applicants, test-participants, and eligibles. By August nearly 4,000 persons had been hired under the examination during 1959. A new examination will be held for appointments in 1960.

Inspection of agency promotions made under the new federal merit promotion program, which went into full operation on Jan. 1, 1959, reveals that real progress has been made. Employees have greater opportunity to advance according to their abilities, and there is more assurance of making sound placements because more employees are considered for each vacancy.

During the 1959 fiscal year, the Civil Service Commission completed new classification standards for over 55 professional, technical, and business-type occupations which include about 330,000 federal positions. Classification standards, which are the basis for setting pay grades for most federal white-collar employees, are now substantially current.

Among new publications distributed during the year by the commission were *Biography of an Ideal: the Diamond Anniversary History of the Federal Civil Service,* and *Civil Service and the Citizen,* designed as a supplemental teaching aid for use in high school social studies classes.

ROGER W. JONES,
Chairman, U.S. Civil Service Commission.

CLAY. In 1958 the United States produced 43,750,000 short tons of clay of all kinds, compared with 45,622,000 tons in 1957, according to the U.S. Bureau of Mines. The 1958 total comprised 2,222,185 tons of kaolin, 396,949 tons of ball clay, 8,808,175 tons of fire clay and stoneware clay, 1,291,414 tons of bentonite, 357,883 tons of fuller's earth, and 30,673,513 tons of miscellaneous clay (including slip clay). There was a decrease of 4% in overall clay production in 1958 from that of 1957. Heavy clay products (building brick, structural tile, and sewer pipe) comprised 49% of the total clay output, as in 1957. Georgia kaolin production amounted to over 75% of domestic tonnage.

CLEVELAND. Biggest city in Ohio and the seventh most populous in the United States, Cleveland had an estimated population in 1959 of 926,808, as compared with the 1950 census figure of 914,808. Cuyahoga County, which has an area of 463 square miles (including Cleveland's 73.43 square miles), had an estimated 1959 population of 1,653,315, as compared with 1,389,532 in 1950.

Citizens of the Cleveland metropolitan area focused their attention in 1959 on the city's plans for its future. Civic debate during the year centered on two main issues: (1) Should public land in the heart of the city be leased to a private corporation as the site of a hotel for which the city has great need? (2) Should a metropolitan government be established within the county with exclusive powers in certain fields in order to handle governmental problems more efficiently?

Voters in the Nov. 3, 1959, election answered "No" to both questions. They also turned down city charter amendments to extend terms of the mayor and councilmen to four years and to permit the City Council to determine the salaries of members of the zoning and building boards.

Approved were city bond issues of $6 million for sewers and $3 million for recreation centers, and county issues totaling $3,500,000 for hospital improvements. Five other money issues were rejected.

A fourth term was won by Mayor Anthony J. Celebrezze (Democrat), and the Democratic majority in the City Council was strengthened.

Many of the city's financial problems were solved by the voters in the May primary election. They approved a 12.55-mill operating levy for the city of Cleveland, which will yield about $11,500,000 a year, and a 1.3-mill Cuyahoga County welfare levy. Some of the city's operating funds went to pay wage increases which had been granted municipal employees in January 1959. No pay increases were contemplated in the 1960 operating budget of $53,127,135, which was $1,583,461 higher than that for 1959. The city's net tax-supported debt (Jan. 1, 1959) was $118,142,065. The overall net tax rate of city, county, and schools was $36.30 per $1,000 of assessed valuation in 1959. The county budget for 1960 was $64,912,769, about 61% of which would go to welfare and relief. That total was $6,243,112 higher than that for 1959.

Enrollment in Cleveland's public and parochial school systems in September 1959 was 235,781.

Opening of the St. Lawrence Seaway (q.v.) late in April 1959 quickly multiplied foreign shipments going in and out of the port of Cleveland. By October more than 400 foreign ships had docked there and overseas trade cargo tonnage had passed the 150,000-ton mark, compared with 68,007 tons for all of the 1958 season when the 14-foot St. Lawrence canal system restricted shipping lines. This increase in harbor activity helped to offset the domestic fleet's drop in iron ore and limestone hauling activities, which were sharply reduced through most of the season because of the prolonged steel strike (see IRON AND STEEL).

Industrial and business activity in the Greater Cleveland area also felt the effects of the steel strike, but not to the extent that had been forecast. More than 20,000 workers in the area were idle because of the strike by the end of October. When steel workers returned to the mills in November, statisticians reported about 9% of the industrial workers in the area had been made idle directly or indirectly by the dispute. The Cleveland Chamber of Commerce employment index figure for October 1959 was 95.3, compared with the recession low of 85.7 in July 1958. Building permits issued from January through October 1959 had a total value of $250,924,000; for the same period of 1958, $216,085,000.

RUSSELL H. REEVES,
Assistant Managing Editor,
Cleveland "Plain Dealer."

CLIMATE. See METEOROLOGY AND CLIMATOLOGY.

CLOTHING INDUSTRY. Informal apparel, as a reflection of the era of casual living, retained in 1959 the supremacy it has held for more than a decade. The expected resurgence of demand for more dressy clothes, particularly in women's wear, has made itself evident only in irregular spurts. Items associated with casual and suburban ways of life have fared relatively well in terms of production. Blouses, skirts, and house dresses all showed increased production in 1958.

Dollar volume by the women's outerwear branches of the industry in the United States during the second half of 1958 was ahead of corresponding 1957 sales except in unit-priced dresses. During the first half of 1959, sales topped the first half of 1958 in every trade. However, the patterns of gain were not the same; skirts moved ahead by 11%, dozen-priced dresses by 9%, unit-priced dresses and coats and suits by 6%, and blouses by 4½%.

Trade reports indicate that market volume in knit goods, sportswear, children's wear, lingerie, corsets, and brassieres showed similar growth, with recovery setting in during the second half of 1958 and advancing in 1959.

In the first half of 1959, 7% more coats and 30% more suits were produced than in the first half of 1958. The first six months' output in 1959 was ahead of the like period in 1958 by 16% in dresses wholesaled by the dozen; by 11% in dresses wholesaled by the piece; and by 8% and 7%, respectively, in blouses and skirts.

Preliminary net value of shipments of women's, misses', and juniors' outerwear, excluding knit outerwear, amounted to $3,105 million in 1958, compared with $3,232 million in 1957, an average loss of about 4%. Net value was $1,518 million for the first six months of 1959, compared with $1,423 million for the same period of 1958, a rise of 6.6%.

Production in 1958 and the first half of 1959 was as follows:

Category	Net value: Year 1958 (millions of dollars)	Net value: 1st half 1959 (millions of dollars)	Production: Year 1958 (millions of units)	Production: 1st half 1959 (millions of units)
Unit-price dresses	$1,228	$672	140.1	84.6
Dozen-price dresses	391	217	100.6	59.0
Coats and suits	802	321	...[1]	...[2]
Blouses	361	163	176.9	96.0
Skirts	323	145	84.2	57.3

[1] Untrimmed coats, 24.2; suits, 9.6. [2] Untrimmed coats, 10.9; suits, 6.0.

Production of men's apparel in 1958 (in thousands of units, with 1957 figures in parentheses) was: suits, 18,183 (19,943); overcoats and topcoats, 4,504 (5,158); and separate dress and sport trousers, 71,382 (71,666). Output for the first six months of 1959 (in thousands of units, with figures for the like period of 1958 in parentheses) was: suits, 10,523 (9,137); overcoats and topcoats, 2,450 (2,044); and separate dress and sport trousers, 44,834 (36,348).

Total value of shipments of girls' and children's apparel, exclusive of knit outerwear, declined to $665 million in 1958, compared with $682 million in 1957. Dresses and blouses were up slightly to $279 million from $278 million; coats, suits, and snowsuits were down to $161 million from $173 million; and volume of other juvenile apparel was reduced to $225 million from $232 million.

New York City ranks first among the principal United States markets in all apparel categories. An analysis by the National Credit Office shows the following percentage breakdown for manufacturers' sales of four leading merchandise types in 1958 in the six largest production centers:

City	Women's and misses' unit-price dresses	Women's and misses' coats and suits[1]	Girls' and children's wear	Men's tailored clothing[2]
New York	71.9	71.1	69.1	35.2
Los Angeles	5.6	6.4	2.9	...
Boston	4.1	1.9	2.2	...
Chicago	2.9	4.1	2.3	9.4
St. Louis	2.6	...	...	...
Philadelphia	2.6	...	7.5	11.4

[1] Kansas City, with 3.9% of women's coat and suit sales, ranks fourth; Baltimore, with 3.0%, ranks fifth. [2] Baltimore, with 8.8% of men's tailored clothing sales, ranks fourth; Cleveland, with 5.3%, fifth; and Rochester, with 4.7%, sixth.

The apparel industry ranks 13th in value of sales; its estimated volume was $10 billion in 1958, compared with $10.3 billion in 1957. Considered as one industry, textiles and apparel rank 7th, with $12.5 billion in 1958, compared with $13.0 billion in 1957.

In 1959 the Bureau of Labor Statistics issued a report of changing American buying habits in which it is noted that the average share of the worker's dollar spent for clothing has declined since 1900 in the face of mounting real income. According to this study, 11½% of family expenditures went for clothing in 1950, compared with 13% just after the turn of the century.

(See also LABOR.)

SAMUEL FEINBERG,
Columnist, "Women's Wear Daily."

COAL. In 1958, world production of coal (including bituminous, lignite, and anthracite) attained a new record of 2,685,135,000 short tons, compared with 2,573,521,000 tons in 1957, according to the U.S. Bureau of Mines. During 1958 the USSR displaced the United States as the world's leading coal producer, a ranking held continuously by the United States since 1899. However, in terms of energy from coal, the USSR did not surpass the United States because much of the Soviet output is lignite, which has lower heating value than American bituminous or anthracite coal.

Also, the USSR has a relative scarcity of good coking coal. (See MINERAL PRODUCTION for output of major countries.)

United States.—Domestic production of anthracite and bituminous coal in 1952–58 in thousands of short tons is shown in Table 1.

Table 1—U.S. PRODUCTION OF COAL
(In thousands of tons)

Year	Anthracite	Bituminous and lignite	Total	Change (per cent)
1952	40,583	466,840	507,423	−12.0
1953	30,949	457,290	488,239	−3.8
1954	29,083	392,000	421,083	−13.8
1955	26,205	464,634	490,839	+16.6
1956	28,900	500,875	529,775	+10.8
1957	25,338	492,704	518,042	−2.2
1958	21,171	410,446	433,617	−16.3

(Source: U.S. Bureau of Mines.)

The United States produced 22% of the world's output of bituminous coal, less than 1% of the lignite, and 13% of the anthracite in 1958. Bituminous and anthracite production declined, as did also output of lignite. Anthracite exports dropped from 4,331,785 short tons in 1957, to 2,279,859 tons in 1958. The loss in bituminous output was due to decreased consumption in the United States because of a general decline in business and to reduced exports. In 1958 consumption decreased 11% from 1957, the decrease occurring in all classes of consumers. Exports of bituminous coal decreased 34% from 1957, and totaled roughly 50,000,000 short tons. Exports were chiefly to Canada (12,235,447), West Germany (9,708,332), Italy (6,989,027), Netherlands (5,515,399), South Korea (3,299,133), and France (3,000,913). Most of the coal in the United States was produced by 12 states, but 34 in all contributed to the 1958 total. Table 2 shows production by chief coal-producing states, from 1955 to 1958.

Table 2—U.S. PRODUCTION OF COAL, BY STATES
(In millions of tons)

State	1955	1956	1957[1]	1958[1]
Alabama	13.1	12.7	13.3	11.2
Colorado	3.6	3.5	3.6	3.0
Illinois	45.9	48.1	47.0	43.9
Indiana	16.1	17.1	15.8	15.0
Kentucky	69.0	74.6	74.7	66.3
Ohio	37.9	38.9	36.9	32.0
Pennsylvania				
Anthracite	26.2	28.9	25.3	21.2
Bituminous	85.7	90.3	85.4	67.8
Tennessee	7.1	8.8	8.0	6.8
Utah	6.3	6.5	6.9	5.3
Virginia	23.5	28.1	29.5	26.8
West Virginia	139.2	155.9	156.8	119.5
Wyoming	2.9	2.6	2.1	1.6
Other	14.3	13.8	12.7	11.2
Total	490.8	529.8	518.0	431.6

[1] Preliminary. (Source: U.S. Bureau of Mines.)

Canada.—Bituminous production in 1958 decreased from 10,940,000 short tons in 1957 to 9,434,000 tons, and lignite increased from 2,249,000 tons in 1957 to 2,253,000 tons in 1958.

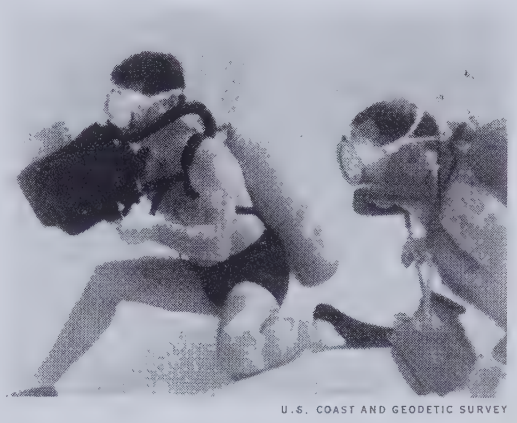
Germany.—In 1958, West Germany's bituminous and anthracite coal output declined to 147,183,000 short tons from 148,068,000 tons in 1957. East Germany's production increased to 3,200,000 short tons in 1958 from 3,035,000 tons in 1957. Lignite production in West Germany declined in 1958 to 103,052,000 tons from 106,716,000 in 1957. East Germany's lignite output increased to 236,961,000 tons in 1958 from 234,346,000 tons in 1957.

United Kingdom.—In 1958 output of bituminous and anthracite coal declined to 241,721,000 short tons from 250,464,000 tons in 1957.

USSR.—Output of bituminous and anthracite coal rose from 360,455,000 short tons in 1957 to 385,809,000 tons in 1958, and lignite production rose from 149,914,000 tons to 160,937,000 in 1958. The USSR depends on coal for 70% of its requirements for energy.

(See also LABOR; MINING.)

F. E. HARRIS,
Former Publications Editor, "Mineral Trade Notes," U.S. Bureau of Mines.



U.S. COAST AND GEODETIC SURVEY

Using special cameras, Coast and Geodetic Survey scientists measure underwater currents and movement of sand ridges.

COAST AND GEODETIC SURVEY, U.S. Work programs of this bureau of the U.S. Department of Commerce were modernized and expanded during 1959 to accelerate oceanographic, geodetic, and geophysical functions.

Oceanography.—Expanded oceanographic activities in 1959 included intensive bathymetric and other hydrographic investigations, using new procedures and techniques. Unique applications were made in measuring underwater currents and the movements of underwater sand ridges by divers equipped to photograph these movements. This technique was successfully employed in studying the descent and bottom impact of dummy containers proposed for disposal of atomic waste. Intensive surveys were made in New York Harbor of currents, water temperatures, and salinity of sea water. Radio current buoys employed in this operation were refined through the use of a new type of radio transmission which provides improved reception and a better tape record.

Tides and Currents.—Over 100 primary tide stations are operated in the United States and on certain Pacific islands to provide basic data for surveying and coastal engineering activities, and for the publication of standard volumes of tide and current tables. In connection with a low-water-line mapping project, a special tidal survey was begun during 1959 in the Mississippi River delta. Other scientific studies included investigations in southeastern Alaska on the apparent land emergence in the Icy Strait–Lynn Canal area. Through use of a new pressure-type tide gage, instant tidal information is being recorded locally or transmitted by wire or radio for remote recording.

Hydrography.—New hydrographic surveys were accomplished along the coast of Maine, on Georges Bank and Nantucket Shoals, along the north coast of Nantucket Island, in the Potomac River, and in several rivers and harbors in Florida. West coast surveys were conducted in the Strait of Georgia southward from the Canadian border. Surveys were continued in Clarence Strait, and a tidal survey was begun in southeastern Alaska. Surveys were accomplished in Prince William Sound, along the north shore of the Alaska Peninsula, and near Adak Island in the Aleutians. Offshore surveys were accomplished in the vicinity of Wake and Eniwetok islands.

Geodesy.—Approximately 3,300 new geographic positions and 14,500 elevations of bench marks were determined during 1959, bringing the national networks for the United States to about 156,000 and 373,000, respectively. The Telluriometer was employed effectively in extending trav-

erse surveys along interstate highway routes in 13 states. Gravity surveys were extended over 20,000 square miles in the north-central section of the country, and a gravity base line was established along the Pacific coast. The transcontinental geoid profile along the 35th parallel neared completion at the end of the year. Astronomic observations were made and compared with geodetic positions at 40 stations between Texas and California.

Photogrammetry.—Special air photographic studies were made in 1959, using panchromatic, infrared, and color photography for detailed mapping of the low-water line of the Louisiana coast. During the year the electronic computer adjustment of stereoscopic instrument bridges to horizontal ground control was improved, and methods of adjusting to vertical control were developed. Analytical photogrammetric bridging was adopted for use with special stereoscopic identification or marking instruments. Color photography was used effectively for the location of aids to navigation, for mapping of shoreline features, and for reconnaissance mapping of underwater features prior to inshore hydrography in areas of irregular bottom.

Geophysics.—World isogonic charts were completed for release by the U.S. Navy early in 1960 to show magnetic declination over the entire globe. The magnetic observatory at Guam was added to the permanent network of observatories operated by the Survey. Twenty-two seismological stations are operated in the United States and possessions, two in Antarctica, and one in Thule, Greenland, in connection with the worldwide program for locating earthquakes. Scientific information giving location, focal depth, and intensity was disseminated by the Survey for 1,230 earthquakes located during the year.

Charts.—Nautical and aeronautical chart production for 1959 totaled approximately 38 million charts of all types. The Survey introduced an entirely new series of small-craft nautical charts with the publication of the first of a series covering the Potomac River. Ten charts of the sectional areonautical series were recompiled during the year, making a total of 27 charts now being issued in the new format. Radio facility charts are now issued every four weeks to reflect installation of new radio navigational aids and frequent airspace amendments. An experimental radio facility chart portraying both the very high and low/medium frequency area systems was published and distributed for user comment and evaluation. New aircraft position chart 3096, covering an area from the west coast to Hawaii, was published. (See also CARTOGRAPHY.)

H. ARNOLD KARO,
Rear Admiral, USC&GS;
Director, Coast and Geodetic Survey.

COAST GUARD, U.S. In 1959 the U.S. Coast Guard strove toward its traditional peacetime objective of maintaining safety and order on the high seas and navigable waters of the United States. During the year a program was started to replace the remaining 83-foot wooden patrol boats with newly designed 82-foot steel boats. Funds available to the service rose from $275,493,840 in 1958 to $289,047,944 in 1959. Military personnel totaled 30,448 in 1959, compared with 30,128 in 1958; authorized civilian employees in 1959 totaled 4,758.

The following statistics show the volume of law-enforcement activity undertaken by the Coast Guard during 1959: vessels boarded and papers examined, 181,415; reports of violations of the Motorboat Act, 13,911; reports of violations of port security regulations, 621; permits to load or discharge explosives, 1,024; total tons of explosives covered by permits, 136,781; supervised loadings of explosives, 1,096; waterfront workers screened for security, 20,229; mariners' documents issued bearing evidence of security clearance, 14,719.

Assistance rendered during the year was as follows: assistance calls responded to, 28,342; value of property involved (including cargo), $1,482,991,900; vessels refloated, 1,692; vessels towed, 10,076; miles disabled vessels towed, 97,794; persons rescued from peril, 2,552.

Marine casualties reported and investigated during the year totaled 4,325. In 776 of the casualties reported, 1,136 lives were lost.

The Coast Guard completed 6,259 inspections of merchant vessels with a gross tonnage of 13,389,945; made drydock examinations of 5,673 vessels with a total tonnage of 14,558,081 tons; carried out 23,879 miscellaneous inspections; numbered 521,361 undocumented vessels; and reviewed plans for 30,500 merchant vessels.

As of June 30, 1959, there were 39,932 aids to navigation maintained in the United States, its territories and possessions, and the Trust Territory of the Pacific Islands, and at overseas military bases. These aids included 60 loran (long-range navigation) stations, 348 manned light stations, and 32 lightships.

Four ocean stations were maintained in the North Atlantic and two in the Pacific throughout the year. These vessels provided search and rescue, communications, and air navigation facilities and meteorological services along heavily traveled ocean routes.

Ice conditions in 1959 were of greater than average severity, requiring aerial reconnaissance and oceanographic work and two vessels for surface patrol.

The Coast Guard's larger ships consisted of 184 cutters and buoy tenders of various types. Fixed and rotary-wing aircraft in operation totaled 128.

Coast Guard Reserve strength was 3,874 officers and 29,173 enlisted personnel. The Coast Guard Auxiliary, a nonmilitary organization of volunteers, was active in more than 600 communities in the promotion of safety and efficiency in the operation of small boats. Its 18,407 members furnished 73,902 instruction courses, examined 84,976 motorboats, patrolled 659 regattas, and responded to 2,328 calls for assistance.

A. C. RICHMOND,
Vice Admiral, USCG, Commandant.

COBALT. World production of cobalt declined from 15,900,000 pounds in 1957 to 14,600,000 in 1958. (See MINERAL PRODUCTION for output of major producing countries.) The United States is the largest market for cobalt, according to the U.S. Bureau of Mines. For the first time the United States in 1958 was able to supply over 50% of its cobalt requirements. Production of recoverable cobalt in 1958 was 4,023,000 pounds, compared with 3,303,000 pounds in 1957. For metallic purposes 5,643,000 pounds were used in 1958, compared with 7,279,000 pounds in 1957; nonmetallic uses claimed 869,000 pounds, and salts and driers required 1,030,000 pounds in 1958.

Consumption decreased from 9,157,000 pounds in 1957 to 7,542,000 pounds in 1958. Imports decreased from 977,000 pounds (estimated cobalt content) to 874,000 pounds in 1958. Of the total imports, Belgian Congo, the chief source, supplied 65% and Belgium, 16%. Imports of metal declined from 16,173,000 pounds in 1957 to 15,719,000 pounds in 1958; there were no white alloy and oxide imports. In the first nine months of 1959, domestic mine production was 2,148,651

pounds, and imports totaled 12,816,000 pounds (estimated content).

COCOA. The U.S. Department of Agriculture estimated in October 1959 that world production of cocoa beans for the 1959–60 season would be 2,075.3 million pounds, an increase of more than 5% over the 1958–59 season. The accompanying table shows production by continent and principal producing countries.

WORLD COCOA BEAN PRODUCTION
(In thousands of pounds)

Continent or country	Average 1950–55	1957–58	1958–59	1959–60
North America	157,514	175,600	171,500	187,100
Dominican Republic	73,179	78,000	67,900	77,200
South America	403,746	518,450	518,181	563,200
Brazil	274,703	380,000	383,000	420,000
Ecuador	59,245	68,000	64,000	65,000
Africa	1,090,038	1,008,900	1,245,740	1,289,100
French Cameroons	123,190	147,700	134,040	145,500
French West Africa[1]	128,055	99,200	115,000	140,000
Ghana	524,897	474,300	575,000	590,000
Nigeria[2]	234,821	180,000	314,000	300,000
Asia and Oceania	15,838	32,500	34,300	35,900
World total	1,667,136	1,735,450	1,969,721	2,075,300

[1] Mostly Ivory Coast. [2] Includes British Cameroons.

Ghana and Brazil are the world's two largest producers of cocoa beans. They and the five other countries listed in the accompanying table account for almost 84% of the world's total production.

COFFEE. Total world production of green coffee for the marketing year 1959–60 was estimated by the Foreign Agricultural Service of the U.S. Department of Agriculture at 68,658,000 bags (of 132.3 pounds each). This production would represent an increase of about 14% over the previous record of 60,039,000 bags in 1958–59, and of nearly two thirds over the 1950–55 average output of 41,015,000 bags.

Exportable production for the 1959–60 marketing season was estimated at 58,636,000 bags, or more than 7 million bags over 1958–59 and 78% above the 1950–55 average of 32,589,000 bags.

WORLD PRODUCTION OF GREEN COFFEE
(1,000 bags)

Country	Annual Average, 1950–55	1958–59	1959–60
Brazil	18,964	30,000	36,000
Colombia	6,330	7,700	8,000
French West Africa[1]	1,342	2,350	2,500
Uganda	754	1,440	1,540
Angola	990	1,455	1,525
Belgian Congo and Ruanda Urundi	613	1,285	1,435
Mexico	1,373	1,600	2,150
El Salvador	1,216	1,500	1,475
Guatemala	1,129	1,400	1,500
Indonesia	985	1,165	1,200
World	41,015	60,039	68,655

[1] In 1959, consisting of the new republics of Dahomey, Ivory Coast, Mauritania, Niger, Senegal, Soudan, and Upper Volta.

The biggest rise in production was in Brazil, where a crop of 36 million bags was forecast, including a record 31 million for export. Colombia, the world's second largest producer of coffee, also anticipated a record crop. (See also INTER-AMERICAN AFFAIRS; ORGANIZATION OF AMERICAN STATES.)

Africa, ranking second in coffee production only to South America, expected a 1959–60 crop of 10,753,000 bags, of which 10,216,000 would be exportable. The output would constitute a record for Africa and an increase of about 5% above 1958–59.

The United States continues to rank as the world's largest coffee consumer. Per capita consumption of coffee by United States civilians declined from 19.8 pounds in 1946 to 14.7 pounds in 1954, but an upturn begun in 1955 continued through 1959. Per capita consumption was estimated by the Agricultural Marketing Service of the U.S. Department of Agriculture at 16.3 pounds in 1959, compared with 15.9 in 1958.

C. J. ENZLER,
Information Specialist, Office of Information, U.S. Department of Agriculture.

COINAGE. See MINT ESTABLISHMENT, U.S.

COKE. World production of coke in 1958 totaled 280.2 million short tons, of which the United States produced 19%, compared with 293.8 short tons in 1957, of which the United States produced 26%. (See MINERAL PRODUCTION for output of major countries.)

In 1958, production of coke in the United States decreased to 53,604,000 short tons, from 75,951,000 tons in 1957. The 1958 output comprised 53,005,730 tons of oven coke and 598,372 tons of beehive coke, compared with 73,860,692 tons of oven coke and 2,090,029 tons of beehive coke in 1957. In addition, 3,714,706 tons of coke breeze was produced in 1958, compared with 4,913,123 tons in 1957.

As demand for all grades of coke declined in 1958, producer stocks reached the highest total since 1932. Of the total output in 1958, shipments to blast furnaces constituted 90% of all coke deliveries, 4% went to iron foundries, 1% to producer-gas and water-gas plants, 4% to other industrial plants, and 1% to the residential heating trade. Potential maximum annual oven-coke capacity reached an all-time high of nearly 82.5 million tons in 1958. In the first nine months of 1959, coke output was 41,704,109 tons, compared with 37,709,300 tons in the same period of 1958.

COLD, Common. See RESPIRATORY DISEASES.

COLLEGES AND UNIVERSITIES. A selected list of the major colleges and universities in the United States, Guam, Puerto Rico, and Canada appears on the following pages. Statistics, unless otherwise indicated, are for the full 1958–59 academic year. All information concerning these institutions has been supplied by the head or registrar of each. (See also EDUCATION; and for a more complete list of institutions of higher education in the United States, consult the *Education Directory*, Part 3, "Higher Education," published annually by the Office of Education, Department of Health, Education, and Welfare, Washington, D.C.)

COLOMBIA. Astride the northwest shoulder of the South American continent (with 1,000 miles of Caribbean and 813 miles of Pacific coastline), the Republic of Colombia has a population of 13,522,000 (1958 est.). Its 439,829 square-mile area is larger than Texas and California combined. Bogotá, the capital, situated on a cool, central plateau (elevation over 8,500 feet) is a modern metropolis of 944,290 with suburbs totaling another 120,000 (1958 est.). Other principal cities (1954 est.) are: Medellín, 431,380; Cali, 365,800; and Barranquilla, 324,700.

Government.—A formal truce between the traditional party groupings (Liberals and Conservatives) provides for alternation of the presidency between the two and an equal division of administrative and congressional posts. This "National Front," which is to operate until 1974, must secure a two-thirds majority in order for its legislation to pass the Congress. President Alberto Lleras Camargo (Lib-

(*Continued on page 174*)

MAJOR COLLEGES AND UNIVERSITIES, U.S. AND CANADA, 1958–59

‡ Statistics for the 1956–57 school year (latest data received from institution). † Statistics for the 1957–58 school year. * Statistics as of beginning of fall term, 1959–60. The following letter symbols are used in this table:

AdC—Advent Christian
AG—Assemblies of God
AL—American Lutheran
AMA—American Missionary Association
AME—African Methodist Episcopal
AMEZ—African Methodist Episcopal Zion
Bapt—Baptist
C—Coeducational or Coordinate
CBr—Church of the Brethren
CC—Church of Christ
CG—Church of God
CMA—Christian and Missionary Alliance
Co—County
Cong—Congregational
DC—Disciples of Christ
Dst—District
Dst-Co—District-County
EC—Evangelical Covenant
EL—Evangelical Lutheran
Epis—Episcopal
ER—Evangelical Reformed
EUB—Evangelical United Brethren
Fed—Federal
Fr—Friends
Inter—Interdenominational
Jew—Jewish
LDS—Latter-day Saints
Luth—Lutheran
M—Men only
MCA—Missionary Church Association
ME—Methodist Episcopal
Men—Mennonite
Meth—Methodist
Mor—Moravian
Mun—Municipal
Naz—Nazarene
Pres—Presbyterian
Pri—Private
Prov—Provincial
RC—Roman Catholic
Ref—Reformed
SDA—Seventh Day Adventist
SDB—Seventh Day Baptists
St—State
St-Co—State-County
St-Dst—State-District
St-Mun—State-Municipal
St-Pri—State-Private
Ter—Territorial
UB—United Brethren
UL—United Lutheran
UCC—United Church of Christ
UCCa—United Church of Canada
UMC—United Missionary Church
UP—United Presbyterian
W—Women only
YMCA—Young Men's Christian Association

[1] Full time faculty only. [2] Most instructors are part-time. [3] Locally sponsored and operated as part of the program of the State University of New York. [4] Campuses are located at Berkeley, Davis, La Jolla, Los Angeles, Riverside, San Francisco, and Santa Barbara. [5] The 6 campuses, all in Chicago, are: Amundsen, Crane, Fenger, Southeast, Wilson, and Wright. [6] Other campuses at Teaneck and Madison, N.J. [7] Part of the University of Hartford. [8] The Colleges of the Seneca is the corporate name of Hobart (for men) and William Smith (for women) colleges, coordinated with the faculty and enrollment shown here for both. [9] The faculty of Harvard University is also that of Radcliffe College. [10] Branches are located at Galveston, Houston, El Paso, and Dallas. [11] All instructors are part-time. [12] Includes Milwaukee and 8 other campuses.

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students		Total Students Enrolled
					Undergraduate	Graduate	
Abilene Christian College, Abilene, Texas	CC	1906	D. H. Morris	135	2,514	254	2,770 C
Acadia University, Wolfville, N.S.	Bapt	1838	W. Kirkconnell	70	690	50	770 C
Adams State College, Alamosa, Colo.	St	1921	F. J. Plachy	68	1,271	186	1,793 C
Adelphi College, Garden City, N.Y.	Pri	1896	P. D. Eddy	158[1]	2,208	153	7,230 C
Adrian College, Adrian, Mich.	Meth	1845	J. H. Dawson	36	865	...	865 C
Aeronautics, Acad. of, New York, N.Y.	Pri	1932	C. S. Jones	60	900	...	1,350 M
Agnes Scott College, Decatur, Ga.	Pri	1889	W. M. Alston	62	629	...	629 W
Akron, University of, Akron, Ohio	Mun	1870	N. P. Auburn	147	...	...	6,377 C
Alabama, University of, University, Ala.	St	1831	F. A. Rose	800	11,581	1,286	12,867 C
Alabama A. & M. College, Normal, Ala.	St	1875	J. F. Drake	71	1,625	93	1,964 C
Alabama College, Montevallo, Ala.	St	1896	H. M. Phillips	62	1,410	78	1,590 C
Alabama Polytechnic Institute, Auburn, Ala.	St	1872	R. B. Draughon	534	9,735	816	11,181 C
Alabama State Coll., Florence, Ala.	St	1873	E. B. Norton	76	2,419	100	2,907 C
Alabama State Coll., Jacksonville, Ala.	St	1883	H. Cole	139	2,680	163	3,960 C
Alabama State Coll., Livingston, Ala.	St	1835	D. P. Culp	39	497	...	625†C
Alabama State College, Montgomery, Ala.	St	1874	H. C. Trenholm	175	2,000	300	2,300 C
Alabama State Coll., Troy, Ala.	St	1887	C. B. Smith	63	1,685	210	1,895 C
Alaska, University of, College, Alaska	St	1917	E. N. Patty	97	814	33	2,585 C
Albany State College, Albany, Ga.	St	1903	W. H. Dennis, Jr.	40	918	...	1,045 C
Alberta, University of, Edmonton, Alberta	Prov	1908	W. H. Johns	600	5,426	358	9,757 C
Albion College, Albion, Mich.	Meth	1835	W. Whitehouse	87	1,418	...	1,422 C
Albright College, Reading, Pa.	EUB	1856	H. V. Masters	58	837	...	837*C
Alcorn A. & M. College, Lorman, Miss.	St	1871	J. D. Boyd	57	1,011	...	1,114 C
Alderson-Broaddus College, Philippi, W.Va.	Bapt	1871	R. E. Shearer	24	371	...	522 C
Alfred University, Alfred, N.Y.	St-Pri	1836	M. E. Drake	194	1,722	91	2,053 C
Allegheny College, Meadville, Pa.	Meth	1815	L. L. Pelletier	82	1,197	42	1,330 C
Allen University, Columbia, S.C.	AME	1870	F. R. Veal	51	950	5	955 C
Alma College, Alma, Mich.	Pres	1886	R. D. Swanson	45	718	...	718 C
Alverno College, Milwaukee, Wis.	RC	1936	Sr. M. Augustine	80	...	712	1,513 W
Alvin Junior College, Alvin, Texas	Dst	1949	A. Templeton	23	175	...	414 C
Amarillo College, Amarillo, Texas	Mun	1929	J. M. Ray	63	2,292	...	2,292 C
American Academy of Art, Chicago, Ill.	Pri	1923	F. H. Young	18	250	...	725 C
American Conservatory of Music, Chicago, Ill.	Pri	1886	J. R. Hattstaedt	50	205	98	1,750 C
American International Coll., Springfield, Mass.	Pri	1885	J. F. Hines	51	1,254	91	2,159 C
American River Jr. Coll., Sacramento, Calif.	Dst	1955	B. Priest	85	1,600	...	3,700 C
American University, The, Washington, D.C.	Meth	1893	H. Anderson	130	1,826	228	8,507†C
Amherst College, Amherst, Mass.	Pri	1821	C. W. Cole	133	1,016	5	1,023 M
Anderson Coll., Anderson, Ind.	CG	1917	R. H. Reardon	51	840	59	1,156 C
Anna Maria Coll. for Women, Paxton, Mass.	RC	1946	Sr. I. Marie	20	256	...	433 W
Antelope Valley College, Lancaster, Calif.	Dst	1929	L. F. Barker	36	361	...	2,467 C
Antioch College, Yellow Springs, Ohio	Pri	1852	J. P. Dixon, Jr.	71	1,251	...	1,251 C
Appalachian State Teachers College, Boone, N.C.	St	1903	W. H. Plemmons	114	2,099	1,023	3,884 C
Apprentice School, Newport News, Va.	Pri	1919	F. R. White	48	476	...	476*M
Aquinas College, Grand Rapids, Mich.	RC	1923	A. F. Bukowski	47	1,172	...	1,524 C
Arizona, University of, Tucson, Ariz.	St	1885	R. A. Harvill	759	8,902	1,457	11,455 C
Arizona State College, Flagstaff, Ariz.	St	1899	J. L. Walkup	75	1,909	636	2,753 C
Arizona State University, Tempe, Ariz.	St	1885	G. Gammage	445	9,426	2,276	18,350 C
Arkansas, University of, Fayetteville, Ark.	St	1871	J. T. Caldwell	746	5,125	1,183	6,908 C
Arkansas A. & M. College, College Heights, Ark.	St	1909	H. E. Thompson	64	1,308	...	1,369 C
Arkansas A., M. & N. College, Pine Bluff, Ark.	St	1873	L. A. Davis	84	1,264	...	1,264†C
Arkansas Polytechnic College, Russellville, Ark.	St	1909	J. W. Hull	75	1,640	...	1,640 C
Arkansas State College, Jonesboro, Ark.	St	1908	C. R. Reng	106	2,636	81	2,717 C
Arkansas State Teachers College, Conway, Ark.	St	1907	S. D. Snow	92	2,032	412	2,444 C
Arlington State College, Arlington, Texas	St	1895	J. R. Woolf	179	6,585	...	6,585 C
Armstrong College, Berkeley, Calif.	Pri	1918	J. E. Armstrong	19	658	21	739 C
Armstrong College of Savannah, Savannah, Ga.	St	1935	F. M. Hawes	63	476	...	1,514 C
Art Center School, The, Los Angeles, Calif.	Pri	1930	E. A. Adams	60	769	24	1,634 C
Art Institute of Chicago, Sch. of the, Chicago, Ill.	Pri	1879	N. Boothby	58	1,335	34	4,160 C
Asbury College, Wilmore, Ky.	Pri	1890	Z. T. Johnson	60	957	...	963 C
Ashland College, Ashland, Ohio	CBr	1878	G. L. Clayton	68	649	15	1,384 C
Assumption University, Windsor, Ont.	RC	1857	E. C. LeBel	105	896	16	1,785 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled	
Athens College, Athens, Ala.	Meth	1822	V. B. McCain, Jr.	24	581	...	581	C
Atlanta University, Atlanta, Ga.	Pri	1865	R. E. Clement	50	...	1,880	2,372	C
Atlantic Christian College, Wilson, N.C.	DC	1902	A. Wenger	60	1,100	...	1,100	C
Atlantic Union College, South Lancaster, Mass.	SDA	1882	L. M. Stump	33	535	...	535	C
Augsburg Coll. & Theol. Sem., Minneapolis, Minn.	Luth	1869	B. Christensen	50	900	23	1,148	C
Augustana College, Rock Island, Ill.	Luth	1860	C. Bergendoff	78	1,206	...	1,710	C
Augustana College, Sioux Falls, S.Dak.	EL	1860	L. M. Stavig	79	1,105	...	1,729	C
Aurora College, Aurora, Ill.	AdC	1893	T. P. Stephens	31	380	...	1,240	C
Austin College, Sherman, Texas	Pres	1849	J. D. Moseley	48	1,027	19	1,046	C
Austin Peay State College, Clarksville, Tenn.	St	1929	H. Harvill	91	1,276	60	2,167	C
Babson Institute, Babson Park, Mass.	Pri	1919	G. M. Trim	30	601	78	685	M
Baker University, Baldwin, Kans.	Meth	1858	W. Scarborough	38	...	...	497	C
Bakersfield College, Bakersfield, Calif.	Dst	1913	E. Simonsen	126	2,209	...	7,779	C
Baldwin-Wallace College, Berea, Ohio	Meth	1845	A. B. Bonds, Jr.	93	1,521	...	2,747	C
Ball State Teachers College, Muncie, Ind.	St	1918	J. R. Emens	281	5,350	963	8,831	C
Baltimore, University of, Baltimore, Md.	Pri	1925	T. H. Wilson	80	3,000	...	3,000	C
Baltimore College of Commerce, Baltimore, Md.	YMCA	1909	J. S. Rook	52	...	...	576	C
Baltimore Junior College, Baltimore, Md.	Mun	1947	W. V. Bell	41	793	...	1,004	C
Baptist Bible Seminary, Johnson City, N.Y.	Bapt	1932	P. R. Jackson	21	427	...	427	C
Barnard Coll. of Columbia Univ., New York, N.Y.	Pri	1889	M. C. McIntosh	105	1,429	...	1,527	W
Barry College, Miami, Fla.	RC	1940	Moth. M. Gerald	41	464	...	782	W
Bates College, Lewiston, Me.	Pri	1864	C. F. Phillips	54	857	...	857	C
Bay City Junior College, Bay City, Mich.	Mun	1922	E. J. Bradner	60	1,132	...	2,180	C
Baylor University, Waco, Texas	Bapt	1845	W. R. White	268	4,392	266	6,097	C
Beaver College, Jenkintown, Pa.	Pres	1853	R. M. Kistler	52	663	...	663	W
Beckley College, Beckley, W.Va.	Pri	1933	D. K. Shroyer	23	892	...	892	*C
Bellarmine College, Louisville, Ky.	RC	1950	A. F. Horrigan	52	933	...	1,030	M
Belleville Jr. Coll., Belleville, Ill.	Dst	1946	D. B. Matthews	26	449	...	1,712	*C
Belmont Abbey College, Belmont, N.C.	RC	1876	C. E. Allen	45	669	15	684	M
Belmont College, Nashville, Tenn.	Bapt	1951	H. C. Gabhart	26	475	...	475	C
Beloit College, Beloit, Wis.	Pri	1846	M. Upton	85	1,042	...	1,084	C
Benedict College, Columbia, S.C.	Bapt	1870	J. A. Bacoats	33	717	...	717	C
Benjamin Franklin University, Washington, D.C.	Pri	1925	C. A. Kennedy	3[2]	179	...	1,152	C
Bennett College, Greensboro, N.C.	Meth	1873	W. B. Player	35	478	...	480	W
Bennington College, Bennington, Vt.	Pri	1932	W. C. Fels	46	347	2	349	*W
Berea College, Berea, Ky.	Pri	1855	F. S. Hutchins	100	1,273	...	1,313	C
Berry College, Mount Berry, Ga.	Pri	1902	J. R. Bertrand	53	589	...	592	C
Bethany College, Lindsborg, Kans.	Luth	1881	L. D. Lund	35	549	...	783	C
Bethany College, Bethany, W.Va.	DC	1840	P. Gresham	36	597	...	648	C
Bethany Nazarene College, Bethany, Okla.	Naz	1899	R. H. Cantrell	45	900	...	999	C
Bethel College, Mishawaka, Ind.	UMC	1947	R. Pannabecker	17	246	...	428	C
Bethel College, North Newton, Kans.	Men	1887	J. W. Fretz	38	635	...	739	C
Bethel College, McKenzie, Tenn.	Pres	1842	R. N. Baker	22	315	...	650	C
Bethel College & Seminary, St. Paul, Minn.	Bapt	1871	C. H. Lundquist	43	534	88	690	C
Bethune-Cookman College, Daytona Beach, Fla.	Meth	1923	R. V. Moore	36	737	...	737	C
Biola College, La Mirada, Calif.	Inter	1908	S. Sutherland	41	450	...	647	C
Birmingham-Southern College, Birmingham, Ala.	Meth	1856	H. K. Stanford	63	1,225	34	1,481	C
Bishop College, Marshall, Texas	Bapt	1880	M. K. Curry, Jr.	19	522	...	522	C
Bishop's University, Lennoxville, Quebec	Pri	1843	A. R. Jewitt	22	339	...	339	C
Bismarck Junior College, Bismarck, N.Dak.	Mun	1939	S. J. Lee	25	450	...	450	C
Black Hills Teachers College, Spearfish, S.Dak.	St	1883	R. E. Jones	55	1,484	144	1,648	C
Blackburn College, Carlinville, Ill.	Pres	1857	R. P. Ludlum	29	320	...	338	C
Blinn College, Brenham, Texas	Co	1883	J. H. Atkinson	25	545	...	545	C
Blue Mountain College, Blue Mountain, Miss.	Bapt	1873	L. T. Lowrey	27	442	...	560	W
Bluefield State College, Bluefield, W.Va.	St	1895	L. B. Allen	35	882	...	882	*C
Bluffton College, Bluffton, Ohio	Men	1900	L. Ramseyer	34	437	...	437	C
Bob Jones University, Greenville, S.C.	Pri	1927	B. Jones, Jr.	153	2,583	117	2,824	C
Boise Junior College, Boise, Idaho	Dst	1932	E. B. Chaffee	76	1,481	...	3,073	C
Boston College, Chestnut Hill, Mass.	RC	1863	M. P. Walsh	534	5,063	1,826	9,469	C
Boston University, Boston, Mass.	Pri	1839	H. C. Case	966	8,750	1,993	30,802	C
Bowdoin College, Brunswick, Me.	Pri	1794	J. S. Coles	80	808	...	811	M
Bowling Green Coll. of Commerce, Bowling Green, Ky.	Pri	1922	J. M. Hill, Sr.	26	620	...	620	C
Bowling Green State Univ., Bowling Green, Ohio	St	1910	R. McDonald	232	4,829	100	5,235	C
Bradford Durfee Coll. of Technology, Fall River, Mass.	Pri	1899	W. J Holland	33	380	...	624	C
Bradley University, Peoria, Ill.	Pri	1897	H. P. Rodes	190	5,314	94	6,362	C
Brandeis University, Waltham, Mass.	Pri	1948	A. L. Sachar	193	1,040	180	1,220	C
Brescia College, Owensboro, Ky.	RC	1925	Sr. J. Lachner	30	294	...	618	C
Briar Cliff College, Sioux City, Iowa	RC	1930	Sr. M. Matilda	38	247	...	731	W
Bridgeport, University of, Bridgeport, Conn.	Pri	1927	J. H. Halsey	130	1,929	50	3,400	C
Bridgewater College, Bridgewater, Va.	CBr	1880	W. D. Bowman	39	578	...	578	C
Brigham Young University, Provo, Utah	LDS	1875	E. L. Wilkinson	492	11,427	523	13,640	C
British Columbia, The Univ. of, Vancouver, B.C.	Prov	1908	N. MacKenzie	700	9,000	400	13,900	C
Brooklyn, Polytechnic Inst. of, Brooklyn, N.Y.	Pri	1854	E. Weber	257	2,409	1,012	6,552	C
Brooklyn College, Brooklyn, N.Y.	Mun	1930	H. D. Gideonse	588	9,253	82	25,092	C
Brooklyn Law School, Brooklyn, N.Y.	Pri	1901	J. Prince	16	494	...	1,102	C
Broome Tech. Com. Coll.,[3] Binghamton, N.Y.	St-Mun	1947	C. Tyrrell	80	808	...	1,650	C
Brown University, Providence, R.I.	Pri	1764	B. C. Keeney	322	2,245	376	3,683	C
Bryant College, Providence, R.I.	Pri	1863	H. L. Jacobs	72	1,400	...	2,000	*C
Bryn Mawr College, Bryn Mawr, Pa.	Pri	1885	K. E. McBride	120	670	113	932	W
Bucknell University, Lewisburg, Pa.	Bapt	1846	M. M. Odgers	155	2,153	45	2,874	C
Buena Vista College, Storm Lake, Iowa	Pres	1891	J. A. Fisher	41	694	...	694	*C
Buffalo, University of, Buffalo, N.Y.	Pri	1846	C. C. Furnas	1,364	4,212	2,278	14,820	C
Burdett College, Boston, Mass.	Pri	1879	C. F. Burdett	23	697	...	1,110	C
Butler University, Indianapolis, Ind.	Pri	1855	M. O. Ross	274	...	...	7,177	C
California, University of,[4] Berkeley, Calif.	St	1868	C. Kerr	4,125	34,371	13,971	48,342	C
California Coll. of Arts & Crafts, Oakland, Calif.	Pri	1907	H. X. Ford	21	330	24	705	C
California Inst. of Technology, Pasadena, Calif.	Pri	1891	L. DuBridge	450	703	555	1,258	M
California State Polytech. Coll., San Luis Obispo, Calif.	St	1901	J. A. McPhee	290	3,939	50	4,183	C
California Western Univ., San Diego, Calif.	Meth	1924	W. C. Rust	75	700	20	1,085	C
Calvin College, Grand Rapids, Mich.	Ref	1876	W. Spoelhof	85	1,899	...	1,908	C
Cameron State Agric. College, Lawton, Okla.	St	1909	C. L. Davis	60	1,048	...	2,118	C
Campbell College, Buies Creek, N.C.	Bapt	1887	L. H. Campbell	42	1,025	...	1,182	C
Campbellsville College, Campbellsville, Ky.	Bapt	1907	J. M. Carter	36	...	...	575	C
Canal Zone Jr. Coll., Balboa Heights, C.Z.	Fed	1933	R. C. Hackett	12	170	...	537	C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled
Canisius College, Buffalo, N.Y.	RC	1870	J. J. McGinley	97	1,153	10	2,104 M
Capital University, Columbus, Ohio	AL	1850	H. L. Yochum	88	1,329	187	1,536 C
Capitol Radio Eng. Inst., Washington, D.C.	Pri	1927	E. H. Rietzke	35	425	...	425 C
Carbon College, Price, Utah	St	1938	C. Burtenshaw	24	404	...	669 C
Carleton College, Northfield, Minn.	Pri	1866	L. M. Gould	94	1,058	...	1,058 C
Carleton University, Ottawa, Ont.	Pri	1942	A. D. Dunton	66	864	15	2,177 C
Carnegie Inst. of Technology, Pittsburgh, Pa.	Pri	1900	J. C. Warner	356	3,204	555	5,755 C
Carroll College, Helena, Mont.	RC	1909	R. Hunthausen	35	753	...	753 C
Carroll College, Waukesha, Wis.	Pres	1846	R. D. Steele	46	800	...	1,118 C
Carson-Newman College, Jefferson City, Tenn.	Bapt	1851	D. H. Fite	70	1,427	...	1,427 C
Carthage College, Carthage, Ill.	UL	1870	H. H. Lentz	39	495	...	583 C
Case Institute of Technology, Cleveland, Ohio	Pri	1880	K. H. Smith	364	1,667	796	2,463 M
Casper College, Casper, Wyo.	Co	1945	G. L. Hall	35	615	...	2,489 C
Catawba College, Salisbury, N.C.	UCC	1851	A. R. Keppel	53	781	...	1,027 C
Catholic Univ. of America, The, Washington, D.C.	RC	1887	W. J. McDonald	400	2,000	3,000	6,000 C
Cedar Crest College, Allentown, Pa.	UCC	1867	D. H. Moore	37	458	...	472 W
Centenary College, Shreveport, La.	Meth	1825	J. J. Mickle	78	2,482	...	2,482 C
Centenary Coll. for Women, Hackettstown, N.J.	Meth	1867	E. W. Seay	55	...	...	546*W
Central Bible Institute, Springfield, Mo.	AG	1922	J. R. Ashcroft	19	430	6	456 C
Central College, Pella, Iowa	Ref	1853	G. T. Vander Lugt	41	432	...	456 C
Central College, Fayette, Mo.	Meth	1854	R. Woodward	48	810	...	810 C
Central Connecticut State Coll., New Britain, Conn.	St	1849	H. D. Welte	162	1,609	8	2,528 C
Central Mich. University, Mt. Pleasant, Mich.	St	1892	J. W. Foust	223	3,905	15	6,312 C
Central Missouri State Coll., Warrensburg, Mo.	St	1871	W. C. Lovinger	131	3,996	686	4,677 C
Central State College, Wilberforce, Ohio	St	1887	C. H. Wesley	70	1,300	...	1,363 C
Central State College, Edmond, Okla.	St	1890	W. M. Chambers	110	3,713	695	5,018 C
Central Technical Institute, Kansas City, Mo.	Pri	1931	C. L. Foster	20	500	...	550*C
Central Wash. Coll. of Educ., Ellensburg, Wash.	St	1891	P. H. Mitchell	104	1,955	51	2,048 C
Centralia Jr. College, Centralia, Wash.	St	1925	B. Hallgrimson	35	500	...	500 C
Centralia Township Jr. Coll., Centralia, Ill.	Dst	1940	V. Bolerjack	24	298	...	385 C
Centre Coll. of Kentucky, Danville, Ky.	Pres	1819	T. A. Spragens	36	471	...	484 C
Cerritos College, Norwalk, Calif.	Dst	1955	R. Burnight	73	600	...	3,500 C
Chaffey College, Ontario, Calif.	St-Dst	1883	D. Milliken	95	1,346	...	3,220*C
Chapman College, Orange, Calif.	DC	1861	J. L. Davis	35	478	...	1,132 C
Charleston, College of, Charleston, S.C.	Pri	1770	G. D. Grice	17	466	...	488 C
Charlotte College, Charlotte N.C.	Mun	1949	B. E. Cone	25	449	...	1,005 C
Chatham College, Pittsburgh, Pa.	Pri	1869	P. Anderson	55	437	...	442 W
Chattanooga, University of, Chattanooga, Tenn.	Pri	1886	L. A. Martin	75	1,359	2	3,096 C
Chestnut Hill College, Philadelphia, Pa.	RC	1871	Sr. C. Frances	60	506	...	971 W
Chicago, University of, Chicago, Ill.	Pri	1892	L. A. Kimpton	808	2,510	5,480	7,990 C
Chicago Academy of Fine Arts, Chicago, Ill.	Pri	1902	R. V. Ford	18	...	...	259†C
Chicago City Jr. College,[5] Chicago, Ill.	Mun	1911	P. Masiko, Jr.	452	6,937	...	26,964*C
Chicago Medical School, Chicago, Ill.	Pri	1912	J. Sheinin	45	...	277	277‡C
Chicago Teachers College, Chicago, Ill.	Mun	1869	R. M. Cook	158	...	...	6,692 C
Chicago Technical College, Chicago, Ill.	Pri	1904	C. W. Morey	32	538	...	1,059 M
Chico State College, Chico, Calif.	St	1889	G. Kendall	213	2,553	136	3,300 C
Chouinard Art Institute, Los Angeles, Calif.	Pri	1921	N. Chouinard	68	675	...	675*C
Christian Brothers College, Memphis, Tenn.	RC	1854	Bro. L. Thomas	35	670	...	690*M
Cincinnati Coll.-Conserv. of Music, Cincinnati, Ohio	Pri	1955	J. M. E. Mixter	50	450	50	1,700*C
Cincinnati, University of, Cincinnati, Ohio	Mun	1819	W. C. Langsam	585[1]	6,149	814	19,838 C
Cincinnati Bible Seminary, Cincinnati, Ohio	CC	1924	W. W. Perry	16	360	17	479 C
Citadel, The, Charleston, S.C.	St	1842	M. W. Clark	140	2,100	...	2,100 M
Citrus Junior College, Glendora, Calif.	Dst	1915	M. Eisenbise	46	800	...	2,600*C
City College, The, N.Y.	Mun	1847	B. G. Gallagher	1,543	9,913	107	32,294 C
Claflin College, Orangeburg, S.C.	Meth	1869	H. V. Manning	27	425	...	425 C
Claremont Graduate School, Claremont, Calif.	Pri	1925	R. J. Bernard	48	133	253	1,339 C
Claremont Men's College, Claremont, Calif.	Pri	1946	G. Benson	38	350	...	350 M
Clark College, Atlanta, Ga.	ME	1869	J. P. Brawley	52	790	...	810 C
Clark College, Vancouver, Wash.	Dst	1933	D. C. Baird	61	1,139	...	4,786 C
Clark University, Worcester, Mass.	Pri	1887	H. B. Jefferson	75	700	128	1,858 C
Clarke College, Dubuque, Iowa	RC	1843	Sr. M. Benedict	60	1,022	...	1,022 W
Clarkson College of Technology, Potsdam, N.Y.	Pri	1896	W. G. Van Note	102	1,468	16	1,488 M
Cleary College, Ypsilanti, Mich.	Pri	1873	O. J. Cleary	20	541	8	901 C
Clemson Agricultural College, Clemson, S.C.	St	1889	R. C. Edwards	287	3,873	50	5,255 C
Cleveland-Marshall Law School, Cleveland, Ohio	Pri	1897	W. Stapleton	21	...	437	437 C
Coe College, Cedar Rapids, Iowa	Pres	1851	J. E. McCabe	65	692	...	1,143 C
Coffeyville College, Coffeyville, Kans.	Mun	1923	K. M. Wilson	22	585	...	627 C
Coker College, Hartsville, S.C.	Pri	1908	K. Kuehner	27	525	...	558 W
Colby College, Waterville, Me.	Pri	1813	J. S. Bixler	104	1,181	...	1,181 C
Colgate University, Hamilton, N.Y.	Pri	1819	E. N. Case	117	1,388	6	1,595 M
Colorado, University of, Boulder, Colo.	St	1877	Q. Newton	600	...	...	10,500 C
Colorado College, Colorado Springs, Colo.	Pri	1874	L. T. Benezet	86	1,554	43	1,728 C
Colorado School of Mines, Golden, Colo.	St	1874	J. Vanderwilt	105	1,013	96	1,119 C
Colorado State College, Greeley, Colo.	St	1890	W. R. Ross	126	5,221	3,528	11,384 C
Colorado State University, Fort Collins, Colo.	St	1876	W. E. Morgan	310	5,804	1,284	7,136 C
Colorado Woman's College, Denver, Colo.	Bapt	1888	E. E. Dawson	39	585	...	585 W
Columbia Basin College, Pasco, Wash.	St-Dst	1955	J. Cooney	55	1,051	...	1,950*C
Columbia Bible College, Columbia, S.C.	Pri	1923	G. A. Fleece	23	268	75	402 C
Columbia College, Chicago, Ill.	Pri	1890	N. Alexandroff	20	241	4	414 C
Columbia College, Columbia, S.C.	Meth	1854	R. W. Spears	42	731	...	731 W
Columbia University, New York, N.Y.	Pri	1754	G. Kirk	1,534	5,244	16,091	21,335 C
Columbia Univ. Teachers College, New York, N.Y.	Pri	1888	H. L. Caswell	178	973	7,510	8,483 C
Community Coll. & Tech. Institute, Benton Harbor, Mich.	Mun	1946	C. G. Beckwith	26	608	...	608*C
Compton Junior College, Compton, Calif.	St	1927	P. E. Martin	85	4,172	...	4,172‡C
Concord College, Athens, W.Va.	St	1875	J. F. Marsh, Jr.	71	1,315	...	1,624*C
Concordia College, Moorhead, Minn.	EL	1891	J. L. Knutson	100	1,613	...	1,658 C
Concordia Seminary, St. Louis, Mo.	Luth	1839	A. Fuerbringer	39	...	678	678 M
Concordia Teachers College, River Forest, Ill.	Luth	1864	M. L. Koehneke	75	1,391	93	1,484 C
Concordia Teachers College, Seward, Nebr.	Luth	1894	P. A. Zimmerman	42	960	...	981 C
Concordia Theol. Seminary, Springfield, Ill.	Luth	1846	G. J. Beto	23	363	...	365 M
Connecticut, University of, Storrs, Conn.	St	1881	A. Jorgensen	950	8,737	2,537	13,329 C
Connecticut College, New London, Conn.	Pri	1911	R. Park	106	889	2	914 W
Connors State Ag. College, Warner, Okla.	St	1909	J. Johnson	21	462	...	462 C
Contra Costa Coll., San Pablo, Calif.	Dst	1950	G. J. Faul	92	2,201	...	4,588 C
Converse College, Spartanburg, S.C.	Pri	1889	O. Carmichael, Jr.	51	416	2	433 W
Cooper Union, New York, N.Y.	Pri	1859	E. S. Burdell	53	597	...	1,337 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled	
Copiah-Lincoln Jr. College, Wesson, Miss.	St	1928	F. Fortenberry	35	433	...	436	C
Cornell College, Mount Vernon, Iowa	Meth	1853	R. D. Cole	66	768	...	786	C
Cornell University, Ithaca, N.Y.	St-Pri	1865	D. W. Molott	1,526	10,080	3,297	13,871	C
Corpus Christi, Univ. of, Corpus Christi, Texas	Bapt	1947	W. A. Miller	38	514	...	695	C
Creighton University, Omaha, Nebr.	RC	1878	C. M. Reinert	147	1,496	754	3,424	C
Culver-Stockton College, Canton, Mo.	DC	1853	F. Helsabeck	30	489	...	690	C
Cumberland College, Williamsburg, Ky.	Bapt	1889	J. M. Boswell	42	880	...	880	*C
Dakota Wesleyan University, Mitchell, S.Dak.	Meth	1885	J. J. Early	28	404	...	679	C
Dalhousie University, Halifax, N.S.	Pri	1818	A. E. Kerr	118	1,118	568	1,697	C
Dallas Theol. Sem. & Grad. Sch. of Theol., Dallas, Texas	Pri	1924	J. F. Walvoord	16	...	306	320	M
Dana College, Blair, Nebr.	Luth	1884	C. C. Madsen	25	403	...	476	C
Danbury State Teachers Coll., Danbury, Conn.	St	1903	R. A. Haas	71	978	205	1,558	C
Dartmouth College, Hanover, N.H.	Pri	1769	J. S. Dickey	205	2,856	256	3,112	M
David Lipscomb College, Nashville, Tenn.	Pri	1891	A. C. Pullias	57	1,085	...	1,085	C
Davidson College, Davidson, N.C.	Pres	1836	D. G. Martin	70	910	...	910	M
Davis and Elkins College, Elkins, W.Va.	Pres	1904	D. K. Allen	37	567	...	670	C
Dayton, University of, Dayton, Ohio	RC	1850	R. A. Roesch	320	...	...	7,000	C
Defiance College, Defiance, Ohio	Cong	1850	K. McCann	35	465	...	823	C
Delaware, University of, Newark, Del.	St	1833	J. A. Perkins	230	2,784	1,520	7,690	C
Delaware State College, Dover, Del.	St	1891	J. H. Holland	35	329	...	329	C
Del Mar College, Corpus Christi, Texas	Dst	1935	E. L. Harvin	108	1,318	...	3,254	C
Delta State College, Cleveland, Miss.	St	1924	J. M. Ewing	51	1,038	...	1,038	C
Denison University, Granville, Ohio	Bapt	1831	A. B. Knapp	106	1,380	...	1,396	C
Denver, University of, Denver, Colo.	Meth	1864	C. M. Alter	196	3,278	997	8,228	C
DePaul University, Chicago, Ill.	RC	1898	C. J. O'Malley	291	3,644	987	8,298	C
DePauw University, Greencastle, Ind.	Meth	1837	R. J. Humbert	151	2,151	9	2,216	C
Detroit, University of, Detroit, Mich.	RC	1877	C. J. Steiner	445	5,801	572	10,520	C
Detroit Coll. of Law, Detroit, Mich.	Pri	1891	J. J. Danhof	13	...	...	542	C
Detroit Institute of Technology, Detroit, Mich.	Pri	1891	D. F. Barich	85	2,500	...	2,500	C
DeVry Technical Institute, Chicago, Ill.	Pri	1931	T. J. Lafeber	126	1,800	...	1,800	C
Diablo Valley College, Concord, Calif.	Dst	1950	K. O. Drexel	77	1,721	...	6,865	C
Dickinson College, Carlisle, Pa.	Meth	1773	G. Malcolm	100	1,142	...	1,142	C
Dillard University, New Orleans, La.	Meth	1935	A. W. Dent	67	1,215	...	1,361	C
District of Columbia Tchrs. Coll., Washington, D.C.	Mun	1851	P. O. Carr	58	1,192	343	1,535	C
Doane College, Crete, Nebr.	Cong	1872	D. M. Typer	30	380	...	442	C
Dominican College of San Rafael, San Rafael, Calif.	RC	1890	Sr. M. Patrick	65	514	274	868	W
Drake University, Des Moines, Iowa	DC	1881	H. G. Harmon	201	4,007	1,201	8,696	C
Drew University, Madison, N.J.	Meth	1867	F. G. Holloway	76	510	371	881	C
Drexel Inst. of Technology, Philadelphia, Pa.	Pri	1891	J. Creese	285	3,693	24	5,206	C
Drury College, Springfield, Mo.	Pri	1873	J. F. Findlay	49	951	219	1,170	C
Dubuque, University of, Dubuque, Iowa	Pres	1852	G. Couchman	36	667	124	791	C
Duchesne College, Omaha, Nebr.	RC	1881	Moth. D. Clark	30	372	...	408	W
Duke University, Durham, N.C.	Meth	1838	A. H. Edens	717	4,348	2,827	7,175	C
Duquesne University, Pittsburgh, Pa.	RC	1878	H. McAnulty	256	2,484	235	4,998	C
D'Youville College, Buffalo, N.Y.	RC	1908	Sr. Catherine	55	588	...	635	W
Earlham College, Richmond, Ind.	Fr	1847	L. R. Bolling	60	842	3	879	C
East Carolina College, Greenville, N.C.	St	1907	J. D. Messick	200	4,084	360	4,850	C
East Central Junior College, Decatur, Miss.	Dst	1928	W. A. Vincent	31	516	109	645	C
East Central State College, Ada, Okla.	St	1909	C. F. Spencer	78	1,688	143	2,791	C
East Los Angeles College, Los Angeles, Calif.	Mun	1945	B. K. Swartz	177	...	...	13,357	C
East Tennessee State Coll., Johnson City, Tenn.	St	1911	B. E. Dossett	190	3,868	153	4,021	C
East Texas Baptist College, Marshall, Texas	Bapt	1914	H. D. Bruce	30	769	...	793	C
East Texas State Coll., Commerce, Texas	St	1889	J. G. Gee	115	2,710	661	4,224	C
Eastern Coll. of Commerce and Law, Baltimore, Md.	Pri	1928	A. R. Ensor	53	...	...	617	C
Eastern Illinois University, Charleston, Ill.	St	1895	Q. Doudna	179	3,461	276	4,257	C
Eastern Kentucky State College, Richmond, Ky.	St	1906	W. F. O'Donnell	124	...	...	4,662	C
Eastern Mennonite College, Harrisonburg, Va.	Men	1917	J. R. Mumaw	28	509	9	600	C
Eastern Michigan University, Ypsilanti, Mich.	St	1849	E. B. Elliott	304	4,257	663	4,920	*C
Eastern Montana Coll. of Educ., Billings, Mont.	St	1925	H. L. Steele	70	1,723	1,974	2,222	C
Eastern Nazarene College, Wollaston, Mass.	Naz	1918	E. S. Mann	32	546	16	662	C
Eastern New Mexico Univ., Portales, N.Mex.	St	1934	F. D. Golden	85	2,203	277	2,880	C
Eastern Oklahoma A. & M. Coll., Wilburton, Okla.	St	1909	E. T. Dunlap	35	1,121	...	1,121	C
Eastern Oregon College, La Grande, Oreg.	St	1929	F. B. Bennett	61	1,285	...	1,285	C
Eastern Wash. Coll. of Educ., Cheney, Wash.	St	1890	D. S. Patterson	99	2,710	551	3,901	C
Edward Waters College, Jacksonville, Fla.	AME	1872	W. B. Stewart	30	1,019	...	1,019	C
El Camino College, El Camino College, Calif.	Dst	1947	S. E. Marsee	235	4,500	...	14,684	C
Elizabethtown College, Elizabethtown, Pa.	CBr	1899	A. C. Baugher	33	633	...	1,251	C
Elmhurst College, Elmhurst, Ill.	ER	1871	R. C. Stanger	48	825	...	854	C
Elmira College, Elmira, N.Y.	Pri	1855	J. R. Murray	55	675	...	1,491	W
Elon College, Elon College, N.C.	Cong	1889	J. E. Danieley	72	1,583	...	2,254	C
Emerson College, Boston, Mass.	Pri	1880	S. J. McKinley	22	482	29	511	C
Emmanuel College, Boston, Mass.	RC	1919	Sr. A. Gertrude	81	655	...	655	W
Emmanuel Mission. Coll., Berrien Springs, Mich.	SDA	1874	J. D. Smith	88	295	14	1,292	C
Emory and Henry College, Emory, Va.	Meth	1836	E. G. Hunt, Jr.	43	803	...	803	C
Emory University, Atlanta, Ga.	Meth	1836	S. W. Martin	373	2,216	1,730	3,946	C
Emporia, College of, Emporia, Kans.	Pres	1882	L. E. Sharpe	28	300	...	300	*C
Erie County Technical Institute,[3] Buffalo, N.Y.	St-Dst	1947	L. E. Spring	72	1,198	...	1,198	*C
Erskine College, Due West, S.C.	Pres	1839	J. M. Lesesne	40	535	...	535	C
Evansville College, Evansville, Ind.	Meth	1854	M. W. Hyde	71	2,195	...	3,671	C
Everett Junior College, Everett, Wash.	Dst	1941	F. T. Giles	108	1,954	...	5,229	C
Fairfield University, Fairfield, Conn.	RC	1942	J. Fitzgerald	70	1,039	50	2,119	M
Fairleigh Dickinson Univ., Rutherford,[6] N.J.	Pri	1941	P. Sammartino	311	4,114	189	13,411	C
Fairmont State College, Fairmont, W.Va.	St	1867	J. W. Pence	60	1,600	...	1,742	*C
Farmington State Tchrs. Coll., Farmington, Me.	St	1864	E. H. Scott	25	500	...	500	*C
Fashion Institute of Technology,[3] New York, N.Y.	St-Mun	1944	L. L. Bethel	117	1,000	...	2,200	*C
Fenn College, Cleveland, Ohio	Pri	1923	G. B. Earnest	150	1,400	...	6,300	C
Ferris Institute, Big Rapids, Mich.	St	1884	V. F. Spathelf	134	3,484	...	3,484	C
Findlay College, Findlay, Ohio	CG	1882	O. J. Wilson	30	743	...	743	C
Fisk University, Nashville, Tenn.	Cong	1865	S. J. Wright	56	...	...	723	C
Flint Com. Junior College, Flint, Mich.	Mun	1923	C. Blocker	172	2,850	...	3,675	C
Flora Macdonald College, Red Springs, N.C.	Pres	1896	M. S. Woodson	32	450	...	476	W
Florida, University of, Gainesville, Fla.	St	1853	J. W. Reitz	990	11,663	1,605	13,268	C
Florida A. & M. University, Tallahassee, Fla.	St	1887	G. W. Gore, Jr.	226	3,883	999	4,882	C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled
Florida Nor. & Indus. Mem. Coll., St. Augustine, Fla.	Bapt	1892	R. W. Puryear	20	293	...	293 C
Florida Southern College, Lakeland, Fla.	Meth	1885	C. T. Thrift, Jr.	116	2,956	...	2,956 C
Florida State University, Tallahassee, Fla.	St	1857	R. M. Strozier	467	7,540	1,949	10,134 C
Fontbonne College, St. Louis, Mo.	RC	1923	Sr. M. Sheeley	43	389	...	1,133 W
Fordham University, New York, N.Y.	RC	1841	L. J. McGinley	431[1]	5,589	1,373	13,475 C
Fort Hays Kansas State College, Hays, Kans.	St	1902	M. Cunningham	146	3,082	411	3,603 C
Fort Smith Junior College, Fort Smith, Ark.	Pri	1927	E. T. Vines	19	1,044	...	1,044 C
Fort Valley State College, Fort Valley, Ga.	St	1895	C. V. Troup	63	888	35	934 C
Fort Wayne Bible College, Fort Wayne, Ind.	MCA	1904	J. F. Gerig	18	241	...	345 C
Francis T. Nicholls St. Coll., Thibodaux, La.	St	1948	C. C. Elkins	45	700	...	900 C
Frank Phillips College, Borger, Texas	St-Dst	1948	J. W. Dillard	30	500	...	500 C
Franklin and Marshall College, Lancaster, Pa.	ER	1787	F. D. Bolman, Jr.	96	1,331	3	1,688 M
Franklin College, Franklin, Ind.	Bapt	1834	H. Richardson	42	593	23	616 C
Franklin Technical Institute, Boston, Mass.	Pri	1908	L. J. Dunham, Jr.	33	356	...	1,185 C
Franklin University, Columbus, Ohio	YMCA	1902	J. F. Frasch	30	100	...	1,556 C
Freed-Hardeman College, Henderson, Tenn.	CC	1908	H. A. Dixon, Sr.	26	456	...	456 C
Fresno City College, Fresno, Calif.	Dst	1910	S. M. White	100	1,699	...	3,730 C
Fresno State College, Fresno, Calif.	St	1911	A. E. Joyal	360	5,298	274	13,069 C
Friends University, Wichita, Kans.	Fr	1898	L. E. Roberts	35	879	...	879 C
Fullerton Junior College, Fullerton, Calif.	Dst	1913	H. L. Sheller	160	3,186	...	5,935 C
Furman University, Greenville, S.C.	Bapt	1826	J. L. Plyler	75	1,089	229	1,318 C
Gannon College, Erie, Pa.	RC	1944	W. J. Nash	86	1,200	...	1,600 M
Gardner-Webb Junior College, Boiling Springs, N.C.	Bapt	1905	P. L. Elliott	25	482	...	594 C
Garrett Biblical Institute, Evanston, Ill.	Meth	1855	D. E. Loder	35	...	741	741 C
General Beadle St. Tchrs. Coll., Madison, S. Dak.	St	1881	V. A. Lowry	29	766	...	766 C
General Motors Institute, Flint, Mich.	Pri	1919	G. R. Cowing	178	2,086	...	2,511 M
Geneva College, Beaver Falls, Pa.	Pres	1848	E. C. Clarke	59	2,789	...	2,789 C
George Peabody Coll. for Tchrs., Nashville, Tenn.	Pri	1875	H. H. Hill	125	1,100	2,000	4,000*C
George Pepperdine College, Los Angeles, Calif.	Pri	1937	M. N. Young	85	1,009	75	1,100 C
George Washington Univ., Washington, D.C.	Pri	1821	O. Colclough	1,009	...	...	13,231 C
George Williams College, Chicago, Ill.	Pri	1890	J. R. McCurdy	24	279	51	388 C
Georgetown College, Georgetown, Ky.	Bapt	1829	R. L. Mills	64	1,020	43	1,159 C
Georgetown University, Washington, D.C.	RC	1789	E. B. Bunn	691	2,329	1,697	8,446 C
Georgia, Medical College of, Augusta, Ga.	St	1828	H. B. O'Rear	116	76	372	448 C
Georgia, University of, Athens, Ga.	St	1785	O. C. Aderhold	381	6,204	581	11,756†C
Georgia Institute of Technology, Atlanta, Ga.	St	1885	E. D. Harrison	375	6,232	541	9,892 C
Georgia Southwestern College, Americus, Ga.	St	1908	L. A. Moll	25	529	...	729 C
Georgia State Coll. for Women, Milledgeville, Ga.	St	1889	R. E. Lee	50	1,548	80	1,785 W
Georgia State Coll. of Bus. Admin., Atlanta, Ga.	St	1914	N. Langdale, Jr.	166	3,291	127	4,716 C
Georgia Teachers College, Collegeboro, Ga.	St	1908	Z. Henderson	70	1,202	...	1,296 C
Georgian Court College, Lakewood, N.J.	RC	1908	Moth. M. Callahan	40	610	...	610 W
Gettysburg College, Gettysburg, Pa.	Luth	1832	W. S. Paul	117	1,696	...	1,696
Glendale College, Glendale, Calif.	Dst	1927	R. Haugh	109	2,665	...	2,665 C
Glenville State College, Glenville, W.Va.	St	1872	H. B. Heflin	40	652	...	722 C
Golden Gate Bapt. Theol. Sem., Berkeley, Calif.	Bapt	1944	H. K. Graves	16	36	202	359 C
Golden Gate College, San Francisco, Calif.	YMCA	1901	R. T. Sharpe	31	290	...	2,339 C
Goldey Beacom School of Bus., Wilmington, Del.	Pri	1900	J. W. Miller	28	678	...	713 C
Gonzaga University, Spokane, Wash.	RC	1887	E. W. Morton	100	1,997	150	2,278 C
Good Counsel College, White Plains, N.Y.	RC	1923	Moth. M. Dolores	22	356	...	376 W
Gordon College, Beverly Farms, Mass.	Pri	1889	H. Armerding	25	345	145	490 C
Gorham State Teachers College, Gorham, Me.	St	1878	F. L. Bailey	65	664	...	664*C
Goshen College, Goshen, Ind.	Men	1894	P. Mininger	71	742	41	1,021 C
Goucher College, Baltimore, Md.	Pri	1885	O. Kraushaar	66	727	14	762 W
Grace Theol. Sem. & Grace Coll., Winona Lake, Ind.	CBr	1937	A. J. McClain	22	211	113	362 C
Graceland College, Lamoni, Iowa	LDS	1895	H. H. Grice	40	726	...	741 C
Grambling College, Grambling, La.	St	1901	R. W. E. Jones	127	3,758	...	3,758 C
Grand Canyon College, Phoenix, Ariz.	Bapt	1949	E. Patterson	23	826	...	826 C
Grand Rapids Jr. Coll., Grand Rapids, Mich.	Mun	1914	J. Visser	72	2,147	...	2,147 C
Grays Harbor College, Aberdeen, Wash.	Dst	1930	E. P. Smith	28	550	...	550 C
Great Falls, College of, Great Falls, Mont.	RC	1932	J. J. Donovan	34	...	...	690*C
Green Mountain College, Poultney, Vt.	Meth	1834	R. A. Withey	32	424	...	424 W
Greensboro College, Greensboro, N.C.	Meth	1838	H. H. Hutson	42	487	...	487 C
Greenville College, Greenville, Ill.	Meth	1892	H. J. Long	35	579	...	579 C
Grinnell College, Grinnell, Iowa	Pri	1846	H. R. Bowen	100	904	...	916 C
Grove City College, Grove City, Pa.	Pri	1876	J. S. Harker	77	1,480	...	1,512 C
Guam, Terr. College of, Agana, Guam	Ter	1952	P. C. Sanchez	17[1]	...	...	1,223 C
Guilford College, Guilford College, N.C.	Fr	1889	C. A. Milner	55	772	4	776 C
Gustavus Adolphus College, St. Peter, Minn.	Luth	1862	E. M. Carlson	79	1,348	...	1,348 C
H. Sophie Newcomb Mem. Coll., New Orleans, La.	Pri	1886	J. R. Hubbard	85	866	...	866 W
Hahnemann Medical College, Philadelphia, Pa.	Pri	1848	W. Malone, III	40	...	412	412 C
Hamilton College, Clinton, N.Y.	Pri	1812	R. W. McEwen	64	645	...	645 M
Hamline University, St. Paul, Minn.	Meth	1854	P. H. Giddens	87	1,049	...	1,049 C
Hampden-Sydney College, Hampden-Sydney, Va.	Pres	1776	J. C. Robert	26	414	...	414*M
Hampton Institute, Hampton, Va.	Pri	1868	A. G. Morón	111	1,127	34	1,915 C
Hanover College, Hanover, Ind.	Pres	1827	J. E. Horner	52	812	...	830 C
Hardin-Simmons University, Abilene, Texas	Bapt	1891	E. A. Reiff	89	1,835	209	2,044 C
Harding College, Searcy, Ark.	CC	1924	G. S. Benson	58	1,001	57	1,201 C
Harris Teachers College, St. Louis, Mo.	Mun	1857	G. E. Clark	77	1,810	...	2,300 C
Hartnell College, Salinas, Calif.	Dst	1920	J. F. Ching	64	1,171	...	1,171 C
Hartwick College, Oneonta, N.Y.	Luth	1928	F. M. Binder	40	679	...	740 C
Harvard University, Cambridge, Mass.	Pri	1636	N. M. Pusey	4,100	4,482	...	11,268*M
Hastings College, Hastings, Nebr.	Pres	1882	T. Maxson	50	833	...	932 C
Haverford College, Haverford, Pa.	Fr	1833	H. Borton	59	457	...	457 M
Hawaii, University of, Honolulu, Hawaii	St	1907	L. H. Snyder	537	5,552	322	13,442 C
Heidelberg College, Tiffin, Ohio	UCC	1850	W. T. Wickham	88	866	...	1,037*C
Henderson State Teachers Coll., Arkadelphia, Ark.	St	1929	D. McBrien	62	2,218	217	2,507 C
Hendrix College, Conway, Ark.	Meth	1884	M. T. Steel	38	618	...	618 C
Henry Ford Community College, Dearborn, Mich.	Mun	1938	F. K. Eshleman	133	1,652	...	5,840 C
High Point College, High Point, N.C.	Meth	1924	W. M. Patton, Jr.	55	1,018	...	1,044 C
Highland Park Jr. Coll., Highland Park, Mich.	Mun	1918	G. O. Withey	60	2,400	...	2,400 C
Hillsdale College, Hillsdale, Mich.	Bapt	1844	J. D. Phillips	42	862	...	862 C
Hillyer College,[7] Hartford, Conn.	Pri	1879	A. S. Wilson	161	1,040	...	7,775 C
Hinds Jr. College, Raymond, Miss.	St-Dst	1917	G. M. McLendon	50	994	...	994 C
Hiram College, Hiram, Ohio	Pri	1850	P. F. Sharp	43	608	...	631 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled
Hobart & William Smith Colleges,[8] Geneva, N.Y.	Epis	1822	L. M. Hirshson	83	1,035	...	1,035 C
Hofstra College, Hempstead, N.Y.	Pri	1935	J. C. Adams	266	2,766	79	2,784 C
Hollins College, Hollins College, Va.	Pri	1842	J. R. Everett	61	634	...	639 W
Holy Cross, College of the, Worcester, Mass.	RC	1843	W. A. Donaghy	135	1,816	7	1,823 M
Holy Names, College of The, Oakland, Calif.	RC	1868	Sr. I. Maria	50	534	94	722 W
Holy Names College, Spokane, Wash.	RC	1907	Sr. M. Raphael	31	392	...	630 W
Holyoke Junior College, Holyoke, Mass.	Mun	1946	G. E. Frost	14	270	...	596 C
Hood College, Frederick, Md.	ER	1893	A. G. Truxal	57	595	...	595 W
Hope College, Holland, Mich.	Ref	1851	I. J. Lubbers	86	1,207	...	1,207 C
Houghton College, Houghton, N.Y.	Meth	1883	S. W. Paine	32	680	...	717 C
Houston, University of, Houston, Texas	St-Pri	1934	A. D. Bruce	415	6,547	265	15,784 C
Howard College, Birmingham, Ala.	Bapt	1842	L. Wright	100	2,824	...	2,824 C
Howard County Junior College, Big Spring, Texas	Dst	1946	W. A. Hunt	31	654	...	1,128 C
Howard Payne College, Brownwood, Texas	Bapt	1889	G. D. Newman	70	1,010	210	1,520 C
Howard University, Washington, D.C.	Pri	1867	M. W. Johnson	351[1]	4,183	1,776	5,959 C
Hudson Valley Technical Institute,[3] Troy, N.Y.	St-Co	1953	O. V. Guenther	52	680	...	1,018*C
Humboldt State College, Arcata, Calif.	St	1913	C. H. Siemens	120	1,522	59	1,875 C
Humphreys College, Stockton, Calif.	Pri	1891	J. Humphreys	15	375	...	375 C
Hunter College, New York, N.Y.	St-Mun	1870	G. N. Shuster	433	5,890	71	19,535 W
Huntingdon College, Montgomery, Ala.	Meth	1854	H. Searcy	47	722	...	895 C
Huntington College, Huntington, Ind.	UB	1897	E. Becker	25	265	...	350 C
Huron College, Huron, S.Dak.	Pres	1883	D. E. Kerr	26	560	...	560 C
Husson College, Bangor, Me.	Pri	1898	C. Husson, Sr.	20	577	...	637 C
Huston-Tillotson College, Austin, Texas	Meth	1952	J. J. Seabrook	29	609	...	609 C
Hutchinson Junior College, Hutchinson, Kans.	Dst-Co	1928	E. R. Briggs	33	776	...	1,126 C
Idaho, College of, Caldwell, Idaho	Pres	1891	T. Shearer	60	...	...	1,351 C
Idaho, University of, Moscow, Idaho	St	1889	D. R. Theophilus	275	4,540	704	4,344 C
Idaho State College, Pocatello, Idaho	St	1901	C. McIntosh	185	2,840	98	3,280 C
Illinois, University of, Urbana, Ill.	St	1867	D. D. Henry	4,501	20,486	6,314	38,251 C
Illinois College, Jacksonville, Ill.	Inter	1829	L. V. Caine	33	431	...	501 C
Illinois Institute of Technology, Chicago, Ill.	Pri	1892	J. Rettaliata	203	1,974	264	9,623 C
Illinois State Normal University, Normal, Ill.	St	1857	R. G. Bone	310	4,691	489	6,872 C
Illinois Wesleyan University, Bloomington, Ill.	Meth	1850	L. M. Bertholf	90	1,457	12	1,469 C
Immaculata College, Immaculata, Pa.	RC	1920	Sr. Mary of Lourdes	47	650	...	950 W
Immaculate Conception Seminary, Conception, Mo.	RC	1883	S. Schappler	30	263	84	347*M
Immaculate Conception Seminary, Darlington, N.J.	RC	1856	J. H. Brady	21	107	172	279 M
Immaculate Heart College, Los Angeles, Calif.	RC	1916	Sr. M. Humiliata	55	531	4	1,931 W
Imperial Valley College, El Centro, Calif.	Dst	1922	E. W. Waterman	15	1,078	...	1,078 C
Incarnate Word College, San Antonio, Texas	RC	1881	Moth. M. Columkille	72	1,199	175	1,760 W
Indiana Central College, Indianapolis, Ind.	EUB	1902	I. L. Esch	40	996	...	996 C
Indiana State Teachers Coll., Terre Haute, Ind.	St	1865	R. W. Holmstedt	171	4,135	804	7,501 C
Indiana Technical College, Fort Wayne, Ind.	Pri	1930	A. T. Keene	75	2,279	...	2,897 M
Indiana University, Bloomington, Ind.	St	1820	H. B. Wells	1,331[1]	13,617	8,686	35,155 C
Inter American Univ., San Germán, P.R.	Pres	1912	R. C. Bauer	67	1,751	...	2,526*C
Iona College, New Rochelle, N.Y.	RC	1940	R. B. Power	104	1,584	...	1,863 M
Iowa, State University of, Iowa City, Iowa	St	1847	V. M. Hancher	792	8,638	4,926	13,564 C
Iowa State Teachers College, Cedar Falls, Iowa	St	1876	J. W. Maucker	186	4,153	934	6,019 C
Iowa State Univ. of Sci. & Tech., Ames, Iowa	St	1858	J. H. Hilton	606	8,365	1,138	9,503 C
Iowa Wesleyan College, Mount Pleasant, Iowa	Meth	1842	J. R. Chadwick	33	725	...	825 C
Itawamba Junior College, Fulton, Miss.	St	1948	P. Sheffield	23	553	...	553 C
Ithaca College, Ithaca, N.Y.	Pri	1892	H. Dillingham	80	1,282	122	1,718 C
Jackson Junior College, Jackson, Mich.	Mun	1928	W. Atkinson	45	1,217	...	1,217 C
Jackson State College, Jackson, Miss.	St	1877	J. L. Reddix	69	3,440	97	3,537 C
Jacksonville University, Jacksonville, Fla.	Pri	1934	F. A. Johnson	63	1,305	...	2,676 C
Jamestown College, Jamestown, N.Dak.	Pres	1883	E. H. Rian	37	528	...	563 C
Jefferson Medical Coll. of Phila., Philadelphia, Pa.	Pri	1825	W. A. Sodeman	535[2]	...	677	702 M
Jewish Theological Seminary of America, New York, N.Y.	Jew	1887	L. Finkelstein	65	375	190	1,136*C
John Carroll Univ., Cleveland, Ohio	RC	1886	H. E. Dunn	149	1,860	11	5,070 M
John Marshall Law School, Chicago, Ill.	Pri	1899	N. W. Lee	30	...	600	600*C
Johns Hopkins University, Baltimore, Md.	Pri	1876	M. Eisenhower	1,447[2]	1,376	1,142	9,789 M
Johnson C. Smith University, Charlotte, N.C.	Pres	1867	R. P. Perry	43	829	34	950 C
Joliet Junior College, Joliet, Ill.	Dst	1901	H. S. Bonar	26	792	...	792 C
Jones County Jr. College, Ellisville, Miss.	St-Dst	1927	J. B. Young	58	1,000	...	1,220 C
Joplin Junior College, Joplin, Mo.	Mun	1938	R. S. Wood	30	675	...	965 C
Juilliard School of Music, New York, N.Y.	Pri	1905	W. Schuman	100	571	96	1,520 C
Juniata College, Huntingdon, Pa.	CBr	1876	C. N. Ellis	55	774	...	774 C
Kalamazoo College, Kalamazoo, Mich.	Bapt	1833	W. K. Hicks	55	652	...	658 C
Kansas, University of, Lawrence, Kans.	St	1865	F. D. Murphy	673	9,200	2,255	11,455 C
Kansas City, Junior College of, Kansas City, Mo.	Dst	1915	M. G. Blim	57	1,472	...	1,472 C
Kansas City, University of, Kansas City, Mo.	Pri	1929	R. Drake	241	...	...	6,269 C
Kansas City Coll. of Osteo. & Surg., Kansas City, Mo.	Pri	1916	J. M. Peach	55	...	399	399 C
Kansas City Kansas Jr. Coll., Kansas City, Kans.	Mun	1923	F. L. Schlagle	21	605	...	605 C
Kansas State College, Pittsburg, Kans.	St	1903	L. H. Axe	199	4,191	207	5,209 C
Kansas State Teachers College, Emporia, Kans.	St	1863	J. E. King	179	3,704	1,000	5,170 C
Kansas State Univ. of Ag. & App. Sci., Manhattan, Kans.	St	1863	J. A. McCain	1,195	6,527	755	7,928 C
Kansas Wesleyan University, Salina, Kans.	Meth	1886	D. A. Zook	30	407	...	407 C
Keene Teachers College, Keene, N.H.	St	1909	L. P. Young	42	754	7	1,068 C
Kent State University, Kent, Ohio	St	1910	G. A. Bowman	402	7,412	137	11,324 C
Kentucky, University of, Lexington, Ky.	St	1865	F. G. Dickey	721	9,523	2,166	11,689 C
Kentucky State College, Frankfort, Ky.	St	1886	R. B. Atwood	48	670	...	670 C
Kentucky Wesleyan College, Owensboro, Ky.	Meth	1866	O. W. Lever	25	348	...	514*C
Kenyon College, Gambier, Ohio	Epis	1824	F. E. Lund	62	508	46	558 M
Keuka College, Keuka Park, N.Y.	Bapt	1890	W. Litterick	36	338	...	341 W
Kilgore College, Kilgore, Texas	St-Dst	1935	C. Stark	65	1,186	...	1,186 C
King College, Bristol, Tenn.	Pres	1867	R. Liston	28	...	...	338 C
King's Business College, Charlotte, N.Car.	Pri	1901	M. Orton	21	483	...	521 C
King's College, Wilkes-Barre, Pa.	RC	1946	G. P. Benaglia	51	950	...	1,060 M
King's College, The, Briarcliff Manor, N.Y.	Pri	1938	P. B. Crawford	29	316	...	328 C
Kirksville Coll. of Osteo. & Surg., Kirksville, Mo.	Pri	1892	M. Thompson	58	...	350	350 C
Knox College, Galesburg, Ill.	Pri	1837	S. G. Umbeck	65	869	...	869 C
Knoxville College, Knoxville, Tenn.	Pres	1875	J. A. Colston	38	559	...	559 C
Lafayette College, Easton, Pa.	Pres	1826	K. R. Bergethon	155	1,620	...	1,865*M
La Grange College, La Grange, Ga.	Meth	1831	W. Henry, Jr.	24	372	...	372 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled	
Lake Erie College, Painesville, Ohio	Pri	1856	P. Weaver	39	454	...	580	W
Lake Forest College, Lake Forest, Ill.	Pres	1857	J. Howard	54	851	...	1,536	C
Lamar State Coll. of Technol., Beaumont, Texas	St	1923	F. L. McDonald	249	4,960	...	6,379	C
Lambuth College, Jackson, Tenn.	Meth	1843	L. L. Gobbel	29	516	...	516	C
Lander College, Greenwood, S.C.	Pri	1872	B. M. Grier	31	511	...	518	C
Lane College, Jackson, Tenn.	ME	1882	C. Kirkendoll	30	902	...	902	C
Langston University, Langston, Okla.	St	1897	G. L. Harrison	43	772	...	772	C
Laredo Junior College, Laredo, Texas	St	1946	W. J. Adkins	35	617	430	1,047	C
La Salle College, Philadelphia, Pa.	RC	1863	D. Bernian	184	2,100	20	4,150	M
Lasell Junior College, Auburndale, Mass.	Pri	1851	R. Packard	70	625	...	625	W
La Sierra College, Arlington, Calif.	SDA	1922	N. F. Pease	53	726	498	1,224	C
Laval University, Quebec, P.Q.	RC	1852	A. Parent	819	4,062	5,768	13,735	C
La Verne College, La Verne, Calif.	CBr	1891	H. D. Fasnacht	32	728	...	728	C
Lawrence College, Appleton, Wis.	Pri	1847	D. M. Knight	83	889	...	933	*C
Lawrence Inst. of Technology, Detroit, Mich.	Pri	1932	E. G. Lawrence	79	2,353	...	2,353	M
Layton School of Art, Milwaukee, Wis.	Pri	1920	E. Lewandowski	23	287	...	312	C
Lebanon Valley College, Annville, Pa.	EUB	1866	F. K. Miller	51	602	...	1,256	C
Lee College, Baytown, Texas	Dst	1934	G. H. Gentry	57	888	...	2,124	C
Lehigh University, Bethlehem, Pa.	Pri	1865	M. Whitaker	293	2,848	430	3,278	M
Le Moyne College, Syracuse, N.Y.	RC	1946	R. F. Grewen	66	1,171	...	1,171	*C
LeMoyne College, Memphis, Tenn.	AMA	1870	H. F. Price	23	455	...	455	C
Lenoir Rhyne College, Hickory, N.C.	Luth	1891	V. R. Cromer	56	960	...	1,413	C
Lesley College, Cambridge, Mass.	Pri	1909	....	35	412	10	765	W
LeTourneau Tech. Inst., Longview, Texas	Pri	1946	R. G. LeTourneau	21	432	...	432	*M
Lewis and Clark College, Portland, Oreg.	Pres	1867	M. S. Odell	75	1,160	50	1,210	C
Lewis College, Lockport, Ill.	RC	1930	P. X. English	40	515	...	544	C
Limestone College, Gaffney, S.C.	Pri	1845	A. J. Eastwood	28	361	...	361	W
Lincoln Bible Institute, Lincoln, Ill.	Pri	1944	E. C. Hargrove	25	445	...	461	C
Lincoln Memorial University, Harrogate, Tenn.	Pri	1897	R. C. Provine	29	737	...	737	C
Lincoln University, Jefferson City, Mo.	St	1866	E. E. Dawson	90	1,532	92	1,968	C
Lincoln University, Lincoln University, Pa.	St-Pri	1854	A. O. Grubb	37	340	13	373	M
Lindenwood College, St. Charles, Mo.	Pres	1827	F. L. McCluer	49	471	...	471	W
Linfield College, McMinnville, Oreg.	Bapt	1849	H. S. Dillin	49	853	50	983	C
Little Rock University, Little Rock, Ark.	Pri	1927	C. V. Stabler	45	1,000	...	1,570	C
Livingstone College, Salisbury, N.C.	AMEZ	1879	S. E. Duncan	27	484	...	484	C
Long Beach City College, Long Beach, Calif.	Dst	1927	G. E. Dotson	328	3,513	...	9,782	C
Long Beach State College, Long Beach, Calif.	St	1949	C. McIntosh	397	6,242	558	12,024	*C
Long Island University, Brooklyn, N.Y.	Pri	1926	R. L. Conolly	231	2,700	39	4,777	C
Longwood College, Farmville, Va.	St	1884	F. Lankford	90	1,221	61	1,299	W
Loras College, Dubuque, Iowa	RC	1839	D. V. Foley	80	1,500	...	1,500	*M
Loretto Heights College, Loretto, Colo.	RC	1918	Sr. F. M. Walsh	55	910	...	910	W
Los Angeles City College, Los Angeles, Calif.	St-Dst	1929	J. Lombardi	330	19,000	...	19,000	C
Los Angeles Harbor Coll., Wilmington, Calif.	Dst	1949	W. C. Black	89	5,700	...	5,700	C
Los Angeles Met. Coll. of Bus., Los Angeles, Calif.	Dst	1950	J. N. Given	61	1,027	...	4,389	C
Los Angeles Pierce Coll., Woodland Hills, Calif.	Mun	1947	J. B. Shepard	125	1,950	...	7,197	C
Los Angeles State Coll. of Applied Arts and Sciences, Los Angeles	St	1947	H. McDonald	421	...	...	30,828	C
Los Angeles Trade-Tech. Coll., Los Angeles, Calif.	Mun	1927	F. P. Wilber	161	3,483	...	22,723	C
Los Angeles Valley Coll., Van Nuys, Calif.	Mun	1949	W. McNelis	146	4,533	...	4,533	C
Louisiana College, Pineville, La.	Bapt	1906	G. E. Guinn	50	865	...	1,397	C
Louisiana Polytechnic Institute, Ruston, La.	St	1894	R. L. Ropp	233	3,778	138	4,084	C
Louisiana State Univ. and A. & M. Coll., Baton Rouge, La.	St	1860	T. Middleton	824	10,792	1,262	14,486	C
Louisville, University of, Louisville, Ky.	Mun	1798	P. G. Davidson	400	2,811	915	10,338	C
Lowell Technological Institute, Lowell, Mass.	St	1895	M. J. Lydon	120	1,011	50	3,000	C
Lower Columbia Jr. Coll., Longview, Wash.	Mun	1934	S. I. Rislov	46	562	...	2,831	C
Loyola College, Baltimore, Md.	RC	1852	V. F. Beatty	72	759	101	1,702	M
Loyola College, Montreal, P.Q.	RC	1896	P. G. Malone	48	635	...	950	C
Loyola University, Chicago, Ill.	RC	1870	J. F. Maguire	346	5,067	2,609	8,816	C
Loyola University, New Orleans, La.	RC	1912	W. Donnelly	215	2,890	769	3,559	C
Loyola Univ. of Los Angeles, Los Angeles, Calif.	RC	1911	C. S. Casassa	106	1,155	487	1,882	*M
Luther College, Decorah, Iowa	EL	1861	J. Ylvisaker	76	1,478	...	1,523	C
Luther Theological Seminary, St. Paul, Minn.	EL	1876	A. N. Rogness	21	...	582	582	M
Lycoming College, Williamsport, Pa.	Meth	1812	D. F. Wertz	65	940	...	940	C
Lynchburg College, Lynchburg, Va.	DC	1903	O. W. Wake	50	1,096	...	1,193	*C
Lyons Township Junior College, La Grange, Ill.	Dst	1929	G. S. Olsen	19	473	...	473	C
Macalester College, St. Paul, Minn.	Pres	1885	H. M. Rice	101	1,799	85	2,177	C
McCormick Theol. Seminary, Chicago, Ill.	UP	1829	A. R. McKay	32	...	305	325	C
McGill University, Montreal, P.Q.	Pri	1821	F. C. James	508	5,320	1,786	7,749	C
McKendree College, Lebanon, Ill.	Meth	1828	W. B. Garrison	26	436	...	729	C
McMaster University, Hamilton, Ont.	Bapt	1887	G. P. Gilmour	124	1,120	102	2,534	C
MacMurray College, Jacksonville, Ill.	Meth	1846	L. W. Norris	54	666	10	697	C
McMurry College, Abilene, Texas	Meth	1923	G. R. Bennett	41	851	82	1,110	C
McNeese State College, Lake Charles, La.	St	1939	W. N. Cusic	140	1,550	...	3,238	C
McPherson College, McPherson, Kans.	CBr	1887	D. Bittinger	28	577	...	577	C
Madison College, Harrisonburg, Va.	St	1908	G. T. Miller	104	1,564	111	1,907	W
Maine, University of, Orono, Me.	St	1865	L. H. Elliott	279	4,821	1,045	5,866	C
Manchester College, North Manchester, Ind.	CBr	1889	A. B. Helman	73	1,092	94	1,282	C
Manhattan College, New York, N.Y.	RC	1853	Br. A. Philip	184	2,740	...	3,895	M
Manhattan School of Music, New York, N.Y.	Pri	1917	J. Brownlee	42	386	70	609	†C
Manhattanville Coll. of Sacred Heart, Purchase, N.Y.	RC	1841	E. M. O'Byrne	102	875	20	958	W
Manitoba, University of, Winnipeg, Man.	Prov	1877	H. Saunderson	260	3,812	278	5,960	C
Marian College, Indianapolis, Ind.	RC	1937	F. J. Reine	45	850	...	850	C
Marian College, Fond du Lac, Wis.	RC	1936	Sr. M. Fidelis	26	175	...	508	W
Marietta College, Marietta, Ohio	Pri	1835	W. B. Irvine	70	1,147	...	1,190	C
Marin, College of, Kentfield, Calif.	Dst	1926	W. H. Austin	52	983	...	1,297	C
Marion College, Marion, Ind.	Meth	1920	W. F. McConn	25	365	...	522	C
Marquette University, Milwaukee, Wis.	RC	1881	E. O'Donnell	599	5,735	1,781	14,128	C
Mars Hill College, Mars Hill, N.C.	Bapt	1856	H. Blackwell	49	1,078	...	1,126	C
Marshall College, Huntington, W.Va.	St	1837	S. H. Smith	188	2,992	48	6,000	C
Mary Baldwin College, Staunton, Va.	Pres	1842	S. Spencer, Jr.	30	364	...	370	*W
Mary Hardin-Baylor College, Belton, Texas	Bapt	1845	A. Tyson	42	...	...	1,400	W
Mary Manse College, Toledo, Ohio	RC	1922	Sr. J. B. Macelwane	55	1,010	46	1,449	W
Mary Washington Coll. of Univ. of Va., Fredericksburg, Va.	St	1908	G. C. Simpson	114	1,598	...	1,598	W
Marycrest College, Davenport, Iowa	RC	1939	Moth. M. Upham	31	412	...	880	W
Marygrove College, Detroit, Mich.	RC	1910	Sr. M. Honora	92	900	...	1,525	W
Maryland, Univ. of, College Pk. & Baltimore, Md.	St	1807	W. H. Elkins	2,331	9,197	5,200	28,092	C

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Maryland Institute, Baltimore, Md.	Pri	1826	D. C. MacLea	41	350	5	875 C
Maryland State College, Princess Anne, Md.	St	1886	J. T. Williams	45	469	...	469 C
Maryland State Teachers College, Bowie, Md.	St	1867	W. E. Henry	26	352	...	352*C
Maryland State Tchrs. College, Frostburg, Md.	St	1898	R. Hardesty	41	699	78	875 C
Maryland State Tchrs. College, Salisbury, Md.	St	1925	W. Devilbiss	21	360	...	391 C
Maryland State Tchrs. College, Towson, Md.	St	1866	E. T. Hawkins	79	2,051	111	2,162 C
Marylhurst College, Marylhurst, Oreg.	RC	1930	Sr. M. Barbara	35	771	...	966 W
Marymount College, Salina, Kans.	RC	1922	Sr. E. Knaup	46	545	...	744 W
Marymount College, Tarrytown, N.Y.	RC	1907	Moth. M. Smith	56	615	...	615 W
Maryville College, Maryville, Tenn.	UP	1819	R. W. Lloyd	67	704	...	719 C
Maryville Coll. of the Sacred Heart, St. Louis, Mo.	RC	1872	Moth. M. Erskine	38	270	...	270 W
Marywood College, Scranton, Pa.	RC	1915	Sr. M. Eugenia	79	1,846	11	2,301 W
Mason City Jr. College, Mason City, Iowa	Dst	1918	C. H. Beem	30	571	...	571 C
Massachusetts, University of, Amherst, Mass.	St	1863	J. P. Mather	559	4,267	568	5,271 C
Massachusetts College of Art, Boston, Mass.	St	1870	R. L. Bertolli	35	489	...	489 C
Massachusetts Coll. of Pharmacy, Boston, Mass.	Pri	1823	H. C. Newton	28	514	20	538 C
Massachusetts Inst. of Tech., Cambridge, Mass.	Pri	1861	J. Stratton	1,949	3,588	2,671	6,259 C
Mass. State Tchrs. Coll., Boston, Mass.	St	1852	W. F. Looney	94	1,490	63	2,679*C
Mass. State Tchrs. Coll., Bridgewater, Mass.	St	1840	C. Maxwell	64	1,124	...	1,124*C
Mass. State Tchrs. Coll., Fitchburg, Mass.	St	1894	R. F. Weston	73	717	...	1,097 C
Mass. State Tchrs. Coll., Framingham, Mass.	St	1839	M. O'Connor	44	700	158	858 W
Mass. State Tchrs. Coll., Lowell, Mass.	St	1894	D. H. O'Leary	36	516	...	516 C
Mass. State Tchrs. Coll., Salem, Mass.	St	1854	F. A. Meier	57	928	...	1,350†C
Mass. State Teachers College, Westfield, Mass.	St	1839	E. J. Scanlon	44	500	...	500 C
Mass. State Tchrs. Coll., Worcester, Mass.	St	1871	E. A. Sullivan	50	760	...	1,397*C
Medical Evangelists, Coll. of, Loma Linda, Calif.	SDA	1905	G. T. Anderson	300	...	842	866 C
Meharry Medical College, Nashville, Tenn.	Pri	1876	H. D. West	145	482	...	482 C
Memorial University, St. John's, Newfoundland	Prov	1925	R. Gushue	67	1,059	20	1,500 C
Memphis State University, Memphis, Tenn.	St	1912	J. M. Smith	204	4,200	400	6,100 C
Menlo College, Menlo Park, Calif.	Pri	1915	W. E. Kratt	61	680	...	680*M
Mercer University, Macon, Ga.	Bapt	1833	S. Dowell	81	1,506	341	2,260 C
Mercy College, Detroit, Mich.	RC	1941	Sr. M. Lucille	65	445	...	571*W
Mercyhurst College, Erie, Pa.	RC	1926	Moth. M. Eustace	28	490	...	693 W
Meredith College, Raleigh, N.C.	Bapt	1891	C. Campbell	46	683	...	731 W
Merrimack College, North Andover, Mass.	RC	1947	V. McQuade	68	1,163	...	1,701 C
Mesa College, Grand Junction, Colo.	Co	1925	H. J. Wubben	30	854	...	1,386 C
Miami, University of, Coral Gables, Fla.	Pri	1925	J. Pearson	661	8,310	729	13,055 C
Miami University, Oxford, Ohio	St	1809	J. Millett	349	7,444	1,041	8,485 C
Michigan, University of, Ann Arbor, Mich.	St	1817	H. Hatcher	1,693	18,731	8,522	44,695 C
Michigan Coll. of Min. & Tech., Houghton, Mich.	St	1885	J. R. Van Pelt	192	3,034	23	3,157 C
Michigan State University, East Lansing, Mich.	St	1855	J. A. Hannah	1,123	15,888	3,673	20,507 C
Middle Georgia Coll., Cochran, Ga.	St	1928	L. E. Roberts	23	579	...	579 C
Middle Tennessee State Coll., Murfreesboro, Tenn.	St	1909	Q. E. Cope	131	2,255	26	3,763 C
Middlebury College, Middlebury, Vt.	Pri	1800	S. Stratton	89	1,268	964	2,232 C
Midland College, Fremont, Nebr.	UL	1887	P. Dieckman	34	754	...	1,010 C
Midwestern University, Wichita Falls, Texas	St-Mun	1922	T. A. White	64	1,390	98	2,050 C
Miles College, Birmingham, Ala.	ME	1905	W. A. Bell	49	868	...	1,253 C
Milligan College, Milligan College, Tenn.	Pri	1881	D. E. Walker	27	471	...	471 C
Millikin University, Decatur, Ill.	Pres	1901	P. L. McKay	81	1,135	35	1,373 C
Mills College, Oakland, Calif.	Pri	1852	C. E. Rothwell	60	664	84	748 W
Millsaps College, Jackson, Miss.	Meth	1892	H. Finger, Jr.	50	1,550	...	1,550 C
Milton College, Milton, Wis.	Pri	1844	P. L. Dunn	28	322	...	352 C
Milwaukee Institute of Technology, Milwaukee, Wis.	Mun	1951	G. Parkinson	39	774	...	3,470 C
Milwaukee School of Engr., Milwaukee, Wis.	Pri	1903	K. Werwath	73	2,074	...	2,074 M
Minneapolis School of Art, Minneapolis, Minn.	Pri	1886	W. B. Bryan	18	209	...	723 C
Minnesota, University of, Minneapolis, Minn.	St	1851	J. Morrill	1,792	25,782	5,173	30,955 C
Minnesota State Coll., Bemidji, Minn.	St	1919	C. R. Sattgast	84	1,965	142	2,107 C
Minnesota State Coll., Mankato, Minn.	St	1867	C. L. Crawford	201	5,200	900	6,100 C
Minnesota State Coll., Moorhead, Minn.	St	1887	J. J. Neumaier	89	1,356	51	1,760 C
Minnesota State Coll., St. Cloud, Minn.	St	1869	G. F. Budd	172	4,396	229	6,138 C
Minnesota State Coll., Winona, Minn.	St	1858	N. Minné	75	1,338	225	1,807 C
Misericordia, College, Dallas, Pa.	RC	1923	Sr. M. Celestine	89	613	...	1,424 W
Mississippi, University of, University, Miss.	St	1848	J. D. Williams	235	3,222	856	4,078 C
Mississippi College, Clinton, Miss.	Bapt	1826	R. A. McLemore	72	1,240	108	2,225 C
Mississippi Southern College, Hattiesburg, Miss.	St	1910	W. D. McCain	200	5,350	528	7,348 C
Mississippi St. Coll. for Women, Columbus, Miss.	St	1885	C. P. Hogarth	95	1,258	...	1,258 W
Mississippi State University, State College, Miss.	St	1878	B. Hilbun	300	4,251	108	4,701 C
Mississippi Vocational College, Itta Bena, Miss.	St	1950	J. H. White	51	640	...	640 C
Missouri, Univ. of, Columbia & Rolla, Mo.	St	1839	E. Ellis	1,012	12,086	3,525	16,240 C
Missouri Valley College, Marshall, Mo.	Pres	1888	M. E. Collins	27	392	...	425 C
Mitchell College, New London, Conn.	Pri	1938	R. C. Weller	26	998	...	998†C
Modesto Junior College, Modesto, Calif.	St	1921	H. Wiser	130	2,500	...	2,500*C
Mohawk Valley Technical Institute,[3] Utica, N.Y.	St-Co	1946	A. V. Payne	47	676	...	1,326*C
Moline Community College, Moline, Ill.	Dst	1946	E. McClintock	25	330	...	330 C
Monmouth College, Monmouth, Ill.	Pres	1853	R. W. Gibson	46	720	...	720 C
Monmouth College, West Long Branch, N.J.	Pri	1933	E. G. Schlaefer	68	1,048	4	2,466 C
Montana School of Mines, Butte, Mont.	St	1893	E. G. Koch	33	295	17	312 C
Montana State College, Bozeman, Mont.	St	1893	R. R. Renne	223	4,377	313	4,852 C
Montana State University, Missoula, Mont.	St	1893	H. Newburn	291	3,813	821	4,734 C
Monterey Peninsula College, Monterey, Calif.	Mun	1947	F. R. Huber	68	1,300	...	3,000 C
Montgomery Junior College, Takoma Park, Md.	Co	1946	D. E. Deyo	40	898	...	1,619 C
Montreal, University of, Montreal, P.Q.	RC	1876	I. Lussier	2,346	6,275	12,158	25,655 C
Moody Bible Inst., Chicago, Ill.	Pri	1886	W. Culbertson	67	1,396	...	1,396 C
Moravian College, Bethlehem, Pa.	Mor	1807	R. S. Haupert	48	744	31	828 C
Morehead State College, Morehead, Ky.	St	1923	A. Doran	103	1,504	20	2,140 C
Morehouse College, Atlanta, Ga.	Pri	1867	B. E. Mays	47	748	8	756 M
Morgan State College, Baltimore, Md.	St	1867	M. D. Jenkins	141	2,997	...	3,279 C
Morningside College, Sioux City, Iowa	Meth	1894	J. R. Palmer	58	1,873	...	1,873 C
Morris Brown College, Atlanta, Ga.	AME	1881	J. H. Lewis	48	730	...	896 C
Morris College, Sumter, S.C.	Bapt	1908	O. R. Reuben	32	400	...	400†C
Morris Harvey College, Charleston, W.Va.	Pri	1888	L. Riggleman	60	2,687	...	2,687 C
Mount Allison University, Sackville, N.B.	UCCa	1840	W. Flemington	74	1,282	22	1,316 C
Mount Holyoke College, South Hadley, Mass.	Pri	1837	R. G. Gettell	159	1,360	45	1,434 W
Mount Marty College, Yankton, S.Dak.	RC	1937	Sr. M. Anderson	19	159	...	479 W
Mount Mary College, Milwaukee, Wis.	RC	1913	Sr. M. J. Francis	94	1,625	...	1,890 W
Mount Mercy College, Pittsburgh, Pa.	RC	1929	Moth. M. Corbett	62	1,110	...	1,110 W

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Mount Royal College, Calgary, Alberta	UCCa	1910	W. J. Collett	8	130	...	130 C
Mount St. Agnes College, Baltimore, Md.	RC	1890	Sr. M. Cleophas	48	299	69	398 W
Mount St. Joseph Teachers Coll., Buffalo, N.Y.	RC	1937	Sr. M. Hubert	15	280	60	340 W
Mount St. Joseph-on-the-Ohio, Coll. of, Mount St. Joseph, Ohio.	RC	1854	Sr. M. Corona	61	646	...	721 W
Mount St. Mary's College, Los Angeles, Calif.	RC	1925	Sr. R. Gertrude	95	1,074	173	1,578 W
Mount St. Mary's College, Emmitsburg, Md.	RC	1808	J. Sheridan	47	690	...	690 M
Mount St. Scholastica College, Atchison, Kans.	RC	1863	Moth. M. Schroll	32	878	...	1,015 W
Mount St. Vincent, College of, New York, N.Y.	RC	1910	Sr. C. Marie	72	573	...	831 W
Mount San Antonio College, Walnut, Calif.	St	1946	O. Edinger, Jr.	237	2,831	...	8,559 C
Mount Union College, Alliance, Ohio	Meth	1846	C. Bracy	55	1,043	...	1,279 C
Muhlenberg College, Allentown, Pa.	Luth	1848	J. C. Seegers	77	990	...	1,219 C
Multnomah College, Portland, Oreg.	Pri	1897	J. Griffith	50	960	...	2,150 C
Multnomah Sch. of the Bible, Portland, Oreg.	Inter	1936	W. M. Aldrich	18	...	...	398 C
Mundelein College, Chicago, Ill.	RC	1930	Sr. M. Ida	68	1,159	...	1,203 W
Murray State Agr. Coll., Tishomingo, Okla.	St	1908	C. Murray	24	455	...	516 C
Murray State College, Murray, Ky.	St	1923	R. H. Woods	110	3,304	365	3,669 C
Muskegon Community College, Muskegon, Mich.	Dst	1926	W. G. Dwyer	35	1,746	...	1,746 C
Muskingum College, New Concord, Ohio	Pres	1837	R. Montgomery	65	1,379	...	1,503 C
Napa College, Napa, Calif.	Dst	1941	R. L. Patrick	30	385	...	698 C
Nasson College, Springvale, Me.	Pri	1912	R. C. Gay	30	350	...	350 C
National Agricultural College, Doylestown, Pa.	Pri	1896	J. Work	28	312	...	312 M
National College of Education, Evanston, Ill.	Pri	1886	K. R. Johnson	42	591	233	1,193 C
Navarro Junior College, Corsicana, Texas	Co	1946	B. W. Jones	32	926	...	926 C
Nazareth College, Louisville, Ky.	RC	1920	Sr. M. Gertrude	60	354	...	1,948*W
Nazareth College, Nazareth, Mich.	RC	1897	Sr. M. Kathleen	30	300	...	300 W
Nazareth College, Rochester, N.Y.	RC	1924	Moth. M. Helene	60	646	...	777 W
Nebraska, University of, Lincoln, Nebr.	St	1869	C. M. Hardin	648	7,000	1,300	11,000 C
Nebraska State Teachers College, Chadron, Nebr.	St	1911	B. L. Kline	60	1,208	105	1,351 C
Nebraska State Teachers College, Kearney, Nebr.	St	1905	H. L. Cushing	79	2,533	323	2,856 C
Nebraska State Teachers College, Peru, Nebr.	St	1867	N. S. Gomon	56	800	68	1,058 C
Nebraska State Teachers College, Wayne, Nebr.	St	1910	W. Brandenburg	78	1,574	93	1,894 C
Nebraska Wesleyan University, Lincoln, Nebr.	Meth	1887	V. D. Rogers	58	1,262	...	1,262 C
Nevada, University of, Reno & Las Vegas, Nev.	St	1874	C. J. Armstrong	186	2,558	258	4,775 C
New Bedford Inst. of Technology, New Bedford, Mass.	St	1895	J. E. Foster	51	519	...	519 C
New Brunswick, University of, Fredericton, N.B.	Prov	1785	C. B. MacKay	102	2,177	99	2,336 C
New England Conserv. of Music, Boston, Mass.	Pri	1867	J. Aliferis	106	250	150	400 C
New Hampshire, University of, Durham, N.H.	St	1866	E. L. Johnson	305	3,875	600	4,475 C
New Haven College, New Haven, Conn.	YMCA	1926	M. Peterson	47	156	...	1,112*C
New Jersey State Coll., Glassboro, N.J.	St	1923	T. Robinson	81	1,078	...	2,539 C
New Jersey State Coll., Jersey City, N.J.	St	1929	M. B. Gilligan	74	1,401	...	1,667 C
New Jersey State Coll., Paterson, N.J.	St	1855	M. E. Shea	102	1,420	...	2,748*C
New Jersey State College, Trenton, N.J.	St	1855	E. L. Martin	118	1,972	...	3,057 C
New Jersey State Coll., Union, N.J.	St	1855	E. G. Wilkins	97	1,200	...	3,600*C
New Jersey State Coll., Upper Montclair, N.J.	St	1908	E. Partridge	140	1,993	20	2,013 C
New Mexico, Univ. of, Albuquerque, N.Mex.	St	1889	T. L. Popejoy	261	...	...	9,111 C
New Mexico Highlands Univ., Las Vegas, N.Mex.	St	1893	T. Donnelly	61	1,700	142	1,950 C
New Mexico St. Univ. of A., M., Engr., & Sci., Univ. Park, N.Mex.	St	1889	R. Corbett	175	...	...	5,185 C
New Mexico Western College, Silver City, N.Mex.	St	1893	J. C. Miller	72	475	20	723 C
New Orleans Bapt. Theol. Sem., New Orleans, La.	Bapt	1917	H. Eddleman	39	...	1,034	1,034 C
New Rochelle, College of, New Rochelle, N.Y.	RC	1904	Moth. M. Carthy	73	900	...	900 W
New School for Social Research, New York, N.Y.	Pri	1919	H. Simons	71	108	81	987 C
New York, State University of, Albany, N.Y.	*St*	*1948*	*T. H. Hamilton*	*2,652*	*30,429*	*1,277*	*41,087**
Harpur College, Endicott, N.Y.	St	1946	G. G. Bartle	74	891	..	1,351*C
Downstate Medical Center, Brooklyn, N.Y.	St	1857	R. A. Moore	206	565	48	618*C
Upstate Medical Center, Syracuse, N.Y.	St	1834	C. F. Jacobsen	91	354	14	429*C
College of Forestry, Syracuse, N.Y.	St	1911	H. Shirley	79	552	105	678*C
College on Long Island, Oyster Bay, N.Y.	St	1957	L. K. Olsen	27	368	...	369*C
Maritime College, Ft. Schuyler, New York, N.Y.	St	1874	H. C. Moore	35	578	...	580*M
College of Ceramics, Alfred, N.Y.	St	1900	J. McMahon	27	366	39	405*C
College of Agriculture, Ithaca, N.Y.	St	1904	C. E. Palm	334	1,593	651	2,346*C
College of Home Economics, Ithaca, N.Y.	St	1925	H. Canoyer	97	675	116	791*C
School of Indust. & Labor Rel., Ithaca, N.Y.	St	1945	J. McConnell	26	283	64	347*C
Veterinary College, Ithaca, N.Y.	St	1894	G. Poppensiek	57	219	18	255*C
College of Education, Albany, N.Y.	St	1844	E. R. Collins	172	2,207	179	3,226*C
College of Education, Brockport, N.Y.	St	1866	D. M. Tower	102	1,366	...	2,167*C
College of Education, Buffalo, N.Y.	St	1867	P. G. Bulger	178	2,997	...	4,549*C
College of Education, Cortland, N.Y.	St	1866	D. C. Moffett	155	2,246	...	3,066*C
College of Education, Fredonia, N.Y.	St	1886	H. W. Porter	83	1,050	...	1,375*C
College of Education, Geneseo, N.Y.	St	1867	F. J. Moench	62	1,123	41	1,594*C
College of Education, New Paltz, N.Y.	St	1886	W. Haggerty	105	1,456	...	3,447*C
College of Education, Oneonta, N.Y.	St	1889	R. F. Netzer	104	1,608	...	2,210*C
College of Education, Oswego, N.Y.	St	1861	F. S. Brown	149	2,256	...	2,743*C
College of Education, Plattsburg, N.Y.	St	1889	G. Angeli	95	1,305	2	1,735*C
College of Education, Potsdam, N.Y.	St	1866	F. W. Crumb	71	1,130	...	1,526*C
Agricultural & Tech. Inst., Alfred, N.Y.	St	1908	P. B. Orvis	80	1,352	...	1,378*C
Agricultural & Tech. Inst., Canton, N.Y.	St	1906	A. E. French	30	530	...	530*C
Agricultural & Tech. Inst., Cobleskill, N.Y.	St	1914	R. L. Wheeler	20	539	...	545*C
Agricultural & Tech. Inst., Delhi, N.Y.	St	1916	W. Kunsela	31	516	...	519*C
Agricultural & Tech. Inst., Farmingdale, N.Y.	St	1916	W. R. Medesy	112	1,643	...	1,647*C
Agricultural & Tech. Inst., Morrisville, N.Y.	St	1910	R. N. Whipple	50	661	...	661*C
New York City Community Coll.,[3] Brooklyn, N.Y.	St-Mun	1946	O. Klitgord	270	3,024	...	8,790 C
New York Law School, New York, N.Y.	Pri	1891	J. A. Cox	20	687	...	687 C
New York Medical College, New York, N.Y.	Pri	1860	R. E. Snyder	60[2]	493	...	537 C
New York University, New York, N.Y.	Pri	1831	C. V. Newsom	1,591[1]	8,388	4,121	41,566 C
Newark College of Engineering, Newark, N.J.	St-Mun	1881	R. Van Houten	155	1,563	...	3,835 C
Newberry College, Newberry, S.C.	UL	1856	C. Kaufmann	34	712	...	728 C
Newton College of the Sacred Heart, Newton, Mass.	RC	1946	Moth. G. Husson	38	458	...	458 W
Niagara University, Niagara Falls, N.Y.	RC	1856	V. T. Swords	90	1,200	150	1,700 C
North Carolina, A. & T. Coll. of, Greensboro, N.C.	St	1891	W. T. Gibbs	154	2,562	621	3,487 C
North Carolina, University of, Chapel Hill, N.C.	St	1795	W. B. Aycock	1,166	7,590	3,354	10,944 C
North Carolina, Woman's Coll. of the Univ. of, Greensboro, N.C.	St	1891	G. Blackwell	192	2,189	110	2,487 W
North Carolina College, Durham, N.C.	St	1910	A. Elder	105	1,250	65	1,769 C
North Carolina St. Coll. of Ag. & Engr., Raleigh, N.C.	St	1889	J. Caldwell	439	5,306	343	6,989 C
North Carolina State Tchrs. Coll., Elizabeth City, N.C.	St	1891	W. N. Ridley	32	489	...	489 C
North Carolina State Tchrs. Coll., Fayetteville, N.C.	St	1877	R. Jones	35	641	...	814 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled	
North Central Bible Coll., Minneapolis, Minn.	AG	1930	I. O. Miller	10	350	...	382	C
North Central College, Naperville, Ill.	EUB	1861	C. H. Geiger	50	1,058	...	1,122	C
North Dakota, Univ. of, Grand Forks, N.Dak.	St	1883	G. W. Starcher	241	4,288	1,176	5,464	C
North Dakota Agric. College, Fargo, N.Dak.	St	1889	F. S. Hultz	177	3,000	150	3,900	C
North Dakota State Teachers Coll., Dickinson, N.Dak.	St	1918	O. A. DeLong	36	543	...	674	C
North Dakota State Teachers Coll., Mayville, N.Dak.	St	1889	T. R. Jenkins	35	575	...	575	C
North Dakota State Tchrs. Coll., Minot, N.Dak.	St	1913	C. P. Lura	100	2,193	...	2,221	C
North Dakota St. Tchrs. Coll., Valley City, N. Dak.	St	1889	R. L. Lokken	48	1,318	...	1,318	C
North Georgia College, Dahlonega, Ga.	St	1873	M. E. Hoag	42	812	...	812	C
North Park Coll. & Theol. Sem., Chicago, Ill.	EC	1891	K. Olsson	64	725	62	1,276	*C
North Texas State College, Denton, Texas	St	1890	J. Matthews	354	6,676	247	11,828	C
Northeast Louisiana State College, Monroe, La.	St	1928	G. T. Walker	119	2,604	...	3,057	C
Northeast Mississippi Jr. Coll., Booneville, Miss.	St	1948	W. H. Hinton	30	567	...	576	C
Northeast Missouri St. Tchrs. Coll., Kirksville, Mo.	St	1867	W. H. Ryle	110	2,384	318	2,702	C
Northeastern Okla. A. & M. Coll., Miami, Okla.	St	1919	B. G. Carter	34	863	...	1,261	C
Northeastern State College, Tahlequah, Okla.	St	1846	H. Garrison	68	2,554	371	3,055	C
Northeastern University, Boston, Mass.	Pri	1898	A. Knowles	500	6,000	45	19,000	C
Northern Baptist Theol. Seminary, Chicago, Ill.	Bapt	1913	C. W. Koller	17	133	108	270	C
Northern Illinois University, DeKalb, Ill.	St	1895	L. A. Holmes	325	5,400	550	7,900	C
Northern Michigan College, Marquette, Mich.	St	1899	E. L. Harden	120	2,214	329	2,543	C
Northern Montana College, Havre, Mont.	St	1929	L. Brockmann	45	801	...	1,093	C
Northern Oklahoma Jr. Coll., Tonkawa, Okla.	St	1901	V. Easterling	28	517	...	517	C
Northern State Tchrs. Coll., Aberdeen, S. Dak.	St	1902	J. H. Kramer	96	2,370	240	2,670	C
Northland College, Ashland, Wis.	Pri	1892	G. Turbeville	28	351	...	464	C
Northrop Inst. of Technology, Inglewood, Calif.	Pri	1942	J. McKinley	69	1,599	...	1,999	M
Northwest Christian College, Eugene, Oreg.	DC	1895	R. Griffeth	19	339	...	430	C
Northwest Missouri State College, Maryville, Mo.	St	1905	J. W. Jones	104	2,284	93	2,407	C
Northwest Nazarene College, Nampa, Idaho	Naz	1913	J. E. Riley	41	648	2	719	C
Northwestern College, Minneapolis, Minn.	Inter	1902	C. B. Akenson	25	343	...	343	C
Northwestern Michigan College, Traverse City, Mich.	Co	1951	P. Tanis	25	405	...	405	C
Northwestern State College, Natchitoches, La.	St	1884	J. S. Kyser	185	2,489	173	2,662	C
Northwestern State College, Alva, Okla.	St	1897	J. W. Martin	47	942	39	981	C
Northwestern Univ., Evanston & Chicago, Ill.	Pri	1851	J. R. Miller	542	6,107	3,519	16,161	C
Norwich University, Northfield, Vt.	Pri	1819	E. N. Harmon	57	900	...	900	M
Notre Dame, College of, Belmont, Calif.	RC	1868	Sr. C. Julie	39	246	...	256	W
Notre Dame, Univ. of, Notre Dame, Ind.	RC	1842	T. Hesburgh	493	5,500	700	6,200	M
Notre Dame College, Cleveland, Ohio	RC	1922	Sr. M. Loyole	30	301	...	380	W
Notre Dame of Maryland, Coll. of, Baltimore, Md.	RC	1873	Sr. M. Mary	51	575	...	875	W
Nova Scotia Technical College, Halifax, N.S.	Prov	1907	J. Hoogstraten	26	279	3	292	C
Nyack Missionary College, Nyack, N.Y.	CMA	1882	H. W. Boon	26	524	...	563	C
Oakland City College, Oakland, Calif.	Mun	1953	C. A. Long	195	4,026	...	15,371	C
Oakland City College, Oakland City, Ind.	Bapt	1885	O. G. Chapman	25	690	...	690	C
Oberlin College, Oberlin, Ohio	Pri	1833	W. Stevenson	201	2,034	90	2,477	C
Occidental College, Los Angeles, Calif.	Pri	1887	A. G. Coons	88	1,411	27	2,059	C
Oceanside-Carlsbad College, Oceanside, Calif.	St	1934	R. V. Rodgers	34	490	...	3,790	C
Odessa College, Odessa, Texas	Dst	1946	M. H. Fly	55	...	...	6,727	C
Oglethorpe University, Atlanta, Ga.	Pri	1835	D. C. Agnew	27	362	...	429	C
Ohio Coll. of Applied Science, Cincinnati, Ohio	Pri	1828	G. R. Henninger	17	306	...	306	C
Ohio Northern University, Ada, Ohio	Meth	1871	F. McIntosh	101	1,379	...	2,427	C
Ohio State University, Columbus, Ohio	St	1875	N. G. Fawcett	2,853	19,215	6,738	29,153	C
Ohio University, Athens, Ohio	St	1804	J. C. Baker	425	8,115	585	8,822	C
Ohio Wesleyan University, Delaware, Ohio	Meth	1842	D. Lockmiller	160	2,106	44	2,203	C
Oklahoma, University of, Norman, Okla.	St	1892	G. L. Cross	601	11,185	2,983	14,168	C
Oklahoma Baptist University, Shawnee, Okla.	Bapt	1906	J. W. Raley	81	1,637	40	1,677	C
Oklahoma City University, Oklahoma City, Okla.	Meth	1904	J. S. Wilkes	117	2,580	...	4,399	C
Oklahoma College for Women, Chickasha, Okla.	St	1908	F. H. Beets	53	634	...	701	W
Oklahoma State Univ., Stillwater, Okla.	St	1891	O. S. Willham	580	...	...	12,115	C
Olivet College, Olivet, Mich.	Cong	1844	G. Riethmiller	28	427	...	427	C
Olivet Nazarene College, Kankakee, Ill.	Naz	1907	H. W. Reed	47	1,020	...	1,020	‡C
Olympic College, Bremerton, Wash.	Dst	1946	F. C. Kintzer	82	779	...	5,859	C
Omaha, University of, Omaha, Nebr.	Mun	1908	M. Bail	127	2,723	9	6,157	C
Ontario Agricultural College, Guelph, Ont.	Prov	1874	J. MacLachlan	230	892	80	972	C
Ontario College of Art, Toronto, Ont.	Prov	1875	S. H. Watson	35	1,000	...	1,000	C
Ontario Veterinary College, Guelph, Ont.	Prov	1862	T. L. Jones	68	265	15	280	C
Orange Coast College, Costa Mesa, Calif.	Dst	1947	B. Peterson	144	3,230	...	11,657	C
Orange County Community College,[3] Middletown, N.Y.	St-Dst	1950	E. H. Miner	75	762	...	3,466	C
Oregon, University of, Eugene, Oreg.	St	1872	O. M. Wilson	411	...	...	8,525	C
Oregon College of Education, Monmouth, Oreg.	St	1856	R. Lieuallen	63	...	...	1,851	*C
Oregon State College, Corvallis, Oreg.	St	1868	A. L. Strand	645	8,089	1,266	9,677	C
Oregon Tech. Inst., Klamath Falls, Oreg.	St	1947	W. Purvine	92	1,180	...	1,180	C
Orlando Junior College, Orlando, Fla.	Pri	1941	M. S. Hale, Jr.	41	475	...	475	C
Osgoode Hall Law School, Toronto, Ont.	Pri	1872	H. A. Leal	22	412	460	876	C
Osteopathic Phys. & Surg., Coll. of, Los Angeles, Calif.	Pri	1896	W. Henley	128	...	363	363	C
Ottawa, University of, Ottawa, Ont.	RC	1848	H. Légaré	584	2,004	310	7,964	C
Ottawa University, Ottawa, Kans.	Bapt	1865	A. B. Martin	26	677	...	677	C
Otterbein College, Westerville, Ohio	EUB	1847	L. W. Turner	79	856	...	1,052	C
Ouachita Baptist College, Arkadelphia, Ark.	Bapt	1886	R. A. Phelps, Jr.	53	1,037	...	1,069	C
Our Lady of Cincinnati College, Cincinnati, Ohio	RC	1935	Sr. M. Grace	53	597	...	901	W
Our Lady of the Elms, College of, Chicopee, Mass.	RC	1928	Sr. R. Williams	29	479	16	495	W
Our Lady of the Lake College, San Antonio, Texas	RC	1896	J. McMahon	54	382	53	2,942	W
Ozarks, College of the, Clarksville, Ark.	Pres	1834	W. Drummond	24	260	...	280	C
Pace College, New York, N.Y.	Pri	1906	R. S. Pace	55[1]	762	285	4,148	C
Pacific, College of the, Stockton, Calif.	Meth	1851	R. E. Burns	130	1,689	105	2,231	C
Pacific Lutheran College, Tacoma, Wash.	Luth	1894	S. Eastvold	78	1,366	8	2,127	C
Pacific Union College, Angwin, Calif.	SDA	1882	R. W. Fowler	83	1,172	121	1,293	C
Pacific University, Forest Grove, Oreg.	Cong	1849	M. Ritchie	49	700	68	768	C
Paducah Junior College, Paducah, Ky.	Mun	1932	R. G. Matheson	9	710	...	710	C
Palm Beach Junior College, Lake Worth, Fla.	Co	1933	H. C. Manor	44	963	...	963	C
Palomar College, San Marcos, Calif.	Dst	1946	J. W. Dunn	46	600	...	2,200	*C
Pan American College, Edinburg, Texas	St-Dst	1927	R. P. Ward	75	2,761	...	2,761	C
Panhandle A. & M. College, Goodwell, Okla.	St	1909	M. E. McKee	49	1,288	...	1,288	C
Paris Junior College, Paris, Texas	Dst	1924	J. R. McLemore	28	634	...	694	C
Park College, Parkville, Mo.	Pres	1875	P. Morrill	38	323	...	329	C
Parsons College, Fairfield, Iowa	Pres	1875	M. G. Roberts	52	922	...	1,040	C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled	
Parsons School of Design, New York, N.Y.	Pri	1896	S. Callisen	25	677	11	708	C
Pasadena City College, Pasadena, Calif.	Dst	1924	C. J. Robbins	241	7,293	...	28,494	C
Pasadena College, Pasadena, Calif.	Naz	1902	R. V. De Long	48	989	30	1,019	C
Paul Quinn College, Waco, Texas	AME	1872	J. H. Adams	30	530	...	530	*C
Peabody Conservatory-College of Music, Baltimore, Md.	Pri	1868	P. Mennin	55	427	...	427	C
Pembroke State College, Pembroke, N.Car.	St	1887	W. J. Gale	25	451	...	451	C
Pennsylvania, University of, Philadelphia, Pa.	Pri	1740	G. Harnwell	3,000	5,371	3,433	17,572	C
Pennsylvania Military College, Chester, Pa.	Pri	1821	C. R. Moll	55	876	...	1,527	M
Pennsylvania State Tchrs. Coll., Bloomsburg, Pa.	St	1839	H. A. Andruss	70	1,472	...	1,472	C
Pennsylvania State Tchrs. Coll., California, Pa.	St	1852	M. Duda	76	1,745	...	1,905	C
Pennsylvania State Tchrs. Coll., Cheyney, Pa.	St	1837	J. H. Duckrey	38	1,216	...	1,302	C
Pennsylvania State Tchrs. Coll., Clarion, Pa.	St	1867	P. Chandler	52	1,100	...	1,100	C
Pennsylvania State Tchrs. Coll., East Stroudsburg, Pa.	St	1893	L. Koehler	72	1,214	...	1,772	C
Pennsylvania State Tchrs. Coll., Edinboro, Pa.	St	1861	T. R. Miller	62	1,140	190	1,750	C
Pennsylvania State Tchrs. Coll., Indiana, Pa.	St	1871	W. E. Prutt	137	3,477	220	4,062	C
Pennsylvania State Tchrs. Coll., Kutztown, Pa.	St	1866	I. de Francesco	73	1,830	...	2,027	C
Pennsylvania State Tchrs. Coll., Lock Haven, Pa.	St	1870	R. T. Parsons	53	969	...	1,071	C
Pennsylvania State Tchrs. Coll., Mansfield, Pa.	St	1857	L. Rathgeber	79	1,067	...	1,136	C
Pennsylvania State Tchrs. Coll., Millersville, Pa.	St	1855	D. Biemesderfer	93	1,535	...	1,535	C
Pennsylvania State Tchrs. Coll., Shippensburg, Pa.	St	1871	R. E. Heiges	65	1,164	...	1,260	C
Pennsylvania State Tchrs. Coll., Slippery Rock, Pa.	St	1889	N. Weisenfluh	79	1,704	...	1,738	C
Pennsylvania State Tchrs. Coll., West Chester, Pa.	St	1871	H. Frain	115	2,500	...	3,000	C
Pennsylvania State University, University Park, Pa.	St	1855	E. A. Walker	1,608	19,659	4,481	24,140	C
Pensacola Jr. College, Pensacola, Fla.	St	1948	H. L. Ashmore	71	1,390	...	3,711	C
Perkinson Jr. College, Perkinson, Miss.	St-Co	1911	J. Hayden, Jr.	31	536	...	536	C
Pestalozzi Froebel Tchrs. Coll., Chicago, Ill.	Pri	1896	H. H. Hegner	18	350	...	800	C
Pfeiffer College, Misenheimer, N.C.	Meth	1885	J. L. Stokes, II	59	869	...	875	C
Philadelphia Coll. of Osteopathy, Philadelphia, Pa.	Pri	1899	F. H. Barth	85	...	370	370	C
Philadelphia Coll. of Pharm. & Sc., Philadelphia, Pa.	Pri	1821	I. Griffith	55	650	16	715	C
Philadelphia Museum Coll. of Art, Philadelphia, Pa.	Pri	1876	E. M. Benson	115	820	...	820	C
Philadelphia Textile Institute, Philadelphia, Pa.	Pri	1884	B. W. Hayward	40	330	...	525	C
Philander Smith College, Little Rock, Ark.	Meth	1868	M. L. Harris	44	944	...	944	C
Phillips University, Enid, Okla.	DC	1907	E. S. Briggs	64	816	103	1,416	C
Phoenix College, Phoenix, Ariz.	Co	1920	R. J. Hanneily	92	1,643	...	6,909	C
Piedmont College, Demorest, Ga.	Cong	1897	J. E. Walter	16	300	...	300	†C
Pikeville College, Pikeville, Ky.	Pres	1889	A. A. Page	40	549	...	933	C
Pittsburgh, University of, Pittsburgh, Pa.	Pri	1787	E. Litchfield	738[1]	5,834	2,031	20,056	C
Plymouth Teachers College, Plymouth, N.H.	St	1871	H. E. Hyde	45	571	138	740	C
Pomona College, Claremont, Calif.	Pri	1887	E. W. Lyon	108	1,100	...	1,111	*C
Port Huron Jr. Coll., Port Huron, Mich.	Mun	1923	J. C. Browning	44	1,163	...	1,163	C
Portland, University of, Portland, Oreg.	RC	1901	H. J. Kenna	125	...	...	1,475	C
Portland State College, Portland, Oreg.	St	1955	B. P. Millar	207	4,230	...	4,476	C
Prairie View A. & M. Coll., Prairie View, Texas	St	1876	E. B. Evans	187	2,675	1,056	3,731	C
Pratt Institute, Brooklyn, N.Y.	Pri	1887	R. F. Oxnam	259	1,852	80	5,184	C
Presbyterian College, Clinton, S.C.	Pres	1880	M. W. Brown	35	614	...	614	C
Prince of Wales College, Charlottetown, P.E.I.	Prov	1860	F. MacKinnon	30	510	...	510	C
Princeton Theol. Seminary, Princeton, N.J.	Pres	1812	J. I. McCord	40	356	60	498	C
Princeton University, Princeton, N.J.	Pri	1746	R. F. Goheen	524	2,980	800	3,780	M
Principia College, Elsah, Ill.	Pri	1898	W. E. Morgan	48	519	...	519	C
Providence-Barrington Bible College, Providence, R.I.	Inter	1900	H. W. Ferrin	27	419	28	484	C
Providence College, Providence, R.I.	RC	1917	R. J. Slavin	125	2,015	154	2,766	*M
Provincial Inst. of Tech. & Art, Calgary, Alta.	Prov	1916	E. W. Wood	176	621	289	6,867	C
Pueblo College, Pueblo, Colo.	St-Co	1933	M. C. Knudson	70	1,009	...	2,926	C
Puerto Rico, Catholic Univ. of, Ponce, P.R.	RC	1948	J. E. McManus	141	1,708	...	4,321	C
Puerto Rico, University of, Río Piedras, P.R.	St	1903	J. Benítez	1,315	...	...	21,583	C
Puerto Rico Jr. Coll., Río Piedras, Puerto Rico	Pri	1949	A. Méndez	37	513	...	513	C
Puget Sound, College of, Tacoma, Wash.	Meth	1888	R. F. Thompson	102	1,501	28	3,423	C
Purdue University, Lafayette, Ind.	St	1869	F. L. Hovde	888	15,885	3,408	22,717	C
Queens College, Flushing, N.Y.	Mun	1937	H. W. Stoke	260	4,114	275	10,858	C
Queens College, Charlotte, N.C.	Pres	1857	E. R. Walker	41	453	...	869	W
Queen's University, Kingston, Ont.	Pri	1841	W. MacKintosh	186	3,266	142	3,408	C
Quincy College, Quincy, Ill.	RC	1860	J. Woods	48	767	...	1,239	C
Quinnipiac College, Hamden, Conn.	Pri	1929	N. G. Sahlin	43	603	...	1,150	C
RCA Institutes, Inc., New York, N.Y.	Pri	1909	G. F. Maedel	75	585	...	835	C
Radcliffe College, Cambridge, Mass.	Pri	1879	W. K. Jordan	...[9]	1,112	470	1,648	W
Radford College, Radford, Va.	St	1913	C. K. Martin, Jr.	68	1,720	97	1,817	C
Randolph-Macon College, Ashland, Va.	Meth	1830	J. Moreland	43	500	...	537	M
Randolph-Macon Woman's Coll., Lynchburg, Va.	Meth	1891	W. Quillian, Jr.	81	678	...	678	W
Ranger Jr. College, Ranger, Texas	St-Dst	1926	T. Nicksick, Jr.	11	...	...	414	*C
Redlands, University of, Redlands, Calif.	Bapt	1907	G. Armacost	89	1,192	49	2,354	C
Reed College, Portland, Oreg.	Pri	1909	R. H. Sullivan	74	628	2	698	C
Reedley College, Reedley, Calif.	Dst	1926	S. E. Epler	46	1,189	...	1,189	C
Regis College, Denver, Colo.	RC	1887	R. F. Ryan	39	1,048	...	1,048	M
Regis College, Weston, Mass.	RC	1927	Sr. M. Alice	54	665	...	665	W
Rensselaer Polytechnic Institute, Troy, N.Y.	Pri	1824	R. G. Folsom	396	3,002	467	4,447	M
Rhode Island, University of, Kingston, R.I.	St	1892	F. H. Horn	267	3,539	263	3,028	C
Rhode Island Coll. of Educ., Providence, R.I.	St	1854	W. C. Gaige	109	1,400	...	2,300	C
Rhode Island School of Design, Providence, R.I.	Pri	1877	J. R. Frasier	75	793	6	840	C
Rice Institute, Houston, Texas	Pri	1891	W. V. Houston	150	1,616	375	1,991	C
Richmond, University of, Richmond, Va.	Bapt	1830	G. M. Modlin	145	1,729	231	3,653	C
Ricks College, Rexburg, Idaho	LDS	1888	J. L. Clarke	61	1,248	...	1,413	C
Rider College, Trenton, N.J.	Pri	1865	F. F. Moore	88	1,707	...	2,562	C
Ripon College, Ripon, Wis.	Pri	1851	F. O. Pinkham	57	582	...	607	C
Riverside City College, Riverside, Calif.	St	1916	O. W. Noble	70	...	...	1,903	*C
Rivier College, Nashua, N.H.	RC	1933	Sr. Clarice	28	186	...	625	W
Roanoke College, Salem, Va.	Luth	1842	H. S. Oberly	36	685	...	914	C
Roberts Wesleyan College, North Chili, N.Y.	Meth	1866	E. A. Voller	33	409	...	409	C
Rochester, University of, Rochester, N.Y.	Pri	1850	C. de Kiewiet	639	3,760	1,022	9,526	C
Rochester Inst. of Technology, Rochester, N.Y.	Pri	1829	M. Ellingson	141	2,030	...	7,353	C
Rockford College, Rockford, Ill.	Pri	1847	L. H. Carlson	40	398	4	1,268	C
Rockhurst College, Kansas City, Mo.	RC	1910	M. Van Ackeren	64	761	...	2,108	M
Rollins College, Winter Park, Fla.	Pri	1885	H. F. McKean	71	683	...	1,600	C
Roosevelt University, Chicago, Ill.	Pri	1945	E. Sparling	233	3,500	500	7,200	C
Rosary College, River Forest, Ill.	RC	1901	Sr. M. Aurelia	67	646	37	1,211	W

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled
Rosary Hill Coll., Buffalo, N.Y.	RC	1947	Sr. M. Angela	35	471	...	540 W
Rose Polytechnic Inst., Terre Haute, Ind.	Pri	1874	R. A. Morgen	40	360	...	360 M
Rosemont College, Rosemont, Pa.	RC	1921	Moth. M. Aidan	54	513	...	513 W
Royal Military Coll. of Canada, Kingston, Ont.	Fed	1876	D. W. Piers	70	430	...	430 M
Russell Sage College, Troy, N.Y.	Pri	1916	L. A. Froman	50	860	...	880 W
Rust College, Holly Springs, Miss.	Meth	1866	E. A. Smith	19	371	...	494 C
Rutgers Univ., The State Univ., New Brunswick, N.J.	St	1766	M. W. Gross	1,071[1]	6,814	796	16,999 C
Sacramento City College, Sacramento, Calif.	Mun	1916	H. Stephenson	145	5,924	...	5,924 C
Sacramento State College, Sacramento, Calif.	St	1947	G. A. West	260	3,300	250	12,571 C
Sacre-Coeur, Universite du, Bathurst, N.B.	RC	1899	C. Aucoin	35	800	...	812 M
Sacred Heart Dominican Coll., Houston, Texas	RC	1945	Sr. M. Antoinette	42	175	...	430 W
St. Ambrose College, Davenport, Iowa	RC	1882	W. J. Collins	80	1,235	...	1,703 M
St. Anselm's College, Manchester, N.H.	RC	1889	G. McCarthy	63	676	...	907 M
St. Augustine's College, Raleigh, N.C.	Epis	1867	J. A. Boyer	35	560	...	560 C
St. Benedict, College of, St. Joseph, Minn.	Pri	1913	Sr. R. Westkaemper	46	600	...	600*W
St. Benedict's College, Atchison, Kans.	RC	1857	B. Downey	38	...	...	695 M
St. Bernard College, St. Bernard, Ala.	RC	1892	B. Luibel	40	750	...	750*C
St. Bernard's Sem. & College, Rochester, N.Y.	RC	1893	W. T. Craugh	21	196	113	309†M
St. Bernardine of Siena College, Loudonville, N.Y.	RC	1937	E. F. Christy	80	1,540	197	1,737 M
St. Bonaventure University, St. Bonaventure, N.Y.	RC	1856	B. Lhota	117	1,429	196	2,895 C
St. Catherine, College of, St. Paul, Minn.	RC	1905	Sr. M. W. Brady	91	1,114	...	1,114 W
St. Charles Seminary, Philadelphia, Pa.	RC	1832	J. Connery	32	370	171	541*M
St. Dunstan's University, Charlottetown, P.E.I.	RC	1855	J. A. Sullivan	27	295	...	410 C
St. Edward's University, Austin, Texas	RC	1885	Bro. R. Fleck	32	358	...	358 M
St. Elizabeth, College of, Convent Station, N.J.	RC	1899	Sr. H. Marie	55	883	...	883 W
St. Francis, College of, Joliet, Ill.	RC	1920	Sr. M. Elvira	42	900	...	900 W
St. Francis College, Brooklyn, N.Y.	RC	1858	Bro. Urban	40	516	...	886 M
St. Francis College, Loretto, Pa.	RC	1847	K. R. Keelan	49	1,047	...	1,047 C
St. Francis Major Seminary, Milwaukee, Wis.	RC	1856	F. M. Schneider	19	184	137	321†M
St. Francis Xavier University, Antigonish, N.S.	Pri	1853	H. J. Somers	78	1,335	38	1,762 C
St. Jerome's College, Kitchener, Ont.	RC	1864	C. Siegfried	11	185	...	185 C
St. John College, Cleveland, Ohio	RC	1928	R. B. Navin	44	528	117	1,722 W
St. John Fisher Coll., Rochester, N.Y.	RC	1951	C. J. Lavery	30	476	...	476 M
St. John's Seminary, Brighton, Mass.	RC	1884	M. P. Stapleton	28	...	...	480 M
St. John's University, Collegeville, Minn.	RC	1857	B. Dworschak	80	1,150	100	1,250*M
St. John's University, Brooklyn, N.Y.	RC	1870	J. A. Flynn	350	4,382	654	10,391 C
St. Joseph College, West Hartford, Conn.	RC	1932	Sr. M. Theodore	46	564	51	615 W
St. Joseph College, Emmitsburg, Md.	RC	1809	Sr. Hilda	69	818	...	818 W
St. Joseph Jr. Coll., St. Joseph, Mo.	Mun	1915	M. E. Gibbins	23	596	...	596 C
St. Joseph on the Rio Grande, Coll. of, Albuquerque, N.M.	RC	1940	Sr. M. V. Schuller	32	622	...	622 C
St. Joseph's College, Rensselaer, Ind.	RC	1889	R. H. Gross	65	1,217	...	1,217 M
St. Joseph's College, Philadelphia, Pa.	RC	1851	J. J. Bluett	86	1,310	21	3,114 M
St. Joseph's College for Women, Brooklyn, N.Y.	RC	1916	Sr. V. Thérèse	53	458	...	458 W
St. Joseph's University, Moncton, N.B.	RC	1864	C. Cormier	30	871	153	1,024 M
St. Lawrence University, Canton, N.Y.	Pri	1856	E. G. Bewkes	99	1,342	164	1,847 C
St. Louis Coll. of Phar. & Allied Sci., St. Louis, Mo.	Pri	1864	J. R. Thayer	25	390	10	400 C
St. Louis University, St. Louis, Mo.	RC	1818	P. C. Reinert	619	4,423	1,771	8,398†C
St. Martin's College, Olympia, Wash.	RC	1895	D. Curtis	30	315	...	350 M
St. Mary, College of, Omaha, Nebr.	RC	1923	Sr. M. Alice	25	597	...	597 W
St. Mary College, Xavier, Kans.	RC	1923	A. M. Murphy	54	539	175	714*W
St. Mary of the Lake Seminary, Mundelein, Ill.	RC	1921	M. P. Foley	...	...	392‡	... M
St. Mary of the Springs, Coll. of, Columbus, Ohio	RC	1911	Sr. M. Angelita	42	306	...	688 W
St. Mary-of-the-Woods Coll., St. Mary-of-the-Woods, Ind.	RC	1840	Sr. F. Joseph	51	513	...	1,280 W
St. Mary's College, St. Mary's, Calif.	RC	1863	Bro. S. Albert	53	736	12	748 M
St. Mary's College, Notre Dame, Ind.	RC	1843	Sr. M. Madeleva	106	1,330	90	1,542 W
St. Mary's College, Winona, Minn.	RC	1912	Bro. I. Basil	57	855	168	1,023 M
St. Mary's Dominican College, New Orleans, La.	RC	1910	Sr. M. Louise	31	366	...	366 W
St. Mary's Sem. and Univ., Baltimore, Md.	RC	1791	L. McDonald	33	212	380	592 M
St. Mary's University, Halifax, N.S.	RC	1802	C. J. Fischer	50	478	43	601 M
St. Mary's University, San Antonio, Texas	RC	1852	W. J. Buehler	95	1,372	111	2,552 M
St. Meinrad Seminary, St. Meinrad, Ind.	RC	1857	B. Knaebel	29	199	153	352 M
St. Michael's College, Santa Fe, N.Mex.	RC	1947	Bro. C. Luke	35	350	...	460 M
St. Michael's College, Winooski, Vt.	RC	1904	G. E. Dupont	56	775	...	775 M
St. Norbert College, West De Pere, Wis.	RC	1898	D. M. Burke	79	1,384	...	1,585 C
St. Olaf College, Northfield, Minn.	EL	1874	C. Granskou	124	1,871	...	1,961 C
St. Paul Seminary, St. Paul, Minn.	RC	1896	L. McCarthy	19	119	210	329 M
St. Paul's College, Lawrenceville, Va.	Epis	1888	E. McClenney	32	374	...	374 C
St. Peter's College, Jersey City, N.J.	RC	1872	J. Shanahan	116	1,697	...	1,898 M
St. Petersburg Jr. Coll., St. Petersburg, Fla.	Co	1927	M. M. Bennett	137	1,438	...	3,040 C
St. Rose, College of, Albany, N.Y.	RC	1920	Sr. C. Francis	66	640	1	1,067 W
St. Scholastica, College of, Duluth, Minn.	RC	1912	Sr. J. Baldeschwiler	45	357	...	370 W
St. Teresa, College of, Winona, Minn.	RC	1907	Sr. M. Bowe	72	1,263	...	1,263 W
St. Teresa, College of, Kansas City, Mo.	RC	1940	Sr. M. A. Noble	59	322	...	504 W
St. Thomas, College of, St. Paul, Minn.	RC	1885	J. P. Shannon	93	1,480	40	1,563 M
St. Thomas, Univ. of, Houston, Texas	RC	1947	J. F. Murphy	33	525	...	525 C
St. Vincent College, Latrobe, Pa.	RC	1846	Q. L. Schaut	81	849	124	973 M
St. Xavier College, Chicago, Ill.	RC	1846	Sr. M. Huberta	74	695	...	1,310 W
Salem College, Winston-Salem, N.C.	Mor	1772	D. H. Gramley	43	429	...	446 W
Salem College, Salem, W.Va.	SDB	1888	K. D. Hurley	30	...	...	637 C
Salmon P. Chase College, Cincinnati, Ohio	YMCA	1893	R. Hutchens	22	325	...	505 C
Salve Regina College, Newport, R.I.	RC	1934	Sr. M. Hilda	41	365	...	365 W
Sam Houston State Tchrs. Coll., Huntsville, Texas	St	1879	H. Lowman	160	4,158	...	5,036 C
San Angelo College, San Angelo, Texas	St-Co	1928	R. M. Cavness	53	1,230	...	1,230 C
San Antonio College, San Antonio, Texas	Dst	1925	W. P. Moody	145	...	...	10,032*C
San Bernardino Valley Coll., San Bernardino, Calif.	Dst	1926	H. J. Sheffield	112	2,400	...	14,000 C
San Diego College for Women, San Diego, Calif.	RC	1949	Moth. F. Danz	40	295	4	456 W
San Diego Junior College, San Diego, Calif.	Dst	1914	W. Thatcher	126[1]	3,088	...	11,455 C
San Diego State College, San Diego, Calif.	St	1897	M. A. Love	398	5,900	300	13,400 C
San Fernando Valley State Coll., Northridge, Calif.	St	1958	R. Prator	98	6,677	2,464	9,141 C
San Francisco, City Coll. of, San Francisco, Calif.	Mun	1935	L. G. Conlan	242	6,027	...	8,835 C
San Francisco, Univ. of, San Francisco, Calif.	RC	1855	J. Connolly	152	2,041	587	5,616 M
San Francisco College for Women, San Francisco, Calif.	RC	1930	Moth. C. Parks	39	415	58	590 W
San Francisco State College, San Francisco, Calif.	St	1899	G. S. Dumke	466	6,366	...	10,855 C
San Jose City Coll., San Jose, Calif.	Dst	1921	H. Buchser	132	2,919	...	2,919 C
San Jose State College, San Jose, Calif.	St	1857	J. Wahlquist	660	10,529	760	22,663 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled
San Mateo, College of, San Mateo, Calif.	Dst	1922	J. Bortolazzo	140	3,360	...	4,005 C
Santa Ana College, Santa Ana, Calif.	St-Dst	1915	J. E. Johnson	87	2,380	...	2,380 C
Santa Barbara City Coll., Santa Barbara, Calif.	Dst	1908	J. P. Cosand	34	381	...	662 C
Santa Clara, University of, Santa Clara, Calif.	RC	1851	P. A. Donohoe	138	1,078	235	1,635 M
Santa Monica City College, Santa Monica, Calif.	St	1929	W. F. Thomas	193	6,180	...	12,157 C
Santa Rosa Junior College, Santa Rosa, Calif.	Dst	1918	R. Newman	74	1,251	...	1,487 C
Sarah Lawrence College, Bronxville, N.Y.	Pri	1928	H. Taylor	59	402	6	416 W
Saskatchewan, University of, Saskatoon, Sask.	Prov	1907	J. Spinks	277	4,710	169	10,271 C
Savannah State College, Savannah, Ga.	St	1890	W. K. Payne	75	950	...	950 C
Scranton, University of, Scranton, Pa.	RC	1888	J. J. Long	71	1,926	110	2,036 M
Seattle Pacific College, Seattle, Wash.	Meth	1891	C. D. Demaray	52	1,417	576	1,993 C
Seattle University, Seattle, Wash.	RC	1891	A. A. Lemieux	140	2,341	71	3,936 C
Sequoias, College of the, Visalia, Calif.	Dst	1926	I. Crookshanks	71	1,216	...	2,869*C
Seton Hall University, South Orange, N.J.	RC	1856	J. Dougherty	400	4,400	102	13,183 C
Seton Hill College, Greensburg, Pa.	RC	1883	W. G. Ryan	70	533	...	1,510 W
Shasta College, Redding, Calif.	Dst	1950	G. A. Collyer	51	814	...	1,919 C
Shaw University, Raleigh, N.C.	Bapt	1865	W. Strassner	40	680	22	741 C
Shepherd College, Shepherdstown, W.Va.	St	1871	O. Ikenberry	44	757	...	899 C
Sherbrooke, Université de, Sherbrooke, Quebec	RC	1954	I. Pinard	96	1,426	...	2,169*C
Siena College, Memphis, Tenn.	Pri	1923	Sr. Clarita	21	348	...	348 W
Siena Heights College, Adrian, Mich.	RC	1919	Sr. B. Marie	32	526	...	793 W
Sierra Jr. College, Auburn, Calif.	St	1936	H. Weaver	40	684	...	684 C
Simmons College, Boston, Mass.	Pri	1899	W. E. Park	99	1,291	145	1,873 W
Simpson College, Indianola, Iowa	Meth	1860	W. Kerstetter	41	...	...	721 C
Sinclair College, Dayton, Ohio	YMCA	1887	C. C. Bussey	20	241	...	1,239 C
Sir George Williams College, Montreal, P.Q.	YMCA	1929	H. F. Hall	115	1,420	...	6,111 C
Skagit Valley College, Mount Vernon, Wash.	Dst	1926	G. A. Hodson	30	492	...	718 C
Skidmore College, Saratoga Springs, N.Y.	Pri	1911	V. H. Wilson	114	1,250	...	1,250*W
Smith College, Northampton, Mass.	Pri	1871	T. C. Mendenhall	225	2,256	166	2,517 W
South, University of the, Sewanee, Tenn.	Epis	1856	E. McCrady	41	585	81	766 M
South Carolina, University of, Columbia, S.C.	St	1801	R. L. Sumwalt	300	4,700	300	5,000 C
South Carolina State College, Orangeburg, S.C.	St	1896	B. C. Turner	107	1,209	180	1,389*C
South Dakota, State University of, Vermillion, S.Dak.	St	1882	I. D. Weeks	153	1,941	1,226	3,167 C
South Dakota School of Mines & Tech., Rapid City, S.Dak.	St	1885	F. L. Partlo	89	800	17	829*C
South Dakota State College, Brookings, S.Dak.	St	1881	H. M. Briggs	556	4,736	362	4,763 C
South Georgia College, Douglas, Ga.	St	1906	W. S. Smith	23	617	...	617 C
South Macomb Community Coll., Warren, Mich.	Dst	1954	W. Bradley	25	300	...	900 C
South Texas College, Houston, Texas	YMCA	1923	W. I. Dykes	20	500	204	1,120 C
Southeast Missouri State College, Cape Girardeau, Mo.	St	1873	M. F. Scully	120	2,900	99	2,999 C
Southeastern Bapt. Theol. Sem., Wake Forest, N.C.	Bapt	1951	S. Stealey	27	62	775	837 C
Southeastern Louisiana College, Hammond, La.	St	1925	L. H. Dyson	137	1,975	...	1,975 C
Southeastern State College, Durant, Okla.	St	1909	A. E. Shearer	70	1,443	255	2,372 C
Southeastern University, Washington, D.C.	YMCA	1879	L. J. Maas	55	996	175	1,171 C
Southern Baptist Theol. Seminary, Louisville, Ky.	Bapt	1859	D. K. McCall	41	...	1,179	1,179 C
Southern California, Univ. of, Los Angeles, Calif.	Pri	1880	N. H. Topping	800	6,209	2,649	21,511 C
Southern Connecticut St. Coll., New Haven, Conn.	St	1893	H. C. Buley	168	1,660	...	4,159 C
Southern Illinois University, Carbondale, Ill.	St	1869	D. W. Morris	650	8,565	557	13,792 C
Southern Methodist University, Dallas, Texas	Meth	1911	W. M. Tate	327	5,189	1,718	13,412 C
Southern Missionary College, Collegedale, Tenn.	SDA	1893	C. N. Rees	40	706	...	763 C
Southern Oregon College, Ashland, Oreg.	St	1926	E. Stevenson	80	1,679	276	1,955 C
Southern State College, Magnolia, Ark.	St	1909	I. E. Bruce	61	1,254	...	1,666 C
Southern State Teachers College, Springfield, S.Dak.	St	1897	W. W. Ludeman	38	600	...	600*C
Southern University, Baton Rouge, La.	St	1880	F. G. Clark	284	5,300	285	5,585 C
Southwest Missouri State Coll., Springfield, Mo.	St	1906	R. Ellis	130	5,300	...	5,300*C
Southwest Texas State Coll., San Marcos, Texas	St	1903	J. Flowers	111	2,355	351	2,706 C
Southwestern at Memphis, Memphis, Tenn.	Pres	1848	P. N. Rhodes	60	620	...	784 C
Southwestern Baptist Theol. Sem., Ft. Worth, Texas	Bapt	1908	R. E. Naylor	80	2,188	207	2,395 C
Southwestern Bible Institute, Waxahachie, Texas	AG	1929	M. E. Collins	24	568	...	568 C
Southwestern College, Winfield, Kans.	Meth	1885	C. O. Strohl	33	566	...	683 C
Southwestern Louisiana Inst., Lafayette, La.	St	1898	J. Fletcher	306	5,046	84	5,862 C
Southwestern State College, Weatherford, Okla.	St	1901	R. H. Burton	72	2,550	278	3,038 C
Southwestern University, Georgetown, Texas	Meth	1840	W. C. Finch	48	586	...	642 C
Spelman College, Atlanta, Ga.	Bapt	1881	A. E. Manley	39	446	...	513 W
Spring Hill College, Mobile, Ala.	RC	1830	A. C. Smith	83	1,500	12	1,512 C
Springfield College, Springfield, Mass.	Pri	1885	G. Olds	100	1,060	262	1,594 C
Springfield Junior College, Springfield, Ill.	RC	1929	Moth. M. Ketterer	24	350	...	655 C
Stanford University, Stanford, Calif.	Pri	1885	J. Sterling	635	5,445	4,033	10,370 C
Staten Island Community Coll., Staten Island, N.Y.	St-Mun	1955	W. A. Willig	37	319	...	744 C
Stephen F. Austin State Coll., Nacogdoches, Texas	St	1923	R. W. Steen	105	1,820	197	2,017 C
Stephens College, Columbia, Mo.	Pri	1833	S. A. Smith	175	...	...	1,563 W
Sterling College, Sterling, Kans.	Pres	1887	W. M. McCreery	25	525	...	643 C
Stetson University, DeLand, Fla.	Bapt	1883	J. O. Edmunds	112	1,406	270	1,728 C
Steubenville, College of, Steubenville, Ohio	RC	1946	J. Sullivan	26	325	...	721 C
Stevens Institute of Technology, Hoboken, N.J.	Pri	1870	J. H. Davis	120	909	40	1,980 M
Stillman College, Tuscaloosa, Ala.	Pres	1876	S. B. Hay	32	450	...	450 C
Stockton College, Stockton, Calif.	Dst	1935	B. W. Bradley	100	2,481	...	2,711 C
Stonehill College, North Easton, Mass.	RC	1948	R. H. Sullivan	35	519	...	519 C
Stout State College, Menomonie, Wis.	St	1893	V. Fryklund	92	2,701	351	3,055 C
Strayer Jr. College of Finance, Washington, D.C.	Pri	1904	E. G. Purvis	10	125	...	425 C
Suffolk University, Boston, Mass.	Pri	1906	R. J. Munce	63	1,102	86	1,715 C
Sul Ross State College, Alpine, Texas	St	1917	B. Wildenthal	52	1,135	129	1,575 C
Susquehanna University, Selinsgrove, Pa.	Luth	1858	G. W. Weber	40	600	...	600 C
Swarthmore College, Swarthmore, Pa.	Pri	1864	C. C. Smith	105	907	2	920 C
Sweet Briar College, Sweet Briar, Va.	Pri	1901	A. Pannell	61	533	...	533 W
Syracuse University, Syracuse, N.Y.	Pri	1870	W. P. Tolley	838	8,449	4,047	15,615 C
Talladega College, Talladega, Ala.	Cong	1867	A. D. Gray	31	339	...	352 C
Tampa, University of, Tampa, Fla.	Pri	1931	D. M. Delo	69	1,342	...	2,265 C
Tarkio College, Tarkio, Mo.	Pres	1883	C. Canfield	22	272	...	295 C
Tarleton State College, Stephenville, Texas	St	1899	E. J. Howell	70	1,300	...	1,300 C
Taylor University, Upland, Ind.	Pri	1846	M. Rediger	43	719	...	719 C
Temple University, Philadelphia, Pa.	Pri	1884	M. Gladfelter	875	7,577	3,775	27,806 C
Tennessee, University of, Knoxville, Tenn.	St	1794	A. D. Holt	1,133	9,523	4,497	15,515 C
Tennessee A. & I. State Univ., Nashville, Tenn.	St	1912	W. S. Davis	211	3,447	692	4,139 C
Tennessee Polytechnic Inst., Cookeville, Tenn.	St	1915	W. E. Derryberry	161	3,226	57	3,539 C
Tennessee Wesleyan College, Athens, Tenn.	Meth	1857	R. Mohney	31	588	...	778 C

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled
Texarkana College, Texarkana, Texas	Mun	1927	H. W. Stilwell	40	1,487	...	1,487 C
Texas, A. & M. College of, College Station, Texas	St	1876	E. Rudder	396	...	...	7,506 M
Texas, University of,[10] Austin, Texas	St	1881	L. Wilson	991	23,347	4,693	28,040 C
Texas Christian University, Fort Worth, Texas	DC	1873	M. E. Sadler	251	4,583	979	8,589 C
Texas College, Tyler, Texas	ME	1894	D. R. Glass	24	554	224	910 C
Texas College of Arts & Ind., Kingsville, Texas	St	1925	E. H. Poteet	140	3,566	734	4,300 C
Texas Lutheran College, Seguin, Texas	Luth	1891	M. C. Rieke	40	594	...	614 C
Texas Southern University, Houston, Texas	St	1947	S. M. Nebrit	151	2,766	209	5,837 C
Texas Southmost College, Brownsville, Texas	St	1926	C. J. Garland	25	1,064	...	1,064 C
Texas Technological College, Lubbock, Texas	St	1923	R. Goodwin	432	10,275	1,268	11,443 C
Texas Wesleyan College, Fort Worth, Texas	Meth	1891	L. Sone	65	1,065	125	2,290 C
Texas Western College, El Paso, Texas	St	1913	J. R. Smiley	192	...	...	5,407 C
Texas Woman's University, Denton, Texas	St	1903	J. A. Guinn	170	3,007	514	3,631 W
Thiel College, Greenville, Pa.	UL	1870	F. B. Irvin	50	764	...	785 C
Thornton Junior College, Harvey, Ill.	Dst	1927	J. D. Logsdon	38	706	...	706 C
Tift College, Forsyth, Ga.	Bapt	1849	C. T. Vinzant	30	467	...	607 W
Toledo, University of, Toledo, Ohio	Mun	1872	W. S. Carlson	207	3,250	31	7,120 C
Toronto, University of, Toronto, Ont.	Prov	1827	C. T. Bissell	1,652	10,529	1,541	14,402 C
Tougaloo Southern Christian Coll., Tougaloo, Miss.	Inter	1869	S. Kincheloe	28	542	...	542 C
Transylvania University, Lexington, Ky.	Pri	1780	I. E. Lunger	37	472	...	498 C
Trenton Jr. College, Trenton, N.J.	St-Mun	1890	H. J. Parcinski	24	364	...	787 C
Trevecca Nazarene College, Nashville, Tenn.	Naz	1901	A. B. Mackey	18	352	...	363 C
Trinity College, Hartford, Conn.	Pri	1823	A. C. Jacobs	104	1,428	546	1,559 M
Trinity College, Washington, D.C.	RC	1897	Sr. Margaret	62	670	...	670 W
Trinity University, San Antonio, Texas	UP	1869	J. W. Laurie	91	1,213	355	2,426 C
Tri-State College, Angola, Ind.	Pri	1884	P. T. Ford	80	1,780	...	1,780 C
Tufts University, Medford, Mass.	Pri	1852	N. Y. Wessell	369	2,443	979	4,161 C
Tulane University, New Orleans, La.	Pri	1834	R. C. Harris	950	3,208	1,422	9,784 C
Tulsa, University of, Tulsa, Okla.	Pres	1894	B. G. Henneke	277	4,302	470	4,932 C
Tusculum College, Greeneville, Tenn.	UP	1794	R. C. Rankin	19	358	...	358 C
Tuskegee Institute, Tuskegee Institute, Ala.	Pri	1881	L. H. Foster, Jr.	223	5,084	1,233	6,317 C
Tyler Junior College, Tyler, Texas	Dst	1926	H. E. Jenkins	48	1,958	...	1,958*C
Union College, Barbourville, Ky.	Meth	1879	M. A. Miller	35	988	...	988 C
Union College, Lincoln, Nebr.	SDA	1891	D. J. Bieber	52	961	...	961 C
Union College and University, Schenectady, N.Y.	Pri	1795	C. Davidson	273	1,113	870	2,662*C
Union Junior College, Cranford, N.J.	Pri	1933	K. C. MacKay	32	314	...	728 C
Union Theol. Seminary, New York, N.Y.	Pri	1836	H. Van Dusen	54	...	533	1,402 C
Union Theological Seminary, Richmond, Va.	Pres	1812	J. A. Jones, Jr.	18	235	46	281 C
Union University, Jackson, Tenn.	Bapt	1825	W. F. Jones	37	761	...	886 C
United College, Winnipeg, Man.	UCCa	1871	W. C. Lockhart	53	763	23	1,448 C
U.S. Air Force Academy, Denver, Colo.	Fed	1954	W. S. Stone	372	1,500	...	1,500 M
U.S. Army Lang. School, Presidio of Monterey, Calif.	Fed	1941	J. L. Collins, Jr.	435	2,000	...	2,000*C
U.S. Coast Guard Academy, New London, Conn.	Fed	1876	F. A. Leamy	76	600	...	600*M
U.S. Dept. of Agric. Grad. School, Washington, D.C.	Fed	1921	J. B. Holden	...[11]	...	...	5,455*C
U.S. Merchant Marine Acad., Kings Point, N.Y.	Fed	1938	G. McLintock	77	1,000	...	1,000 M
U.S. Military Academy, West Point, N.Y.	Fed	1802	G. H. Davidson	375	2,528	...	2,528 M
U.S. Naval Academy, Annapolis, Md.	Fed	1845	C. L. Melson	472	3,722	...	3,722*M
U.S. Naval Postgrad. School, Monterey, Calif.	Fed	1909	E. E. Yeomans	130	538	620	1,158 C
Upper Iowa University, Fayette, Iowa	Pri	1857	E. E. Garbee	35	972	...	972 C
Upsala College, East Orange, N.J.	Luth	1893	E. B. Lawson	107	...	...	2,264 C
Ursinus College, Collegeville, Pa.	UCC	1869	D. L. Helfferich	61	844	...	1,169 C
Ursuline College, Louisville, Ky.	Pri	1938	Moth. M. Cosma	31	267	...	704 W
Utah, University of, Salt Lake City, Utah	St	1850	A. R. Olpin	627	14,241	2,734	16,975 C
Utah State University, Logan, Utah	St	1888	D. Chase	233	5,131	324	6,441 C
Valdosta State College, Valdosta, Ga.	St	1906	J. Thaxton	41	722	...	1,284 C
Vallejo Junior College, Vallejo, Calif.	Dst	1945	C. A. McDonald	36	1,080	...	1,080 C
Valparaiso University, Valparaiso, Ind.	Luth	1859	O. Kretzmann	170	2,514	...	3,342 C
Vanderbilt University, Nashville, Tenn.	Pri	1872	H. Branscomb	515	2,843	1,172	4,038 C
Vassar College, Poughkeepsie, N.Y.	Pri	1861	S. G. Blanding	177	1,383	7	1,390 W
Ventura College, Ventura, Calif.	Dst	1929	P. H. Putnam	134	1,650	...	6,650 C
Vermont, University of, Burlington, Vt.	St	1791	J. T. Fey	320	3,129	298	3,460 C
Victoria College, Victoria, B.C.	Prov	1902	W. H. Hickman	46	...	...	1,617 C
Victoria College, Victoria, Texas	Co	1925	J. D. Moore	40	764	...	1,226 C
Victoria University, Toronto, Ont.	UCCa	1836	A. B. Moore	48	1,475	...	1,525 C
Villa Madonna College, Covington, Ky.	RC	1921	J. F. Murphy	44	468	...	1,032 C
Villa Maria College, Erie, Pa.	RC	1925	Moth. M. Aurelia	40	610	...	610 W
Villanova University, Villanova, Pa.	RC	1842	J. Klekotka	266	3,884	219	6,248*M
Vincennes University, Vincennes, Ind.	St-Co	1806	I. K. Beckes	20	520	...	520 C
Virginia, Medical College of, Richmond, Va.	St	1838	R. B. Smith, Jr.	170	...	...	1,332 C
Virginia, University of, Charlottesville, Va.	St	1819	E. F. Shannon, Jr.	726	3,835	2,026	6,160 M
Virginia Military Institute, Lexington, Va.	St	1839	W. H. Milton, Jr.	82	1,034	...	1,034 M
Virginia Polytechnic Institute, Blacksburg, Va.	St	1872	W. S. Newman	331	5,819	408	7,945 C
Virginia State College, Petersburg, Va.	St	1882	R. P. Daniel	234	2,372	285	3,797 C
Virginia Union University, Richmond, Va.	Bapt	1865	S. D. Proctor	62	967	35	1,116 C
Viterbo College, La Crosse, Wis.	RC	1931	Sr. M. Francesca	23	600	...	678 W
Wabash College, Crawfordsville, Ind.	Pri	1832	B. K. Trippet	54	...	...	655 M
Wagner College, Staten Island, N.Y.	Luth	1883	R. H. Heindel	88	1,153	7	1,697 C
Wake Forest College, Winston-Salem, N.C.	Bapt	1834	H. W. Tribble	240	1,975	366	2,659 C
Walla Walla College, College Place, Wash.	SDA	1892	P. Christian	59	1,162	35	1,431 C
Wartburg College, Waverly, Iowa	AL	1852	C. H. Becker	56	1,195	...	1,195 C
Washburn University, Topeka, Kans.	Mun	1865	B. S. Stoffer	149	1,700	175	3,611 C
Washington, University of, Seattle, Wash.	St	1861	C. E. Odegaard	998	15,524	5,667	21,191 C
Washington and Jefferson College, Washington, Pa.	Pri	1781	B. Patterson	61	780	...	910*M
Washington and Lee University, Lexington, Va.	Pri	1749	F. C. Cole	95	1,119	...	1,119 M
Washington College, Chestertown, Md.	St-Pri	1782	D. Z. Gibson	40	431	...	431 C
Washington Missionary Coll., Takoma Park, D.C.	SDA	1904	C. B. Hirsch	44	720	...	976 C
Washington State University, Pullman, Wash.	St	1890	C. C. French	366	6,203	1,085	7,288 C
Washington University, St. Louis, Mo.	Pri	1853	E. A. Shepley	634[1]	3,292	2,594	17,818 C
Wayland Baptist College, Plainview, Texas	Bapt	1909	A. H. Owen	33	...	...	685 C
Wayne State University, Detroit, Mich.	St	1868	C. B. Hilberry	867	8,321	1,478	27,956 C
Waynesburg College, Waynesburg, Pa.	UP	1849	P. R. Stewart	40	929	...	955 C
Weber College, Ogden, Utah	St	1889	W. P. Miller	98	2,373	...	5,833 C
Webster College, Webster Groves, Mo.	RC	1915	Sr. M. F. Barberis	35	435	...	1,006 W

Institution and location	Control or affiliation	Year founded	Chief executive	Full-time faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total Students Enrolled	
Wellesley College, Wellesley, Mass.	Pri	1870	M. Clapp	170	1,691	16	1,712	W
Wells College, Aurora, N.Y.	Pri	1868	L. J. Long	48	382	1	383	W
Wentworth Institute, Boston, Mass.	Pri	1904	H. R. Beatty	102	1,405	...	2,654	M
Wesleyan College, Macon, Ga.	Meth	1836	B. J. Martin	59	441	1	490	W
Wesleyan University, Middletown, Conn.	Pri	1831	V. Butterfield	116	773	76	1,175	M
West Georgia Coll., Carrolton, Ga.	St	1933	I. S. Ingram	37	841	...	841	C
West Liberty State College, West Liberty, W.Va.	St	1837	P. N. Elbin	50	1,918	...	1,918	C
West Texas State College, Canyon, Texas	St	1910	J. P. Cornette	118	4,625	1,597	6,222	C
West Virginia Inst. of Tech., Montgomery, W.Va.	St	1895	W. B. Axtell	58	1,020	...	1,113	C
West Virginia State College, Institute, W.Va.	St	1891	W. Wallace	92	1,587	...	2,751	C
West Virginia University, Morgantown, W.Va.	St	1867	E. J. Stahr, Jr.	479	5,670	1,260	8,283	C
West Virginia Wesleyan College, Buckhannon, W.Va.	Meth	1890	S. H. Martin	42	1,159	...	1,210	C
Westchester Community College,[3] Valhalla, N.Y.	Co	1946	P. C. Martin	63	694	...	2,152	C
Western Carolina Coll., Cullowhee, N.C.	St	1889	P. A. Reid	68	1,893	313	2,530	C
Western Illinois University, Macomb, Ill.	St	1899	A. L. Knoblauch	189	2,634	410	3,541	C
Western Kentucky State Coll., Bowling Green, Ky.	St	1906	E. K. Thompson	124	2,337	209	4,106	C
Western Maryland College, Westminster, Md.	Pri	1868	L. S. Ensor	60	705	155	1,330	C
Western Michigan University, Kalamazoo, Mich.	St	1903	P. V. Sangren	425	6,171	571	7,304	C
Western Montana College of Education, Dillon, Mont.	St	1897	J. E. Short	26	346	11	357	C
Western New England Coll., Springfield, Mass.	Pri	1919	B. A. Herman	108	1,230	225	1,455	C
Western Ontario, University of, London, Ont.	Prov	1878	G. E. Hall	282[1]	3,512	283	5,763	C
Western Reserve University, Cleveland, Ohio	Pri	1826	J. S. Millis	528[1]	1,300	1,670	10,515	C
Western State College of Colo., Gunnison, Colo.	St	1911	P. P. Mickelson	73	1,743	822	2,565	C
Western Wash. Coll. of Educ., Bellingham, Wash.	St	1899	J. Jarrett	139	3,585	920	4,505	C
Westmar College, Le Mars, Iowa	EUB	1890	H. Kalas	41	814	...	819	C
Westminster Choir College, Princeton, N.J.	Pri	1926	W. McCalmont	44	187	36	253	C
Westminster College, Fulton, Mo.	Pres	1851	R. Davidson	40	504	...	504	M
Westminster College, New Wilmington, Pa.	UP	1852	W. W. Orr	75	948	9	1,814	C
Westminster College, Salt Lake City, Utah	Inter	1875	F. E. Duddy	32	419	...	449	C
Westmont College, Santa Barbara, Calif.	Inter	1940	R. Voskuyl	28	444	...	471	C
Wharton County Junior College, Wharton, Texas	Co	1946	J. M. Hodges	36	812	...	1,125	C
Wheaton College, Wheaton, Ill.	Pri	1860	V. R. Edman	132	1,600	75	1,899	C
Wheaton College, Norton, Mass.	Pri	1834	A. H. Meneely	65	692	...	692	W
Wheeling College, Wheeling, W.Va.	RC	1954	W. F. Troy	21	376	...	376	C
Wheelock College, Boston, Mass.	Pri	1888	F. Mayfarth	28	388	8	400	W
Whitman College, Walla Walla, Wash.	Pri	1859	L. B. Perry	47	847	...	860	C
Whittier College, Whittier, Calif.	Pri	1901	P. S. Smith	66	1,163	82	2,633	C
Whitworth College, Spokane, Wash.	Pres	1890	F. F. Warren	52	881	6	1,722	C
Wichita, University of, Wichita, Kans.	Mun	1895	H. F. Corbin	175	7,764	760	8,524	C
Wiley College, Marshall, Texas	Meth	1873	T. W. Cole, Sr.	31	1,029	...	1,029	C
Wilkes College, Wilkes-Barre, Pa.	Pri	1933	E. S. Farley	96	1,600	...	1,600	C
Willamette University, Salem, Oreg.	Meth	1842	G. H. Smith	80	962	139	1,165	C
William and Mary, College of, Williamsburg, Va.	St	1693	A. D. Chandler	137	1,971	77	3,418	C
William Carey College, Hattiesburg, Miss.	Bapt	1906	J. R. Noonkester	25	350	...	460	C
William Jewell College, Liberty, Mo.	Bapt	1849	W. P. Binns	52	982	...	1,050	C
William Mitchell Coll. of Law, St. Paul, Minn.	Pri	1900	S. R. Curtis	[5][2]	...	430	430	C
Williams College, Williamstown, Mass.	Pri	1793	J. P. Baxter, 3rd	138	1,107	27	1,134	M
Willimantic State Coll., Willimantic, Conn.	St	1839	J. E. Smith	50	325	...	686	C
Wilmington College, Wilmington, N.C.	St-Co	1947	W. M. Randall	29	438	...	438	C
Wilmington College, Wilmington, Ohio	Fr	1870	W. B. Morgan	41	955	...	1,027	C
Wilson College, Chambersburg, Pa.	Pri	1869	P. S. Havens	48	496	...	498	W
Wingate College, Wingate, N.C.	Bapt	1896	B. E. Smith	38	883	...	883	C
Winston-Salem Tchrs. Coll., Winston-Salem, N.C.	St	1892	F. L. Atkins	54	923	...	923	C
Winthrop College, Rock Hill, S.C.	St	1886	H. R. Sims	108	1,218	2	1,790	W
Wisconsin, University of, Madison,[13] Wis.	St	1848	C. A. Elvehjem	3,025	24,239	7,588	34,800	C
Wisconsin State College, Eau Claire, Wis.	St	1916	L. C. Haas	107	2,480	...	2,840	C
Wisconsin State College, LaCrosse, Wis.	St	1909	R. Mitchell	116	1,774	...	1,774	C
Wisconsin State College, Oshkosh, Wis.	St	1871	R. E. Guiles	103	3,152	...	3,152	C
Wisconsin State College, River Falls, Wis.	St	1874	E. Klainpell	86	1,726	39	1,992	C
Wisconsin State College, Stevens Point, Wis.	St	1894	W. C. Hansen	90	2,471	...	3,132	C
Wisconsin State Coll., Superior, Wis.	St	1896	J. D. Hill	87	1,790	186	1,976	C
Wisconsin State College, Whitewater, Wis.	St	1868	R. Williams	99	1,455	...	1,455	C
Wisconsin St. Coll. & Inst. of Tech., Platteville, Wis.	St	1866	B. Ullsvik	105	2,113	...	2,113	C
Wittenberg University, Springfield, Ohio	UL	1845	C. Stoughton	107	1,872	250	3,736	C
Wofford College, Spartanburg, S.C.	Meth	1854	C. F. Marsh	43	1,165	...	1,165	M
Wooster, College of, Wooster, Ohio	Pres	1866	H. F. Lowry	103	1,226	12	1,256	C
Worcester Junior College, Worcester, Mass.	YMCA	1938	H. Bentley	38	787	...	2,075	C
Worcester Polytechnic Institute, Worcester, Mass.	Pri	1865	A. Bronwell	112	1,091	22	1,221	M
Wyoming, University of, Laramie, Wyo.	St	1887	G. Humphrey	293	3,331	330	3,925	C
Xavier University, New Orleans, La.	RC	1925	Sr. M. Josephina	86	1,018	55	1,073	C
Xavier University, Cincinnati, Ohio	RC	1831	P. O'Connor	239	3,804	1,452	5,256	M
Yakima Valley Junior College, Yakima, Wash.	Dst	1928	R. P. Bailey	42	1,005	...	3,220	C
Yale University, New Haven, Conn.	Pri	1701	A. Griswold	956[1]	3,877	3,403	7,773	M
Yeshiva University, New York, N.Y.	Jew	1886	S. Belkin	855	1,158	722	3,465	*C
York Junior College, York, Pa.	Pri	1873	R. A. Miller	24	315	...	473	C
Young Harris College, Young Harris, Ga.	Meth	1886	C. R. Clegg	28	675	...	675	C
Youngstown University, Youngstown, Ohio	Pri	1908	H. W. Jones	221	3,127	...	6,044	C
Yuba College, Marysville, Calif.	Dst	1927	J. J. Collins	55	1,063	...	3,253	C

(COLOMBIA—*Continued from page 159*)
eral) was inaugurated Aug. 7, 1958, for a 4-year term under this system. In spite of the majority position of the Liberal Party, half of the 148 seats in the Chamber of Deputies (2-year term) and of the 80 in the Senate (4-year term) are held by various factions of the Conservative Party. For the first time, the 1958 election allowed women to vote and to run for office, resulting in the election of 1 female senator and 8 deputies. The Supreme Court has 16 members, divided into 3 chambers (general, civil, and criminal); it has the express power of "judicial review." A career Civil Service program was initiated in 1959.

Religion and Education.—A concordat with the Vatican grants a privileged position to the Roman Catholic Church. Crisanto Cardinal Luque, Colombia's first cardinal, died on May 7, 1959; he had at first supported the dictatorship of Lt. Gen. Gustavo Rojas Pinilla but was instrumental in the general's ouster in 1957. The church's Faith and Morals Commission in 1959 adopted a program to promote observance of the constitutional guarantee of religious freedom (other forms must not be "contrary to Christian morals or to the law"), but stonings and other acts of intolerance by laymen and, occasionally, by priests continued in rural areas where police refuse to take action in defense of Protestants.

In 1956, kindergartens had 45,234 in attendance; primary schools (free but not compulsory) and secondary schools had 1,418,552; there were 28 separate institutions of higher learning (13,284 students) besides many technical and special schools. Literacy extends to some 63% of a population which now is increasing more rapidly than are facilities for schooling.

Finance.—Gold and foreign exchange reserves recovered to $210 million by August 1959 (from a low of $109 million reached in mid-1958), in addition to which all but $116.5 million of the country's commercial arrears of $498 million (left by the Rojas Pinilla regime) had been paid off. Nonetheless, about one quarter (some $125 million) of Colombia's 1959 foreign exchange earnings had to go for foreign debt service. The money supply (962 million pesos in 1950) had risen to 3,263 million pesos by the end of 1958, and to 3,503 million by June 1959. The peso regained strength, exchanging freely at 7.84 to the U.S. dollar in August 1959 (December 1958, 8.23); the principal official rate, established in May 1959, was 6.40 pesos to the dollar. The cost-of-living index (1953 = 100) stood at 162 by July 1959 (end of 1958, 155).

The 1959 budget (resulting in a deficit of over 60 million pesos) totaled 1.5 billion pesos, 8% more than the previous year's. Public works received nearly 25% (a major increase over 1958's 19%); armed forces and police, 20%; Ministry of Education, 10%; public debt, 15%. The proposed 1960 budget programed 1.66 billion pesos with a substantial increase for maintenance of public order.

Transportation and Communications.—Rail routes, mostly 3-foot gauge, cover a total of 1,893 miles; freight traffic increased but slightly in 1958, to 705.6 million ton-kilometers. Colombia's international ocean traffic showed 4.7 million metric tons of goods loaded in 1958 (up slightly from 1957, but down from 4.85 million in 1956). Goods unloaded in 1958 totaled 1.02 million tons (1957, 1.35 million; 1956, 1.61 million). The Grancolombiana fleet operates (jointly with Ecuador) 27 ships with a total capacity of 130,000 tons. The airlines, principally government-controlled AVIANCA, carried 631.8 million passenger-km. and 51.7 million ton-km. of cargo in 1958. There are 16,577 miles of vehicular roads in operation, including the Colombian portion of the Simón Bolívar Highway from Guayaquil, Ecuador, to Caracas, Venezuela.

Agriculture.—Colombia is progressing agriculturally in spite of severe mountain barriers and limited tillable land area. Agricultural products provide 40% of the national income; industry is being expanded, but not at the expense of agriculture. Coffee is the basis of the Colombian economy. The 1958–59 crop, although affected by drought, amounted to 7.3 million bags (of 132 pounds each), 6.7 million of which were available for export (1957–58 crop, 7.0 million bags). The 1959–60 output is estimated at 7.8 million bags. The removal of marginal plantations from coffee production and the cultivation of other crops are being encouraged by means of high price supports and special credits to farmers (90 million pesos were released by the Central Bank in 1959).

The farm outlook is generally bright. Colombia now produces nearly 95% of her food needs; foodstuffs still amount to 15% of the total import bill. Since 1951, output of domestic cooking oils has increased 175%; in 10 years the rice harvest has more than doubled, allowing exportation to Canada and Venezuela (1959 crop estimate, 400,000 tons, worth $40 million). In 1959 the barley harvest (estimated at 105,000 tons) was expected to surpass that of 1958 by 40%; wheat production was running 28% above 1958. Production of sugar for 1959 totaled 280,000 metric tons, 11% above the 1958 figure; the cotton crop (an estimated 135,000 bales of 500 pounds each) was expected to exceed the 1958 yield by 40% but remained some 40,000 bales short of the rising domestic requirements. Bananas yielded an estimated 30 million stems (28 million in 1958).

Industry.—Industrial activity, slowed by the crisis period of readjustment after the fall of the dictatorship, showed modest gains during the final months of 1958 and in 1959. The new petrochemical industry is an example of the basic optimism of Colombia's long-run economic position (under construction or planned are polyvinyl chloride, synthetic resins, plastics, and lampblack plants). Petroleum production in the first half of 1959 was 3.6 million metric tons, running more than 10% ahead of 1958; production in 1958 totaled 6.5 million tons. In 1959 Cities Service struck oil in the El Carare area, and Shell Oil, in western Antioquía. Gold production of 371,714 troy ounces brought $13 million in 1958 (325,113 troy ounces worth $11.4 million were produced in 1957). Cement produced in 1958 totaled 1.2 million tons, slightly less than the 1957 figure. Electrical energy output came to 1.5 billion kilowatt-hours for 1958 (1957, 1.4 billion). Paz del Río, Colombia's iron and steel center employing 7,000, saved the country $37 million in imports in 1958; the country's 32 cotton mills produced more than 1 million yards of cloth daily in 1958.

Foreign Trade.—Again the restriction and close policing of imports brought Colombia a favorable balance of payments in 1958. Exports totaled $460.7 million (down from $511.1 million in 1957), and imports were valued at about $400 million. Although volume went up 13%, coffee receipts brought $354.8 million ($390.1 in 1957) because the New York price fell during the year from approximately 57 cents to 46 cents per pound for Manizales, Colombia's mild type (August 1959 price, 45.1 cents; low in June 1959, 44.3 cents; 1954 price, 80 cents). Petroleum receipts were $64.4 million ($72.4 in 1957).

In 1959, import authorizations threatened to get out of hand; so on July 10 the administration increased the import deposit from 100% to 130% and extended from 60 to 90 days the time the deposit must remain after clearance through customs of the imported merchandise. In May a new tariff was put into effect. Essential goods, such as motor vehicles and parts and certain hydrocarbon fuels, have lower duties; some 700 new items became dutiable; the duty on items available from national production (including many agricultural products) was increased; and the duty was removed from machinery, rubber, and fertilizers. Since 1957 all exports have been subject to a 2% export tax except coffee, bananas, raw hides, and precious metals, which pay 15%.

In exchange for coffee, Colombia will take ships, chemicals, machinery, tractors, and other industrial products from Israel, Rumania, the USSR, England, Spain, Sweden, and Denmark, with which barter agreements were concluded in 1959 in a drive to create new markets. Coffee exports during the first half of 1959 (2.9 million bags) brought $164 million, 18% in excess of the first half of 1958, but volume was up 29%.

Principal Events, 1959.—A special session of Congress, convened in January, conducted the "delayed impeachment" of ex-president Rojas Pinilla. The Senate sat as jury to hear charges that Rojas had violated the constitution, abused his authority, and acquired great wealth improperly. Rojas and his attorney protested the illegality of the proceedings but went on to implicate others in wrongdoing, particularly the Conservative Party leader and ex-president, Laureano Gómez. On March 18 the trial was concluded; Rojas was found guilty on two charges by votes of 62 to 4 and 65 to 1, and on April 2 he was deprived of all honors, titles, political rights, and the pension given former presidents. He was then turned over to the Supreme Court for actual criminal prosecution.

On January 12 the state of siege was lifted except for Caldas, Cauca, Huila, Tolima and Valle del Cauca departments where considerable banditry and terrorism persisted. By midyear, incidents were again occurring at an alarming rate. During the second half of 1959, drastic measures were

instituted to curb the violence that had plagued the country since the bitter guerrilla warfare began in the rural regions in 1949; 359 convictions were secured for the month of July in Valle del Cauca Department alone. Nevertheless, 50 lives were lost during violence in August. Urban dwellers were roused from complacency by raids in cities and by a "Crusade for Peace" speech by the new archbishop, Msgr. Luis Concha Córdoba. A new island prison, Gorgona (surrounded by shark-infested waters), was made ready to receive hundreds of prisoners from the general crackdown.

The high cost of living, aggravated by government authorizations for increases in the prices of gasoline, meat, bus fares, and utilities, contributed to a general discontent, especially on the part of labor groups. In the face of riots and agitation the government returned bus fares to 15 centavos (2 cents) and took other steps regarded by the business community as dangerous appeasement.

A flourishing contraband trade has grown up with Colombia's neighbors. With Ecuador, wheat and cacao are exchanged for manufactured goods; oil-rich Venezuelans pay as much as $150 per head (twice the domestic price) for Colombian cattle. Border towns do a booming business with Venezuelan "tourists" looking for coffee, clothing, and manufactured items. Contraband coffee involves some 300,000 bags annually.

On September 24, Colombia signed the International Coffee Agreement at Washington, D.C., accepting a quota of 5.9 million bags, 10% under the export figure for the best year (1953) in the last ten.

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COLOMBO PLAN. See COMMONWEALTH OF NATIONS.

COLORADO. Western state, United States; admitted to the Union, Aug. 1, 1876. The "Centennial State" ranks 8th in area and, in 1958, 33d in population among the 50 states.

Area and Population.—Area: 104,247 square miles (land, 103,922; inland water, 325), divided into 63 counties. Population: (1950) 1,325,089; (est., July 1, 1959) 1,775,625. Places with 1950 populations above 10,000:

Aurora	11,421	Fort Collins	14,937
Boulder	19,999	Grand Junction	14,504
Colorado Springs	45,472	Greeley	20,354
Denver (*capital*)	535,000[1]	Pueblo	63,685
Englewood	16,869	Trinidad	12,204

[1] 1959 est. by Colorado State Planning Division.

Executive.—Chief state officers in 1959:
Governor: Stephen L. R. McNichols (Democrat)
Lieutenant Governor: Robert L. Knous
Secretary of State: George J. Baker
Treasurer: Tim Armstrong
Auditor: Homer F. Bedford
Attorney General: Duke W. Dunbar
Commissioner of Education: H. Grant Vest (resigned effective Nov. 15, 1959; succeeded by John Swenson)

Constitution and Judiciary.—The present constitution went into effect in 1876. The Supreme Court comprises 7 justices; chief justice in 1959 was Francis J. Knauss.

Legislature.—The General Assembly (Senate, 35 members; House of Representatives, 65) meets annually commencing the first Wednesday after the first Tuesday in January—for regular sessions in odd-numbered years and for budget sessions in even-numbered years.

The 1959 regular session (January 7–April 21) approved a General Fund appropriation of $71.1 million for the 1959–60 fiscal year and raised basic school support to $25.2 million, including a $1.2 million increase for institutions of higher learning to be used primarily for salary increases. Principal concern, however, lay in changes in the tax structure to meet not only higher general expenditures but to finance a capital construction budget which would be placed under the jurisdiction of a newly formed Joint Budget Committee. Major revisions included an increase from 1% to 3% in the minimum personal income tax bracket and a slight drop from 10% to 9% in the maximum bracket; an increase from 4% to 6% in the withholding rate on lower and middle incomes; and an increase in corporation income taxes by the discontinuance of allowances for federal payments. Liquor taxes were raised; commercial lodgings were taxed; and insurance premium taxes went up to 2¼% on out-of-state firms and 1% on those doing more than one half of their business within the state.

Other legislation created a Department of Rehabilitation; approved the Western Interstate Corrections Compact; and authorized the director of state institutions to select and propose 7 sites for homes for the aged and the state to participate in the 1961 White House Conference on the Aging. Discrimination in the sale or lease of housing because of race, color, creed, or sex, except by individual homeowners or their agents, was prohibited. A point system was established for traffic violators; cities and towns were permitted to build and operate public parking facilities with general taxes or revenue bonds; and the distribution of highway user funds was revised to increase the share received by Colorado cities. In addition, the commissioner of mines was made director of a newly activated Department of Natural Resources; regulations were adopted for the registration and handling of small boats; bingo and raffles were regulated; and businesses issuing checks, drafts, and money orders were required to be bonded and licensed by the bank commissioner.

Finance.—State revenue of $386,744,512.13 for the 1958–59 fiscal year comprised $174,106,116.41 from state tax sources, $96,241,542.64 from the federal government, and $116,396,853.08 from all other sources. Of the tax revenue, $44,390,469.55 was derived from a 2% general sales tax, $49,288,310.64 from individual and corporate income taxes, $39,373,852.65 from motor fuel taxes, $13,623,004.29 from licensing, and the remainder from all other state tax sources. Expenditures of $384,567,760.86 included $61,190,912.73 for education, $141,165,158.97 for health, welfare, and safety, and $90,626,240.58 for highways.

Banking.—On June 30, 1959, Colorado's 84 state banks had assets of $577,514,473.94, demand deposits of $269,397,643.92, and time deposits of $158,972,652.07. The 73 national banks had (Jan. 1, 1959) deposits of $1,866,263,243. There were also (June 30, 1959) 35 state-chartered savings and loan associations with assets of $298,174,546 and 21 that were federally chartered, with assets of $383,328,171.

Education.—School attendance is compulsory between the ages of 6 and 16, inclusive. State and federal aid for public education during the 1959–60 school year amounted to $41,671,002, with the state contributing $33,645,002 ($2,070,002 from special sources) and the federal government, $8,026,000. For the 1958–59 school year, the school-age population (6 to 21) totaled 434,355, with registered students numbering 356,738 on Oct. 1, 1959. There were 13,939 public school teachers, whose salaries averaged $4,669 (high school, $4,834; elementary, $4,546).

Social Welfare.—Public assistance expenditures (excluding operational costs) from county, state, and federal funds in the 1958–59 fiscal year totaled $79,466,781.41, including $61,688,267.01 for the aged, $10,307,998.12 for dependent children, and $4,150,292.01 for the permanently and totally disabled. A monthly average of 73,058 persons received public assistance. The state spent $4,478,063.99 for the operation of penal and correctional institutions.

Labor Force.—The state's employed labor force averaged 535,630 between Jan. 1 and Sept. 1, 1959. In June, employment comprised 565,485 nonagricultural workers and 103,595 agricultural workers; average unemployment for the month was 26,025, or approximately 4% of the total labor

MAJOR COLORADO MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1] (thousands of dollars)
All manufactures	77,219	$359,407	$680,983
Food and kindred products	17,861	73,218	177,429
Primary metal industries	9,283[2]	49,706[2]	95,689[2]
Transportation equipment	6,212	37,043	59,832
Chemicals and products	3,866	20,156	58,947
Printing and publishing	6,386	26,675	46,210
Nonelectrical machinery	5,109	24,787	45,614
Stone, clay, glass products	3,128	13,113	28,681

[1] For definition, see footnote 1 in the article, *Industrial Production.*
[2] 1956. (Source: *Annual Survey of Manufactures: 1957.*)

force, compared with 4.8% a year earlier. Insured unemployment in June 1959 stood at 3,563, down appreciably from the 7,330 for the previous April.

Manufacturing.—The University of Colorado Bureau of Research estimated that there were 2,265 manufacturing establishments in the state operating full time in 1958. They added $710 million in value through manufacture and paid $243,300,000 in wages and salaries. Expenditures for new plant and equipment in 1957 amounted to $52,808,000.

Mining.—In 1958, Colorado mineral output was valued at $313,965,710. The state ranked first among the states in the production of molybdenum and third in uranium. There were 14,748 persons employed in the state's mineral industries.

COLORADO MINERAL PRODUCTION, 1958

Mineral	Quantity	Value
Crude oil (bbl.)	48,736,367	$144,747,010
Uranium (lb. U_3O_8)	4,634,490	44,769,173
Molybdenum (lb.)	25,079,851	30,472,019
Cement (bbl.)	5,469,417	19,142,962
Gas (Mcf.)	134,208,520	17,424,409
Sand and gravel (yd.)	14,282,015	14,282,015
Vanadium (lb.)	6,739,248	12,019,557
Zinc (lb.)	96,586,922	9,948,453
Other minerals	...	21,160,112

(Source: Colorado Bureau of Mines.)

Agriculture.—Cash farm income for the first seven months of 1959 totaled $265,862,000, compared with $261,296,000 for the same period of 1958. For the full year 1958, income comprised $341,151,000 from livestock and livestock products, $227,354,000 from crops, and $20,470,000 from government payments. Principal income sources in 1958 were: cattle, $252,280,000; wheat, $96,308,000; and dairy products, $31,649,000.

In 1958 the state's 42,100 farms had an acreage of 37,541,268 (7,500,000 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 2,159,000 cattle, 1,302,000 sheep, and 1,876,000 chickens (excluding commercial broilers). During the week of Oct. 19–25, 1958, there were 88,000 family and hired workers engaged in farming.

COLORADO CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,262	1,520	1,000
Barley (1,000 bu.)	11,474	12,900	14,534
Beans, dry (1,000 bags)	1,864	1,820	1,603
Broomcorn (tons)	7,570	5,600	7,800
Corn (1,000 bu.)	15,511	26,471	24,672
Hay (1,000 tons)	2,352	2,628	2,431
Oats (1,000 bu.)	5,000	4,582	540
Peaches (1,000 bu.)	1,682	1,820	1,850
Pears (1,000 bu.)	188	225	215
Potatoes (1,000 cwt.)	10,387	13,505	11,225
Sorghum grain (1,000 bu.)	4,450	12,454	10,800
Sugar beets (1,000 short tons)	1,881	2,389	2,397
Wheat (1,000 bu.)	37,031	70,236	57,113

(Source: U.S. Department of Agriculture.)

Tourism.—Tourist travel in Colorado constitutes the fourth largest industry in the state. As of Oct. 7, 1959, estimates from the University of Colorado Bureau of Business Research indicated an all-time high of more than 4,300,000 visitors in the state during 1959, spending a total of $350 million. Since the end of World War II, the number of Colorado visitors has increased by an average of 11% each year. (See also below, *Principal Events, 1959.*)

Transportation and Communications.—The year 1958 was the greatest highway construction year in the history of Colorado, with a total expenditure of $116,037,815 by the state, the counties, and the cities for improvements to state and county highway systems and city streets. State and federal expenditures for highways in the 1958 calendar year amounted to $78,322,645, and 643 miles of new construction were completed by the state Department of Highways.

Highways and roads on Jan. 1, 1959, totaled 75,680 miles (12,367 surfaced). Registered *motor vehicles* numbered 844,070 on the same date, including 651,931 passenger cars. There were 12 *railroads* operating a total of 4,171.9 miles, and 7 regularly scheduled *airlines* and 73 civil *airfields.*

Communications media in 1959 included 59 AM and 9 FM *radio stations,* 10 *television stations,* and 25 daily and 122 weekly *newspapers.* There were (January 1) 219,000 business and 478,800 residential *telephones.*

Principal Events, 1959.—Colorado's colorful scenery, varied fishing, hunting, and skiing activities, and many places of historical interest have rapidly brought the state forward as one of the nation's most important tourist centers. Each new skiing season alone attracts 50,000 more visitors than in the previous year, and in 1959 an unprecedentedly early snowstorm in September brought skiers to the state six weeks in advance of the usual season. Seven new lakes will be built in the next two years as part of a $1 million fishing improvement program approved by the Colorado Game and Fish Commission.

Of special interest to visitors in 1959 were events associated with the "Rush to the Rockies" centennial celebration. The festivities included the holding of a Federal Fair, near Denver; opera presentations at the Red Rocks Theatre (also near Denver) and at Colorado State College; performance of plays, musicals, and symphonic and chamber music at the University of Colorado and Denver University and at the Aspen music festival and the Rocky Ridge Music Center.

Construction activity in Denver paralleled population growth in the capital city. A new $22.5 million Denver-Hilton Hotel was scheduled to open in March 1960. Also planned or under construction were a $2 million, 16-story apartment house and an $8 million, 12-story office building for the Public Service Company, which had authorized a multimillion dollar expansion of its generating capacity. In another power development, the federal government completed its 4,500-kilowatt hydroelectric plant at the mouth of the Big Thompson Canyon as the final unit in the multimillion dollar Colorado–Big Thompson Reclamation Project.

In October the federal government released 623 acres of land from the Army arsenal installations to Stapleton Field, the Denver municipal airport. This expansion, together with the 252 acres released previously, will enable city authorities to proceed with the construction of a $21 million jet runway.

Denver was politically in the news in 1959 with the election on June 16 of Richard Y. Batterton (Republican) as its new mayor.

The state took pride in the graduation of the first class from the U.S. Air Force Academy at Colorado Springs on June 3. All except two of the 207-man graduating class were commissioned as second lieutenants in the Air Force.

PEARL ANOE,
Colorado Feature and Literary Service.

COLUMBITE. See MINERAL PRODUCTION.

COMMERCE. See BUSINESS DATA, U.S.; INTERNATIONAL TRADE; RETAIL STORE SALES; WHOLESALE SELLING.

COMMODITY CREDIT CORPORATION. See Index entry.

COMMON MARKET, European. See EUROPEAN ECONOMIC COMMUNITY.

COMMONWEALTH OF NATIONS. A group of 10 voluntarily associated, fully independent nations (Australia, Canada, Ceylon, Ghana, Great Britain,

Table 1—COMMONWEALTH OF NATIONS

Component	Area (sq. mi.)	Population	Status
Europe			
Great Britain and islands of the British seas[1]	94,504	51,680,000	
Cyprus	3,572	549,000	Colony[2]
Gibraltar	2	25,637	Colony
Malta	122	323,970	Internally self-governing colony
Total in Europe	98,200	52,578,607	
Africa			
Basutoland	11,716	641,674	Native protected territory
Bechuanaland Protectorate	275,000	334,000	Protectorate
East Africa:			
Kenya	224,960	6,351,000	Colony and protectorate
Tanganyika Territory	361,800	8,916,000	Trusteeship
Uganda	93,981	5,767,000	Protectorate
Zanzibar	1,020	299,111	Protectorate
Ghana[3]	91,843	4,836,000	Sovereign state
Mauritius	818	632,731	Colony
Rhodesia and Nyasaland, Federation of:			
Northern Rhodesia	288,130	2,360,000	Protectorate
Nyasaland Protectorate	49,177	2,770,000	Protectorate
Southern Rhodesia	150,333	2,860,000	Internally self-governing colony
St. Helena	47	4,802	Colony
Ascension	34	326	
Tristan da Cunha	38	257	
Seychelles	156	41,081	Colony
Somaliland Protectorate	68,000	640,000	Protectorate
South Africa, Union of	472,685	14,673,000	Sovereign state
South West Africa	317,725	554,000	Mandate
Swaziland	6,705	267,000	Protectorate
West Africa:			
Gambia	4,003	266,384	Colony and protectorate
Nigeria	339,169	32,706,000	Colony and protectorate
Cameroons	34,081	1,570,000	Trusteeship
Sierra Leone	27,925	2,230,000	Colony and protectorate
Total in Africa	2,819,346	88,720,366	
America			
Bahamas	4,404	136,220	Colony
Bermuda	21	43,480	Colony
British Guiana	83,000	540,620	Colony
British Honduras	8,867	88,156	Colony
British Virgin Islands	67	7,600	Colony
Canada	3,851,809	17,550,000	Sovereign state
Falkland Islands[4]	4,618	2,253	Colony
West Indies Federation:			
Antigua	171	56,777	Colony
Barbados	166	236,812	Colony
Dominica	305	64,000	Colony
Grenada	133	92,000	Colony
Jamaica	4,411	1,651,493	Internally self-governing colony
Turks and Caicos Islands	170	7,000	
Cayman Islands	93	9,406	
Montserrat	32	14,465	Colony
St. Kitts-Nevis	152	58,579	Colony
St. Lucia	233	92,089	Colony
St. Vincent	150	81,782	Colony
Trinidad and Tobago	1,980	801,000	Colony
Total in America	3,960,782	21,533,732	
Asia			
Aden	112,132	902,000	Colony and protectorate
Bahrain[5]	213	130,000	Protected state
Borneo:			
Brunei	2,226	74,646	Protected state
North Borneo	29,387	416,436	Colony
Sarawak	47,071	654,656	Colony
Ceylon	25,332	9,388,000	Sovereign state
Hong Kong	391	2,806,000	Colony
India, Republic of[6]	1,177,055	393,130,000	Sovereign state
Jammu and Kashmir	92,780	4,410,000	(In dispute)
Kuwait[5]	6,000	240,000	Protected state
Malaya, Federation of	50,680	6,278,763	Sovereign state
Maldive Islands	115	90,000	Protected state
Pakistan	365,037	86,823,000	Sovereign state
Qatar[5]	8,000	35,000	Protected state
Singapore	224	1,549,000	Internally self-governing state
Trucial Oman[5]	6,000	115,000	Protected state
Total in Asia	1,922,643	507,042,501	
Australasia and Oceania			
Australia, Commonwealth of	2,974,581	9,846,140	Sovereign state
Nauru	8	4,258	Trusteeship
New Guinea, Territory of	93,000	1,341,000	Trusteeship
Norfolk Island	13	1,045	External territory
Papua	90,540	487,000	External territory
Fiji	7,022	368,000	Colony
Rotuma	18	4,134	
New Zealand[7]	103,930	2,326,129	Sovereign state
Western Samoa	1,130	102,860	Trusteeship
Pitcairn Island	2	143	Colony
Tonga	270	56,838	Protected state
Western Pacific Islands:			
British Solomon Islands	11,500	113,000	Protectorate
Gilbert and Ellice Islands	369	43,842	Colony
New Hebrides[5]	5,700	55,713	Condominium
Total in Australasia and Oceania	3,288,083	14,750,102	
Total, Commonwealth of Nations	12,089,054	684,625,308	

[1] Includes Northern Ireland, Channel Islands, and Isle of Man. [2] Scheduled to become an independent republic during 1960. [3] Includes former British Togoland. [4] Excludes dependencies. [5] Not an integral part of the Commonwealth. [6] Excludes Jammu and Kashmir; includes Sikkim. [7] Includes insular territories.

India, Malaya, New Zealand, Pakistan, and South Africa) and their dependencies, linked through recognition of Queen Elizabeth II as head of the Commonwealth, although India and Pakistan are republics and Malaya is an elective monarchy. While no federal authority over the group exists, similar legal and constitutional backgrounds make for a similar approach to foreign and domestic affairs. Preferential tariffs encourage inter-Commonwealth trade. The fluid structure of the Commonwealth enables it to change as dependent members grow to independence. Each nation defines citizenship for its own people; all are British and Commonwealth citizens. Component parts of the British Commonwealth appear in Table 1.

The Commonwealth Relations Office in London and the departments of external affairs in the self-governing nations are responsible for relations within the group. High commissioners, with ambassadorial rank, are exchanged among Commonwealth members. Governors general represent the crown in nations recognizing royal sovereignty; in dependent territories such representation lies with a governor. The Commonwealth Relations Office and the Foreign Office keep close contact on foreign affairs.

International Relations.—All the independent members belong to the United Nations and the International Labor Organization (ILO), and all except New Zealand are members of the International Bank for Reconstruction and Development (IBRD) and the International Monetary Fund (IMF). The North Atlantic Treaty Organization (NATO) includes Great Britain and Canada, and Great Britain, Australia, New Zealand, and Pakistan belong to the Southeast Asia Treaty Organization (SEATO). Australia and New Zealand are members of the Pacific (ANZUS) Council and, with Great Britain, of the South Pacific Commission. Pakistan and Great Britain belong to the Central Treaty Organization (CENTO; Baghdad Pact), and Great Britain is a member of the Western European Union and the Caribbean Commission. All the independent countries and the Federation of Rhodesia and Nyasaland are contracting parties to the General Agreement on Tariffs and Trade (GATT).

Colombo Plan.—A series of coordinated devel-

opment plans drawn up by the member countries themselves, the Colombo Plan for Cooperative Economic Development in South and Southeast Asia came into operation in 1951. The plan originally called for an estimated expenditure of $5,288.4 million over the period 1951–57, but in 1955 the period was extended to 1961, and a further five-year extension, to 1966, was announced on Nov. 13, 1959.

Members of the plan, with the dates they joined, are Australia (1950), Burma (1952), Cambodia (1951), Canada (1950), Ceylon (1950), Great Britain (1950), India (1950), Indonesia (1953), Japan (1954), Laos (1951), Malaya (1950), Nepal (1952), New Zealand (1950), North Borneo (1950), Pakistan (1950), the Philippines (1954), Sarawak (1950), Singapore (1950), South Vietnam (1951), Thailand (1954), and the United States (1951). Liaison is maintained with the IBRD, the U.N. Economic Commission for Asia and the Far East (ECAFE), and the U.N. Technical Assistance Board (TAB). The Consultative Committee, consisting of representatives of all member countries, held its 11th meeting at Djokjakarta, Indonesia, on Nov. 11–14, 1959. The meeting drew attention to the continuing need for capital and the necessity to encourage private investment, the presence of inflationary pressures, and the problems of rising populations. External assistance had amounted to $5,880 million by June 30, 1959. By that date, 1,194 experts and 8,603 training places had been provided under the Technical Cooperation Scheme, at a cost of £14,300,000, of which £3,190,000 was expended in 1958–59.

Commonwealth Relations.—With the exception of Canada, all Commonwealth countries belong to the sterling area, as do Burma, Iceland, Ireland, Jordan, Libya, and the British protected states in the Persian Gulf. Iraq left the sterling area on June 23, 1959. Commonwealth organizations, such as the Commonwealth Parliamentary Association, Agricultural Bureaux, Scientific Offices, Air Transport Council, Shipping Committee, Telecommunications Board, and Economic Committee, have been established.

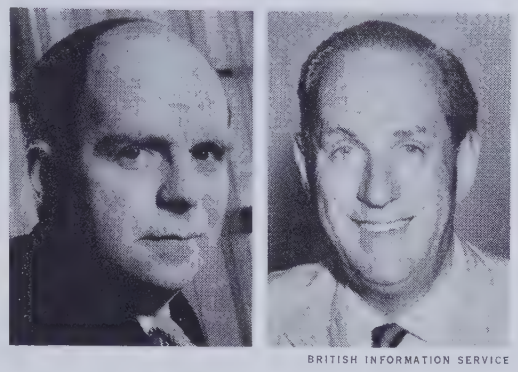
Meetings of officials, ministers, and nongovernmental organizations demonstrate Commonwealth cooperation. For example, a Commonwealth Economic Consultative Council met in London on Sept. 22–23, 1959; a survey officers' conference took place at Cambridge on August 17–26; and an education conference was held at Oxford on July 15–29.

A royal tour to Ghana by Queen Elizabeth and the Duke of Edinburgh, planned for November 1959, was postponed on August 7 because the queen was expecting her third child early in 1960, but the duke visited Ghana alone on November 23–28.

Commonwealth External Trade.—A general contraction in world trade in 1958 was reflected in declines of 7% in sterling area exports and of 6% in sterling area imports. This trend continued into 1959, and sterling area exports during the first quarter of the year were 2% below the first quarter of 1958, but by the end of June there was a slight increase compared with the previous year. Changes ranged from a decline of 32% in Pakistan's exports to an increase of 27% in those of Nigeria. Imports into the sterling area fell by 5% during the first quarter of 1959 compared with the first quarter of 1958, changes varying from a decline of about 20% for New Zealand, Rhodesia and Nyasaland, South Africa, and Pakistan to an increase of 23% for Ghana. Statistics for the second quarter indicated a slight rise. Trade figures for the Commonwealth are shown in Table 2.

Table 2—COMMONWEALTH TRADE
(£ million)

	Imports (c.i.f.)		Exports (f.o.b.)	
	1958	1st half 1959	1958	1st half 1959
Great Britain	3,751	1,924	3,313	1,702
East Africa	131	66	128	68
West Indies	209	104	156	84
Hong Kong	287	139	186	92
Malaya and Singapore	478	231	416	223
Nigeria	167	86	136	90
Australia	639	319	591	339
Canada	1,904	1,036	1,806	890
Ceylon	129	66	125	60
Rhodesia and Nyasaland, Federation of	158	72	136	84
Ghana	85	52	93	57
India	654	317	439	202
New Zealand	285	105	250	160
Pakistan	141	53	108	50
South Africa, Union of	557	243	329	177



BRITISH INFORMATION SERVICE

Iain Macleod (left) replaced Alan Lennox-Boyd (right) as colonial secretary in Prime Minister Harold Macmillan's new cabinet after the British general elections in October.

Dependent Territories.—Expenditure under the Colonial Development and Welfare Acts (1945, 1950, 1955) during 1958–59 amounted to nearly £19 million, making a total of £174,988,967 over the 13-year period since 1946–47. A new act, which became law on April 30, 1959, extended the previous acts to March 31, 1964, and made a further £95 million available. About £8 million in loans was raised on the London market in 1958–59 by colonial governments, and a Jamaican loan of $12.5 million was floated on the New York market on Feb. 26, 1959. Local loans, aggregating nearly £7 million, were raised by Aden, Fiji, Sierra Leone, Kenya, and Tanganyika.

The Colonial Development Corporation had 77 projects in operation at the end of 1958, and a profit of £1,174,720 was made on the year's working. Total approved capital expenditure since 1948 amounted to £81,717,000, of which £56,166,000 had been spent. Capital expenditure approved during 1958 amounted to £3 million.

The Commonwealth Development Finance Company had invested £15.5 million by March 31, 1959. On March 5, it announced that it was doubling its authorized capital, to £30 million.

In 1958 the value of colonial exports (see Table 3) fell by £46 million, due largely to declines of £40 million in Singapore's entrepôt trade and of £9 million in sugar exports. The total for

British Chancellor of the Exchequer Derick Heathcoat Amory (r.), with Nigerian Finance Minister Festus Okotie-Eboh, at Commonwealth economic meeting in London, September 22.

WIDE WORLD

the year was £1,256 million. Imports, at £1,554 million, were about £80 million lower than in 1957. The United Kingdom's share of both imports and exports decreased slightly, while that of the United States, Canada, western Europe, and Japan increased. The current account deficit of the colonial territories fell to £74 million in 1958. Total public revenue amounted to £478,007,000, and expenditure to £530,636,000.

Table 3—MAJOR COLONIAL EXPORTS

Commodity	1957	1958
	(thousand long tons)	
Bauxite	6,970	7,382
Calcium phosphate	293	300
Coal	102	98
Copper	441	444
Diamonds (thousand carats)	1,264	2,037
Gold (thousand fine ounces)	147	154
Iron ore	1,445	1,363
Manganese ore	27	22
Petroleum products	13,037	12,885
Pyrites	989	1,049
Tin	14	8
Zinc	30	28
Coconut oil	34	28
Copra	161	163
Cottonseed	46	77
Palm kernels	461	499
Palm oil	166	171
Peanuts (shelled)	487	705
Whale oil (thousand barrels)	134	192
Bananas	357	336
Cacao	147	101
Coffee	134	135
Sugar	1,716	1,629
Cotton (raw)	121	140
Sisal	222	241
Pyrethrum extract	77	172
Rubber (raw)	102	102
Timber (million cubic feet)	46	52
Wattle bark extract	26	19

Students at colleges and universities in the territories numbered 3,783 in 1958–59, and at the end of 1958 there were 11,193 colonial students in the United Kingdom and in Ireland.

Following elections in Singapore on May 30, 1959, a new constitution, giving the territory full internal self-government, came into effect on June 3. The elections resulted in a victory for the People's Action Party under Lee Kuan Yew. Discussions between the sultan of Brunei and Colonial Secretary Alan Lennox-Boyd took place in London on March 23–April 6, and a new constitution, coupled with separation from Sarawak, was announced on September 29. (See also BORNEO; SINGAPORE.)

A new constitution giving Jamaica internal self-government came into effect on July 4, and separate governments were set up for the Cayman Islands and the Turks and Caicos Islands. Elections held in Jamaica on July 28 resulted in Norman W. Manley of the People's National Party becoming the island's first prime minister. The cabinet system of government was also introduced into Trinidad on July 20. A Colonial Office statement of January 5 said that it was impossible at present to set up a system of representative government in Malta and announced that the British government would contribute £29 million over a five-year period toward the colony's economic development. An agreement on independence for Cyprus was signed in London on February 19. In the Western Aden Protectorate a Federation of the Arab Emirates of the South was inaugurated on February 11, and Lahej joined it on October 5. (See also ADEN; CYPRUS; MALTA; WEST INDIES FEDERATION.)

The declaration of a state of emergency in Nyasaland and the detention of Dr. Hastings K. Banda and other leaders of the Nyasaland African National Congress led to the appointment on March 24 of a commission of inquiry under Sir Patrick Devlin. The commission's report, published on July 23, justified the declaration of the emergency but found that the charges against Dr. Banda were not entirely proved. Plans for constitutional progress in Nyasaland were suspended during the emergency, but increased African representation on the Executive and Legislative councils was announced on August 24. Elections in Northern Rhodesia, under a constitution of January 1959, took place on March 20. Of 20 seats contested, the United Federal Party won 13. An advisory commission in connection with the 1960 review of the federal constitution was announced on July 21, 1959. (See also RHODESIA AND NYASALAND, FEDERATION OF.)

A new Council of Ministers, including 3 Africans, 1 Asian, and 1 European, was established in Tanganyika on July 1. Political unrest in Buganda, leading to a boycott of non-African trade, led to the proscription of the Uganda National Movement on May 22. In a policy statement on Kenya on April 22, the colonial secretary announced that a constitutional conference would be held in advance of the 1960 Kenya elections. The appointment of Professor W. J. M. Mackenzie as constitutional adviser to the conference was announced on August 20. An inquiry into the deaths on March 3 and later of 11 Mau Mau detainees at the Hola camp led to the appointment of a committee, which found (July 18) deficiencies in the administration of detainee camps. A new land policy designed to open the White Highlands to farmers of all races was presented to the Legislative Council on October 13, and plans to end the emergency resulting from the Mau Mau were announced on November 10. (See also BRITISH EAST AFRICA.)

Self-government came to the Northern Region of Nigeria on March 15. A plebiscite held in the Northern Cameroons on November 7 resulted in a decision to continue under trusteeship rather than become a part of Nigeria when the latter attained independence in October 1960. Elections to the federal House of Representatives of Nigeria were held on December 12. A statement made by the colonial secretary at Hargeisa on February 9 announced acceleration of constitutional development in the Somaliland Protectorate to bring it in line as soon as possible with the trust territory of Somaliland. (See also BRITISH CAMEROONS; BRITISH WEST AFRICA; SOMALILAND PROTECTORATE.)

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COMMUNICATIONS. See Index entry.

COMMUNISM. During 1959, Moscow-aligned Communist governments ruled 16 countries: the Soviet Union, Estonia, Latvia, Lithuania, Poland, the German Democratic Republic (East Germany), Czechoslovakia, Rumania, Hungary, Bulgaria, Albania, the Mongolian People's Republic (Outer Mongolia), the Chinese People's Republic, the Korean Democratic Republic (North Korea), Tibet, and North Vietnam. In addition, Yugoslavia was governed by Communists independent of Moscow's control. Altogether, approximately one third of the world's population lived under Communist rule in 1959.

World Communist Strength.—In 1959 the Soviet press claimed that the Communist and Communist-front labor parties of the world had a total membership of 33 million. Of this total, about 28 million lived within the Soviet orbit. The largest Communist party was the Chinese, with 12,720,000 members. The second largest was the Communist Party of the Soviet Union, with 8,239,000 members. The Soviet satellites of eastern Europe

contained over 5 million Communists. Outside of Communist China, the Communist countries of the Far East had almost 2 million party members.

The accompanying table shows the numerical strength of Communist parties in major countries.

WORLD COMMUNIST STRENGTH, 1959

Country	Membership
Africa	
Algeria	10,000
Morocco	1,500
Sudan	750
Tunisia	500
Union of South Africa	2,000
Europe	
Albania[1]	50,000
Austria	50,000
Belgium	12,000
Bulgaria	484,000
Czechoslovakia	1,422,200
Denmark	11,000
Finland	30,000
France	430,000
Germany, East[2]	1,200,000
Germany, West	50,000
Greece	20,000
Hungary[3]	410,000
Iceland[4]	1,000
Italy	1,700,000
Luxembourg	500
Netherlands	15,000
Norway	5,000
Poland[5]	1,052,800
Portugal	9,000
Rumania	720,000
Spain	5,000
Sweden	24,000
Switzerland[6]	6,000
USSR	8,239,000
United Kingdom	27,000
Yugoslavia[7]	899,300
Far East	
Australia	5,500
Burma	10,000
Cambodia	1,000
Ceylon	4,000
China, Communist	12,720,000
India	250,000
Indonesia	1,000,000
Japan	80,000
Korea, North[8]	1,164,200
Laos	4,000
Malaya	5,000
Mongolian People's Republic[9]	36,300
Nepal	3,500
New Zealand	400
Pakistan	3,500
Philippines	1,500
Thailand	5,000
Vietnam, North[10]	620,000
Vietnam, South	2,000
Middle East	
Cyprus	6,000
Iran[11]	2,000
Iraq	1,000
Israel	2,000
Jordan	250
Lebanon	4,000
Turkey	3,000
United Arab Republic	8,000
North America	
Canada	6,000
Costa Rica[12]	300
Cuba[13]	12,000
El Salvador	500
Guadeloupe	3,000
Guatemala[14]	1,000
Honduras	500
Martinique	3,000
Mexico	5,000
Nicaragua[15]	200
United States	7,000
South America	
Argentina	80,000
Bolivia	4,000
Brazil	50,000
British Guiana[16]	6,000
Chile	25,000
Colombia	5,000
Ecuador	1,000
Paraguay	500
Peru	6,000
Uruguay	3,000
Venezuela	35,000

[1] Albanian Workers' Party. [2] Socialist Unity Party. [3] Hungarian Socialist Workers' Party. [4] United Labor Party. [5] Polish United Workers' Party. [6] Swiss Labor Party. [7] League of Communists. [8] Korean Workers' Party. [9] Mongolian People's Revolutionary Party. [10] Lao Dong (Workers) Party. [11] Tudeh Party. [12] People's Vanguard Party. [13] People's Socialist Party. [14] Guatemalan Labor Party. [15] Nicaraguan Socialist Party. [16] People's Progressive Party. (Source: table compiled by the author from numerous sources.)

Communist Dissension.—During 1959 there was evidence of some dissension among Communist-ruled nations. The quarrel between the Yugoslav League of Communists and the Soviet Union continued. On January 27, at the opening session of the 21st congress of the Soviet Communist Party, the first secretary of the party's Central Committee, Nikita S. Khrushchev, severely criticized Yugoslavia for permitting the existence of private farms, imprisoning pro-Soviet Communists, revising Marxism, allying itself with Turkey and Greece, and aiding the North Atlantic Treaty Organization (NATO). The Chinese Communist press also accused the Yugoslavs of attempting to create a rift between the USSR and Communist China.

Meanwhile, within the Soviet bloc itself, various nations were following contradictory policies. Poland permitted large-scale private farming, while neighboring Rumania and Hungary were engaged in campaigns to collectivize all agriculture. The USSR was relaxing some state controls over collective farms and farmers, while Communist China was forcing its peasants into communes where daily life was almost as severely regimented as in a prison camp. In January the East German Communist press declared that communes were suitable for China, but should not be introduced in other nations of the Soviet bloc.

Europe.—The largest concentration of Communists in the free world in 1959 was in Europe, where almost 2½ million party members resided. However a general decline in the strength of European Communist parties was apparent. The party was illegal in Cyprus, Greece, Ireland, Portugal, Spain, and West Germany.

In general, European Communists opposed NATO, the European Economic Community, West German rearmament, the De Gaulle government in France, the presence of United States troops in Europe, and the stationing of United States missiles in European countries. Communists demanded more European trade with the USSR, and, in south Europe, the return of Cyprus to Greece.

Communist parties were unable to elect a single candidate to office in the parliamentary elections held in Austria in May and Great Britain in October, and Iceland's United Labor (Communist) Party lost about 25% of its popular vote in the June elections. In April elections, Communists won only 14 of the total 255 seats in the French Senate, but much greater Communist strength was displayed in the French municipal elections in March.

Far East.—There were more than 1,375,000 Communists in the free countries of the Far East in 1959, with party membership tending to increase. The main goal of Asian Communists was to ally with Socialists and seize control of their respective countries by parliamentary means. Communist parties were illegal in Afghanistan, Burma, Malaya, Pakistan, the Philippines, South Korea, South Vietnam, Taiwan and Thailand.

Communist propaganda in the Far East was aimed mainly at weakening American and western European influence. The Japanese Communists demanded more Japanese trade with Communist China, rupture of the United States–Japanese military alliance, withdrawal of American troops from Japan, and the complete disarmament and neutralization of the Japanese nation. The Indonesian Communist Party urged the nationalization of all Dutch commercial, industrial, and agricultural enterprises in Indonesia. However, the same party opposed some aspects of the new program of "guided democracy" of the Indonesian government.

Small Communist guerrilla bands continued to fight the established governments in Burma, Malaya, and the Philippines. Much more serious was the large-scale Pathet Lao (Communist) uprising which began in Laos during May and continued sporadically throughout the year.

After widespread anti-Communist demonstrations in the Indian state of Kerala during June and July, the Indian federal government dissolved the Communist-led state government of Kerala. Indian Communists led extensive food riots in Calcutta in early September. The Chinese Communist invasion of the frontier zone in northern India caused a split in the Indian Communist Party, some of whose members wanted India to repel the invasion.

In Nepal's first parliamentary elections in February, Communist candidates won only 4 of the total 109 seats in the lower house of the Nepalese parliament. (See also FAR EAST.)

Middle East and Africa.—The Communist parties of the Middle East generally pursued pro-Arab, anti-Israel, and anti-Western policies in 1959. Their main goal was to destroy Anglo-American influence in the Middle East. Communists opposed the Central Treaty Organization and United States military aid to Turkey and Iran. Communist in-

fluence was very strong in Iraq, where in June the National Democratic, United Kurd Democratic, and Communist parties joined together to form a National United Front.

Communist parties were illegal in Iran, Jordan, Lebanon, Saudi Arabia, Turkey, the United Arab Republic, and Yemen. During January and March about 1,000 Communists were arrested in Egypt and Syria on charges of conspiracy to overthrow the government of the United Arab Republic. In May, Lebanon deported approximately 50 foreign Communists.

Africa had perhaps 50,000 Communists in 1959. In North Africa, Communists demanded Algerian independence and the removal of United States airbases from Algeria and Morocco. South of the Sahara, Communists agitated for colonial freedom, especially in the Belgian Congo. Communist parties were illegal in Algeria, the Sudan, and the Union of South Africa. In September, Morocco ordered its Communist Party to cease political activity. (See also AFRICA; MIDDLE EAST.)

Latin America.—Latin America contained about 240,000 Communists in 1959, with party membership tending to increase. Communist parties were illegal in Brazil, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, and Peru. The Argentine government banned Communist political activity in April and initiated court action in October to disfranchise the Communist Party.

As before, Latin American Communists in 1959 devoted most of their activity to combating United States political, economic, and military influence in their respective countries. Communist parties opposed the Organization of American States and called for increased Latin American trade with the Soviet bloc of nations. The Cuban People's Socialist (Communist) Party supported Fidel Castro's seizure of power in Cuba, and Communist propaganda described Castro as the best example of Latin American "progressive bourgeoisie," with which Communist parties should cooperate. On September 2, Dionisio Encina, the secretary general of the Mexican Communist Party, was arrested by the Mexican government on charges of possessing subversive propaganda. (See also INTER-AMERICAN AFFAIRS.)

Canada.—On Oct. 11, 1959, the Canadian Labour-Progressive Party renamed itself the Communist Party of Canada, thus resuming the name it had used before World War II. The party in 1959 had a membership of about 6,000, which represented a great decline from the 1956 membership of 16,000. It is an almost entirely urban organization consisting of industrial workers, white-collar employees, and college students. One fourth of the total membership resides in or near the city of Toronto. Though small in numbers, the party is active in the trade unions of the electronics, mining, smelting, and shipbuilding industries. Party slogans in 1959 called for Canadian disarmament, recognition of Communist China, more trade with Communist countries, and an end to the Canadian military alliance with the United States.

United States.—During 1959 the membership of the Communist Party of the United States remained at the low level of about 7,000, a great decline from the 1955 membership of 22,700. This decline resulted from a mass wave of resignations, due either to members' disillusionment with communism or to their fear of losing jobs in business, education, or government. However, in its annual report issued in March 1959, the Un-American Activities Committee of the House of Representatives warned that many persons who resigned because of fear still actively support the Communist cause, even though they no longer possess party membership cards. The United States Communist Party is primarily urban, with its greatest concentration of members in New York City and southern California. (See also FEDERAL BUREAU OF INVESTIGATION.)

Party slogans in 1959 called for United States recognition of Communist China, admission of China to the United Nations, withdrawal of United States armed forces from Taiwan, cessation of American military aid to the free nations of Europe and Asia, and expansion of trade with the USSR. A major change in internal party policy in 1959 was the abandonment of the previous demand for the creation of an autonomous Negro republic within the United States. Instead, the party now stands for Negro and white integration.

After a third investigation, the Subversive Activities Control Board of the United States government declared on Feb. 9, 1959, that the United States Communist Party is dominated by Moscow, and asked the U.S. Court of Appeals, Washington, D.C., to order the party to register with the Department of Justice as a Communist-action association. Accordingly, on July 30, the court ordered the party to register its income, expenditures, and the names and addresses of its members. The party refused and appealed the case to the Supreme Court.

On April 15 the U.S. Court of Appeals, Denver, Colo., resentenced 6 local Communist Party leaders to prison terms of 2½ to 5 years and fines of $1,500 to $5,000, for conspiracy to overthrow the United States government. The Communists—Arthur Barry, Mrs. Patricia Blau, Anna Correa, Joseph Scherrer, Maia Scherrer, and Harold Zepelin—had appealed a previous conviction on the same charge.

On June 29 the Supreme Court decided that defense industry workers in private plants have the right to cross-examine their accusers before being dismissed on charges of being Communists or security risks.

At the International Youth Festival (a Communist-front gathering) in Vienna, July 26 to August 4, the 400-man United States delegation split into the pro-Communist New York group, headed by Marvin Markman, and the independent Chicago group, which was discriminated against by the festival authorities.

The 17th national convention of the Communist Party of the United States (held December 10–14 in New York City) elected Gus Hall as the party's general secretary, Eugene Dennis as chairman, and Benjamin J. Davis as national secretary.

(For further references, see articles on the countries named herein, and the Index entry, *Communism.*)

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COMMUNITY CHESTS. See UNITED FUNDS AND COMMUNITY CHESTS.

COMMUNITY TRUSTS. Aggregate assets of community trusts in the United States and Canada rose to $282,111,434 at the beginning of 1959, from $227,191,098 a year earlier. Among the larger community foundations and their holdings are: Cleveland Foundation, $36,009,930; New York Community Trust, $32,818,699; Chicago Community Trust, $28,911,238; Boston Permanent Charity Fund, $25,108,574; and Kalamazoo (Mich.) Foundation, $21,086,979.

Philanthropic grants by these organizations aggregated $10,005,634 in 1958, compared with $8,-

777,996 in 1957. Community trusts making the largest disbursements were those in New York City, with $1,400,346; Chicago, $1,188,400; Cleveland, $1,016,606; and Boston, $730,815. Funds newly received by community trusts during 1958 totaled: in Chicago, $5,662,389; in Cleveland, $1,240,913; in Oshkosh (Wis.), $916,096; in Pittsburgh (Pa.), $804,344; and in Hartford (Conn.), $769,934.

A total of 1,608 separate funds were under community trust administration in 1958, compared with 1,526 a year earlier. Winnipeg (Manitoba) had 150 of these; Rochester (N.Y.), 142; and New York City, 129. Upward of 89% of the reported resources are already in hand, the remainder being deferred pending the completion of preceding "life uses."

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COMORO ISLANDS. A French overseas territory comprising four main islands (Grande Comore, Mayotte, Anjouan, and Mohéli) and several islets, situated between Africa and the island of Madagascar. Area, 838 square miles (of which Grande Comore comprises 444); pop. (est. 1958), 182,000, including about 1,000 nonindigenous persons, mainly French. The natives are Moslems of mixed Arab and Malagasy descent. Dzaoudzi (est. 3,000), on Mayotte, is the capital.

In the referendum of Sept. 28, 1958, the Comoro Islands voted approval of the new French Constitution, and on Dec. 11, 1958, chose to retain the status of a French overseas territory with representation in the French Parliament and administrative autonomy. French President Charles de Gaulle visited the territory on July 9, 1959. The Territorial Assembly is elected on the basis of a single electoral college. The assembly choses a Government Council which has executive powers. The ordinary budget for 1958 totaled 289 million francs CFA; the extraordinary budget, 25 million. In 1958 there were 35 elementary schools (2,743 pupils) and 1 secondary school (117).

Food crops include rice, cassava, and sugar cane. Chief cash crops and 1958 exports (in metric tons) were: vanilla, 53; essential oils 33; copra, 2,611; and sisal, 484. Industries include a sawmill, coconut oil and sugar refineries, an essence distillery, and a soap factory. Exports in 1958 totaled 565.2 million francs CFA; imports, 711.2 million. Trade is mainly with France and the Malgache Republic.

CONFECTIONERY. According to the U.S. Bureau of the Census, sales of confectionery and competitive chocolate products were valued at $1,120 million in 1958, more than 5½% above the 1957 figure of $1,060 million. Data in the accompanying table represent approximately 93% of manufacturers' total sales.

CONFECTIONERY AND CHOCOLATE PRODUCTS: SALES BY TYPE OF PRODUCT, 1958[1]

Type of product	Pounds (1,000)	Value ($1,000)
Package goods:		
$1.00 or more per lb.	112,928	111,715
$0.50 to $0.99 per lb.	215,462	106,665
Less than $0.50 per lb.	607,950	173,767
Bar goods	908,133	364,823
Bulk goods	637,751	185,531
5¢ and 10¢ specialties	245,418	96,254
Total	2,727,642	1,038,755

[1] Not including manufacturer-retailers' sales.

Sales through September 1959, estimated at $800,176,000, were 4% above the 1958 level.

CONGO. The Republic of Congo is an autonomous republic of the French Community (q.v.), situated in west-central Africa. Estimated area, 134,750 square miles; pop. (est. mid-1958) 780,000, including (in 1956) 10,429 nonindigenous persons, mainly French. Chief cities are Brazzaville, the capital (est. pop., 99,144), and Pointe-Noire (37,376), the chief port.

Government.—The Republic of Congo was formerly the French overseas territory of Middle Congo, included within the federation of French Equatorial Africa. On Nov. 28, 1958, the territory chose the status of a member state of the French Community. As an autonomous republic, Congo has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic materials, and certain other matters. The republic adopted its constitution on Feb. 23, 1959. The Legislative Assembly consists of 61 members elected by universal suffrage for a five-year term. The assembly chooses a premier, who forms his ministry. On July 4, 1959, Fulbert Youlou, leader of the Democratic Union for the Defense of African Interests, formed a government which included two members of the opposition African Socialist Movement and three Europeans.

Education and Religion.—In 1958 there were 517 schools with a total of 82,221 pupils (72.1% of the school-age population, the highest proportion of the French African territories). Expenditure on education totaled 1,205.3 million metropolitan francs, or 26.2% of the budget. The natives are mostly animists, although there are a few predominantly Christian areas.

Transportation.—The Congo-Ocean Railroad, the republic's only railway, extends 318 miles from Brazzaville to Pointe-Noire. Roads and trails total about 5,000 miles (1956), including 238 miles of hard-surfaced roads and 4,099 of all-weather trails. The chief airports are at Brazzaville (of international class) and Pointe-Noire.

Production and Trade.—Economic development has thus far been confined mainly to the south. Agriculture is the chief occupation and an important source of exports. Industries are mainly local and include vegetable-oil refineries, soap factories, and small smelting works and foundries. Lumber from the tropical forests constitutes the leading export. Lead ore, zinc ore, and gold are mined on a small scale. A dam is under construction on the Kouilou River north of Pointe-Noire. Exports in 1958 totaled 7.8 billion metropolitan francs; imports, 22 billion. Chief exports are lumber (189,000 metric tons in 1958), palm oil, palm kernels, peanuts, lead ore, and tobacco.

Principal Events, 1959.—On February 16, riots broke out in Brazzaville between supporters of Jacques Opangault, leader of the oppositionist African Socialist Movement (MSA), and supporters of Premier Fulbert Youlou. The rioting took on the character of tribal warfare, with the M'Bochis of the north favoring Opangault, and the Balalis supporting Youlou. The disorders lasted for several days, left a reported 120 persons dead, and were finally put down by the intervention of French troops at the request of Premier Youlou. Elections took place on June 14, with Youlou's party (the local branch of the pro-French African Democratic Rally) winning 51 seats in the Legislative Assembly, to 10 for the MSA. Following the elections, Opangault was released from prison, where he had been held on charges of sedition in connection with the February rioting, and Youlou formed a new government on July 4 which included two members of the MSA.

CONGO, Belgian. See BELGIAN CONGO.

CONGREGATIONAL CHRISTIAN CHURCHES. The union between these churches and the Evangelical and Reformed Church under the name of United Church of Christ was advanced toward consummation in 1959 by the second meeting of the General Synod of the United Church. Progress was reported there in bringing together the men's, women's, and young people's organizations of the two denominations, in uniting the benevolent boards, in forming a united Council for Christian Social Action, and in publishing the *United Church Her-*

ald. A Statement of Faith to serve as a testimony, not a test, and a Call to Christian Action in Society were adopted. The vital step toward consummating the union by adopting a constitution was forwarded by receiving with satisfaction as to its main features the report of the Committee on Constitution and referring it to the churches and synods for study and suggestion of desirable changes. These suggestions are to be considered by the committee, and a revised report will be made to an adjourned meeting of the General Synod in July 1960. This will make possible the submission of the constitution to the churches and synods for ratification and, if ratified, its final adoption at the General Synod to be held in Philadelphia in 1961.

Representatives of other church groups have participated in an advisory capacity in the framing of this constitution, the Basis of Union provision having expressed the hope that the name "United Church of Christ" might lead other bodies to come into the union and thus form "a more inclusive United Church."

That the Congregational Christian churches intend to go into this union strengthened in a highly important area of their work is shown by the effort begun in 1959 to raise a fund of $7,500,000 for higher education.

Statistics for the Congregational Christian Churches (as of Jan. 1, 1959): number of churches, 5,506; church membership, 1,401,565; church school membership, 768,940; ministers in full standing (including 3,429 pastors), 6,041; legacies (575 churches reporting), $3,065,022; home expenses (4,832 churches reporting), $57,533,522; benevolences (4,905 churches reporting), $10,155,582; value of church property (5,163 churches reporting), $606,294,174.

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Secretary Emeritus,
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CONGRESS, Library of. See LIBRARY OF CONGRESS.

CONGRESS, U.S. For a list of members of Congress, see UNITED STATES. For a discussion of legislation, see UNITED STATES and articles on specific subjects, such as HOUSING, TAXATION, etc.

CONGRESS OF INDUSTRIAL ORGANIZATIONS. See AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS.

CONNECTICUT. New England state, United States; one of the original 13 states. The "Nutmeg State" or "Constitution State" ranks 48th in area and 26th in population among the 50 states.

Area and Population.—Area: 5,009 square miles (land, 4,899; inland water, 110), divided into 8 counties. Population: (1950) 2,007,280; (est., July 1, 1958) 2,363,000. Towns (defining civil divisions), cities, and boroughs with populations above 15,000 (as estimated by the State Department of Health for July 1, 1959) are:

Ansonia	20,100	New London	31,900
Bridgeport	169,300	Norwalk	65,600
Bristol	46,900	Norwich	39,400
Danbury town	42,700	Shelton	17,100
Darien town	15,900	Southington town	17,500
East Hartford town	37,500	Stamford	89,300
East Haven town	19,000	Stonington town	17,400
Enfield town	24,800	Stratford town	44,600
Fairfield town	42,400	Torrington	30,300
Greenwich town	52,900	Trumbull town	15,900
Groton town	27,100	Vernon town	17,700
Hamden town	39,200	Wallingford town	27,200
Hartford (*capital*)	185,600	Waterbury	114,800
Manchester town	40,200	Waterford town	15,700
Meriden	51,900	West Hartford town	58,500
Middletown	31,600	West Haven town	38,000
Milford town	39,500	Westport town	17,200
Naugatuck	19,600	Wethersfield town	18,000
New Britain	88,100	Windham town	18,500
New Haven	168,500	Windsor town	17,100

Executive.—Chief state officers in 1959:
Governor: Abraham Ribicoff (Democrat)
Lieutenant Governor: John N. Dempsey
Secretary of State: Ella T. Grasso
Treasurer: John A. Speziale
Attorney General: Albert L. Coles
Commissioner of Education: William J. Sanders

Constitution and Judiciary.—The present constitution went into effect in 1818. The highest tribunal, the Supreme Court of Errors, comprises five justices; chief justice, Raymond E. Baldwin.

Legislature.—The General Assembly (Senate, 36 members, House of Representatives, 279) convened in its regular biennial session on January 7, and adjourned June 3, 1959.

Of the near-record 3,333 bills introduced, 1,237 became law and 31 were vetoed. The more important enactments included the abolition of county government, effective Oct. 1, 1960; the creation of a circuit court system consisting of 44 full-time judges to replace in 1961 the present trial justice and municipal courts; adoption of an operating budget of $541 million without any new taxes; and the approval of a $346 million, four-year, bond-financed highway building program. Other important measures provided for an increase in unemployment compensation benefits from $40 to $45 per week; a major change in the legislators' biennial salary from $600 to $2,000, effective with the 1961 session; the authorization of a $57 million bond issue for capital improvements; a merger of the Office of Civil Defense with the Military Department; the creation of a new Department of Consumer Protection (the first of its kind in the United States), which consolidated several inspection agencies, with the Food and Drug Commission as the nucleus; the prohibition of discrimination in the sale or rental of housing consisting of five or more units; the transfer of the responsibility for the Merritt Parkway from an abolished commission to the state Highway Department; and a major governmental reorganization in which, among others, a Department of Agriculture, Conservation and Natural Resources was created and the Health Department was considerably enlarged to include public health, mental retardation, and tuberculosis control and care.

Finance.—In the 1958–59 fiscal year, state revenue of $377,792,075.24 comprised $229,175,698.98 from state tax sources, $54,031,968.02 from the federal government, and $94,584,408.24 from all other sources. Tax revenue included $71,917,375.39 from a 3% general sales tax, $27,301,368.91 from corporate income taxes, $45,475,879.68 from motor fuel taxes, and $16,779,989.40 from licensing. Expenditures of $509,877,334.91 consisted of $97,480,805.34 for education, $246,117,601.47 for health, welfare, and safety, $127,745,822.74 for highways, and $38,533,105.36 for all other purposes. State long-term indebtedness on June 30, 1959, amounted to $574,263,000, of which $429,881,000 was self-liquidating.

Banking.—As of June 10, 1959, the state's 26 national banks had $1,179,685,000 in assets, $773,593,000 in demand deposits, and $266,872,000 in time deposits. The 121 state banks (Dec. 31, 1958) had assets of $3,804,641,600, demand deposits of $852,215,000, and time deposits of $2,568,626,000.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $145,702,207 ($333.81 per pupil), including $104,023,914 from local school districts, $39,808,130 from the state, and $1,870,163 from the federal government. Outlays for construction and improvements amounted to $41,065,809.37, and teachers' salaries averaged $5,117 (high school, $5,361; elementary, $4,977).

CONNECTICUT SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (k-6; k-8)	759	10,367	312,884
Public junior high (7–9)	53	1,733	35,647
Public senior high (10–12)	108	4,206	93,296
Private and parochial elementary and secondary	264	3,245	87,319
Public vocational	14	357	5,696
Junior colleges	4	...	855
Teachers colleges	4	...	3,583
Colleges and universities	18	...	17,880
Other higher institutions	4	...	872

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $40,255,879.20, including $19,747,749 for the aged, $13,425,717 for dependent children, and $3,321,005 for the permanently and totally disabled. A

monthly average of 24,468 persons received public assistance. The state spent $28,251,183 for all mental health activities, including 2 hospitals for the mentally deficient and epileptic (average population, 3,486) and 5 hospitals for the mentally ill (8,856). Correctional and penal programs cost $5,263,079 and included 2 training schools for delinquents (405), 1 reformatory (422), and 2 prisons (1,139).

Labor Force.—The state's labor force totaled 1,076,800 in June 1959, including 25,900 agricultural workers. Nonagricultural employment was up to 892,700 from 869,300 in the previous June and also above the 867,690 average for 1958. Manufacturing accounted for 44.9% of the nonfarm total; trade, 17.5%; and service industries, 11.2%. With the economy on the rebound, unemployment dropped to 60,500 in June 1959 from the previous June's total of 107,300. Unemployment compensation payments for the fiscal year 1958–59, reflecting the earlier high unemployment figure, amounted to $78,759,114.

Manufacturing.—The state's 4,529 manufacturing plants in 1958 employed an average of 387,700 persons who received $1,974,232,144 in wages. Value added by manufacture (1957) totaled $3,601,861,000, and outlays for new plant and equipment amounted to $224,518,000. Production workers in manufacturing averaged $92.70 for an average workweek of 41.2 hours in August 1959.

MAJOR CONNECTICUT MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1] (thousands of dollars)
Nonelectrical machinery	76,005	$391,454	$697,302
Transportation equipment	79,766	434,004	690,670
Electrical machinery	35,674	158,594	329,425
Fabricated metal products	43,901	201,806	324,744
Primary metal industries	27,822	142,784	248,764
Chemicals and products	11,709	60,570	165,294
Food and kindred products	11,855	54,561	137,825
Textile mill products	24,081	94,137	134,897
Printing and publishing	15,414	78,630	133,745
Rubber products	12,752	61,170	115,065

[1] For definition, see text footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—Connecticut ranked 45th among the states in the value of its mineral output in 1958, with 0.08% of the national total. Sand, gravel, and stone yielded 94% of the state's total value of mineral production.

CONNECTICUT MINERAL PRODUCTION, 1958

Mineral	Quantity	Value
Clays	198,831	$ 299,000
Lime	28,996	464,000
Peat	1,764	11,000
Sand and gravel	5,019,000	5,479,000
Stone	4,223,000	6,863,000
Other minerals	...	92,000
Total	...	$13,128,000*

* Total adjusted to eliminate duplication in the value of clay and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $112,750,000 from $124,239,000 for the same period in 1958. For the full year 1958, income comprised $111,221,000 from livestock and livestock products, $55,487,000 from crops, and $2,243,000 from government payments. Principal income sources in 1958 included: dairy products, $44,544,000; eggs, $32,141,000; broilers, $20,436,000; and tobacco, $20,170,000. Forest, greenhouse, and nursery products yielded $20,171,000.

The state's 13,700 farms (1958) had a total acreage (1954) of 1,138,000 (286,000 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 155,000 cattle and 4,106,000 chickens (excluding commercial broilers). Farming engaged 20,496 hired workers in 1959.

THE NEW YORK TIMES

Mayor Richard Lee of New Haven, Conn., at site of city's redevelopment project replacing tenements and factories.

CONNECTICUT CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,309	1,040	1,350
Corn (1,000 bu.)	1,802	2,120	2,132
Hay (1,000 tons)	403	419	381
Potatoes (1,000 cwt.)	1,361[1]	1,374	1,311
Tobacco (1,000 lb.)	22,686	11,750	13,940

[1] 9-year average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $75,174,000, and 191.6 miles of new construction were completed.

Highways and roads on Dec. 31, 1958, totaled 16,148 miles (14,661 surfaced). Registered *motor vehicles* numbered 1,029,656 on July 31, 1959, including 854,369 passenger cars. There were (1958) 3 *railroads* operating 824.63 line miles, and (1959) 6 regularly scheduled *airlines* and 56 *airports and airfields* (3 state, 5 municipal, 16 commercial, and 32 private) in addition to 15 heliports and 6 private and 4 commercial seaplane bases.

Communications media (1959) included 29 AM and 8 FM *radio stations;* 2 VHF and 2 UHF *television stations;* 25 daily *newspapers* (circulation, 762,896) and 157 other newspapers and magazines; and (January 1) 326,000 business and 865,800 residential *telephones.*

Principal Events, 1959.—Political history was made during the 1959 General Assembly when, for the first time in 82 years, both houses were controlled by the Democrats, who also held all elective state executive offices. All major proposals of the Ribicoff administration were enacted. Two far-reaching changes will abolish two systems which have existed since colonial times—county government and the minor courts. Present county functions will be assumed by the state government, and the minor courts will be replaced by a circuit court system consisting of 44 full-time judges. (See also above, *Legislature.*)

In keeping the campaign promise of no new taxes, the Democrats introduced several financing procedures which were unusual to Connecticut. These included the use of motor vehicle fee income for financing educational grants to towns, the curtailment of both state agency expansion and any increase in the operations of state institutions, and the approval to issue bonds to finance state grants for school buildings.

The House of Representatives passed several resolutions as the first step necessary to amend the state constitution. Among these were one requiring a three-fifths majority vote in the General Assembly to override a governor's veto; another to require that the governor and lieutenant governor

be paired in each election to avoid the election of members of different parties; and another to retain for six months the privilege of a citizen to vote after moving from one town to another in the state.

The economy of Connecticut improved mildly in the first nine months of 1959. Total nonagricultural employment in September 1959 was 2.7% higher than a year earlier. The State Tax Department reported a substantial increase in returns for the first three months of the fiscal year beginning in July 1959, as contrasted with the same period the year before. Connecticut continued in 1958 to lead the nation with a per capita personal income of $2,817. This was 47.6% higher than the 1950 figure for the state.

In connection with the elimination by the legislature of the Greater Hartford Bridge Authority, two of the five bridges in the Hartford area were made toll-free on Oct. 1, 1959. Construction in Hartford's first redevelopment area was scheduled to begin early in 1960, and Vincent B. Coffin, first chancellor of the University of Hartford, launched an $8 million building campaign for the institution's new 150-acre campus in West Hartford. At nearby Bradley Field, the state's major commercial airport, enlarged runway facilities were dedicated on October 3 in preparation for jet plane service.

In New Haven, where major redevelopment activities continued throughout the year, a 16-story skyscraper, University Towers, was expected to be completed in 1960. At Groton the largest antibiotic plant in the world was scheduled for completion by the start of 1960, and the world's largest atomic submarine, the *Triton*, was commissioned by the U.S. Navy on Nov. 10, 1959. In July the town of Norwich celebrated the tercentenary of its founding with a week-long series of events.

On July 20, 1959, Chief Justice Edward J. Daly of the Supreme Court of Errors died, and Raymond E. Baldwin was appointed to succeed him. When Baldwin was sworn in a week later, he became the only person in the history of Connecticut to have filled the state's three top posts—governor, U.S. senator, and chief justice.

Legislature and Principal Events by:
ROBERT C. SALE,
State Librarian of Connecticut.

CONSERVATION. See Index entry.

CONSTRUCTION. See ARCHITECTURE; BUILDING AND CONSTRUCTION; HOUSING.

CONSUMER CREDIT. During the first three quarters of 1959 consumer credit in the United States increased approximately $3.8 billion. In the same period a year earlier it decreased $1.6 billion. This shift reflected a substantial improvement in economic conditions, and particularly a sharp increase in demand for consumer durable goods (for example, new passenger cars and household equipment). All of the increase in consumer credit was in the form of expanded installment credit.[1] In the first two months of 1959 consumer credit declined appreciably from the high level at the end of December 1958. This decline was largely the result of a seasonal reduction in the use of noninstallment credit, particularly charge accounts at stores. Thereafter, the rapid expansion of installment credit raised the total of consumer credit to a record level of $49.4 billion at the end of the third quarter. Although this expansion was rapid and substantial, it was probably restrained in part by the restrictive credit policy of the Federal Reserve System (see BANKING).

The increase of installment credit in the first three quarters approached the expansion of 1955 when the record increase of total consumer credit for the year was $6.4 billion, of which $5.4 billion was installment credit (mainly for automobile purchases). However, the amount of consumer credit outstanding at the end of the third quarter was not excessive relative to other changes in the economy as compared with previous years. For instance, in the two years prior to 1942, consumer credit was about 11% of disposable personal income. This percentage rose slightly after World War II, and since 1954 has varied from 13% to 14%. The new, higher level of consumer credit developed largely because of the use of such credit by more middle-income families rather than because of an increase in consumer debt relative to the incomes of credit-using families. At the end of the third quarter in 1959 the ratio of consumer credit to disposable personal income continued to be within the range of 13% to 14%. Moreover, there was no indication of a repetition of the distorted consumer credit pattern of 1955, when a too-rapid extension of installment credit and relaxation of terms (minimum down payments and maximum repayment periods) contributed to a bunching of sales, particularly of automobiles, and a decline in the following year. Only a moderate expansion of consumer credit was expected in the fourth quarter of 1959 because of restrictive banking policies, and the prolonged steel strike (see IRON AND STEEL), which checked appreciably the rising trends in employment, income, and output of consumer durable goods.

Status of Consumer Credit, December 1958—At the end of December 1958 the major portion of the $45.6 billion of consumer credit was installment credit totaling $34.1 billion. It included $14.2 billion of installment sale credit on automobiles provided by sales finance companies, commercial banks, and automobile dealers. Installment credit for other consumer goods, secured by the items purchased, amounted to $8.9 billion, and was provided by commercial banks, department stores, mail-order houses, furniture stores, and other retail outlets. Repair and modernization installment loans for owner-occupied dwellings totaled $2.4 billion, extended mainly by commercial banks. Other personal loans of an installment type amounted to $8.6 billion, granted mainly by commercial banks and other financial institutions.

The minor portion of the $45.6 billion of consumer credit was noninstallment credit of $11.5 billion. It consisted of $3.6 billion of single-payment loans extended mainly by commercial banks. Charge accounts at stores amounted to $5.1 billion. Service credit, the amount owed by individuals to professional practitioners and service establishments which includes the use of credit cards, totaled $2.8 billion.

Trends in Consumer Credit, 1959.—At the end of September 1959, consumer credit was $3.3 billion, or approximately 8% above the level at the end of 1958, and about 13% above the level of the previous September. Installment credit was almost 12% above the year-end level, and 14% above the level of September 1958; noninstallment credit was 1% below the year-end level, but approximately 9% above the September 1958 level. Automobile credit, the largest component in installment credit, increased almost 16% in the first three quarters of 1959; other durable goods credit increased about 5%; and both repair and modernization loans and personal loans increased approximately 10%. Suppliers of the increase in installment credit were almost exclusively financial institutions. They showed

[1] The consumer credit statistics published in the monthly *Federal Reserve Bulletin* include short and intermediate credit extended to consumers through regular business channels—commercial banks, other financial institutions, retail stores and service establishments. Although the consumer credit concept logically includes real estate mortgage credit on owner-occupied houses, this kind of credit is usually long-term and traditionally has been excluded from consumer credit. Statistics of this kind of credit are also published in the *Federal Reserve Bulletin*.

an installment-credit expansion of slightly more than $3.8 billion, half of which came from commercial banks. Sales finance companies supplied about $1.2 billion of the increase in such credit, and the remainder was accounted for by credit unions, consumer finance companies, and other financial institutions. Retail outlets as a group showed a very slight expansion of installment credit at the end of the third quarter. Automobile dealers increased such credit about $80 million, and department stores, about $25 million. Furniture and household appliance stores and other retail outlets reduced their installment credit about $80 million.

Of the three components constituting noninstallment credit, charge accounts at stores declined about $0.7 billion during the first three quarters of 1959; single-payment loans, supplied mainly by commercial banks, increased $0.4 billion; and service credit expanded slightly (about $0.1 billion). The latter increased from $2.8 billion at the end of the year to a peak of $3.0 billion in April, and then declined gradually to $2.9 billion at the end of September. Part of this increase probably reflected a growing use of credit cards for such expenses as travel, meals, and hotel accommodations.

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CONTRACT BRIDGE. See SPORTS, GAMES, AND SHOWS.

COOPERATIVES. United States.—Farm supply cooperatives, while improving their services, are lagging behind city consumer groups in the rate of increase in sales. During 1959, consumer cooperative sales advanced about 12%; farm supply cooperative sales, about 3%. New consumer cooperative stores are being built in Virginia, Maryland, Wisconsin, California, and Pennsylvania.

MAJOR TYPES OF COOPERATIVES IN THE U.S.

Type of Cooperative	Number	Membership (in millions)	Annual business volume
Credit unions	19,000	10.7	$3,100[1]
Cooperatively-oriented mutual insurance companies	10	11.0	375[2]
Cooperative and other group health plans	30	1.4	60
Farm supply rural consumer cooperatives	3,371	3.49	2,100[3]
Rural electric cooperatives	1,000	4.5	563
Rural telephone cooperatives	3,630	0.5	24
Farm marketing cooperatives	6,267	4.12	8,000[3]
Production credit associations	500	0.48	1,900
Consumer stores, fuel cooperatives, etc.	1,050	0.75	180
Cooperative housing associations	200	0.078	40[4]
Student cooperatives	500	0.05	11
Funeral cooperatives	50	0.05	0.6
Retailer-owned wholesales	500	...	...

[1] Loans. [2] Premium income. [3] Figures adjusted to eliminate cooperative-to-cooperative trade. [4] Estimated annual payments by members for housing. (Source: Cooperative League of the USA.)

The biggest problem facing rural cooperatives is that of keeping money within the cooperative framework. To accomplish this end, cooperatives are extending their interests beyond the scope of their original endeavors. For example, a large federation of farm cooperatives, which has begun to process phosphate in southern Idaho, also purchased a substantial interest in a large potash company. Another federation bought a factory in Alliance, Ohio, for the manufacture of fence controllers and poultry equipment. In a third instance of integration among cooperatives, a large regional farm supply group bought a packing plant for the processing and marketing of hogs, a steel grain storage bin factory, and 24 acres of land in Kansas City, Mo., for the campus of a proposed cooperative college. By affiliating with eight small cooperatives, an eastern farm supply cooperative added poultry and egg marketing to its operations. A number of dairy cooperatives are buying processing plants and expanding their consumer services.

In the United States, more than 95% of the farms are supplied with electricity, and, because of increased consumption, electric rates are the lowest in history. A federation of Indiana rural electric cooperatives is seeking a $53 million loan from the Rural Electrification Administration (REA) in order to build a power station and transmission lines supplying 17 cooperatives with 17,500 members. (In this regard, it should be noted that the Eisenhower administration has recommended an increase in interest rates on government REA loans to rural electric cooperatives. Such a move has been opposed by leaders in Congress.)

In 1959 there were two important developments in the cooperative health field. First, labor health plans merged with cooperative health plans to form the Group Health Association of America. Second, the American Medical Association, at its annual meeting, recognized for the first time that cooperative medical groups are, by and large, performing an outstanding service for their 5.5 million members.

Canada.—Canadian cooperatives marked their 50th anniversary in 1959. During 1958–59, marketing cooperatives handled $895 million worth of farm products, 9½% more than in 1956–57. Sales by farm supply cooperatives, numbering over 2,000, with more than 1 million members, increased by 4½%, to $296 million. Farm cooperatives marketed about 33% of all agricultural products. The United Cooperatives of Ontario opened province-wide facilities for processing milk, cheese, butter, eggs, and poultry.

Great Britain.—According to the government Registrar of Friendly Societies, retail cooperative societies in Great Britain numbered 1,000 at the end of 1958. Membership totaled 12,420,000, an increase of almost 300,000 (or 2.2%) since 1957; assets were valued at about £458 million. Retail sales of all societies increased by 2.3% to £974 million in 1958. In the United Kingdom at the end of 1958 there were some 400 agricultural cooperative societies which provide their members (over 310,000) with goods and services or market their products. The yearly turnover of these societies is about £170 million. Nine new cooperative housing societies have registered, bringing the total to 156.

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COPPER. Table 1 shows the production of copper (smelter output) in the world and in the United States in thousands of metric tons, according to the U.S. Bureau of Mines.

Table 1—PRODUCTION OF SMELTER COPPER
(In thousands of metric tons)

Year	World	U.S.	% in U.S.	Year	World	U.S.	% in U.S.
1949	2,360	779.8	33.0	1954	2,970	858.1	28.9
1950	2,645	914.9	34.6	1955	3,300	1,003.8	30.4
1951	2,800	940.4	33.6	1956	3,430	1,003.5	29.3
1952	2,820	929.3	33.0	1957	3,510	985.3	28.1
1953	2,970	950.6	32.0	1958	3,566	870.1	27.0

United States.—In 1958 mine production of recoverable copper totaled 927,329 short tons, compared with 1,086,859 tons in 1957. In the first nine months of 1959, mine output totaled 747,180 tons, compared with 698,551 tons in the comparable 1958 period. Smelter output in the 1959 period was 741,263 tons, compared with 702,024 in the corresponding period of 1958. Refinery output was 1,352,500 tons in 1958, against 1,454,200 in 1957. Secondary recovery from old scrap was 411,400 tons in 1958, as against 444,500 tons in 1957.

Table 2 shows the domestic mine production of copper by states, in thousands of short tons.

Apparent consumption of primary copper, which includes deliveries to the national strategic stockpile, decreased 7% in 1958 and was the smallest on record since 1949. Actual consumption of refined copper likewise was the smallest since 1949, based on reports from consumers of quan-

Table 2—MINE PRODUCTION OF COPPER BY STATES
(In thousands of tons)

State	1955	1956	1957	1958
Arizona	454.1	505.9	515.9	485.8
California	0.6	0.9	0.9	0.7
Colorado	4.3	4.2	5.1	4.2
Idaho	5.6	6.7	7.9	9.8
Michigan	50.1	61.5	58.4	58.0
Missouri	1.7	1.9	1.6	1.4
Montana	81.5	96.4	91.5	90.7
Nevada	78.9	80.8	77.8	66.1
New Mexico	66.4	74.3	67.5	55.5
Utah	232.9	250.6	237.9	189.2
Washington	4.0	2.9	1.7	...[1]
Others	18.2	17.9	20.2	17.9
Total	998.6	1,104.2	1,086.9	979.3

[1] In 1958 only 52 tons. (Source: U.S. Bureau of Mines.)

tities entering processing. Producers' stocks of refined and unrefined copper declined 20% in 1958; at the beginning of the year, stocks were the highest since the end of 1945, but they declined by the year's end.

Reports from copper-selling agencies indicate that 1,227,000 tons of domestic refined copper was delivered to purchasers at an average price of 26.3 cents a pound. The average price of foreign copper delivered in the United States was 25.0 cents a pound. Imports of unmanufactured copper were 594,032 tons in 1957 and 496,309 tons in 1958. Imports of refined copper were 162,309 tons in 1957 and 128,464 in 1958.

(See MINERAL PRODUCTION for output of major countries.)

F. E. HARRIS, *Former Publications Editor, "Mineral Trade Notes"; and* BERENICE B. MITCHELL, *Commodity Industrial Analyst, Division of Foreign Activities, U.S. Bureau of Mines.*

COPYRIGHTS. July 1, 1959, marked the 50th anniversary of the United States copyright law. Although the law has been amended 21 times, there is considerable belief that its provisions have not kept pace with technological advancement in the fields of communication to which copyrights apply. Consequently, with congressional authorization, the U.S. Copyright Office has been engaged for the past few years in studying the principal problems that would be involved in writing a new law. In 1959 some two dozen study papers had been completed, thus clearing the way for an attempt at revision of the present copyright law.

The most controversial copyright question of recent years is the proposed elimination of a statutory provision which exempts juke-box operators from the payment of performance royalties. A bill to effect such a change (H.R. 5921) was introduced by Congressman Emanuel Celler of New York, but no final action was taken.

There is a growing opinion that a need exists for the protection under copyright principles of the ornamental designs of useful objects. A bill with this intent was introduced by Sen. Joseph O'Mahoney of Wyoming. Although Congress did not act on this measure, future hearings were planned.

In regard to the problem of design copyrights, an international committee of copyright experts met at The Hague, Sept. 28–Oct. 10, 1959, to consider a revision of The Hague Arrangement covering the international deposit and registration of designs. The meeting was held in preparation for a diplomatic conference scheduled for 1960 to revise the text of the arrangement, with the aim of producing a simple, effective procedure for the international protection of designs by means of a single international registration. In addition, the fourth annual session of the Intergovernmental Copyright Committee of the Universal Copyright Convention,[1] meeting in Munich, Oct. 12–17, 1959, also considered the problem of the international protection of works of applied art.

During the 1959 fiscal year, registrations (including renewals) by the U.S. Copyright Office were as follows:

Books:	
(a) Printed in the United States:	
Books, pamphlets, leaflets, etc.	103,670
Contributions to newspapers and periodicals	3,042
Total	106,712
(b) Printed abroad in a foreign language	6,262
(c) English books registered for ad interim copyright	822
Total books	113,796
Periodicals (numbers)	124,425
Lectures, sermons, addresses	829
Dramatic or dramatico-musical compositions	3,125
Musical compositions	88,833
Maps	3,728
Works of art, models or designs	7,775
Reproductions of works of art	2,258
Drawings or plastic works of a scientific or technical character	946
Photographs	1,183
Prints, labels, and pictorial illustrations	23,939
Motion-picture photoplays	5,502
Motion pictures not photoplays	1,657
Total	377,997

GEORGE D. CARY,
General Counsel, U.S. Copyright Office.

CORN. See AGRICULTURE; GRAINS.

CORSICA. A Mediterranean island forming a department of France. Area, 3,367 square miles; pop. (1954), 246,995. Ajaccio (32,997) is the capital. Corsicans speak an Italian dialect. Wine, olive oil, timber, and asbestos are exported. On Feb. 19, 1959, Corsica was visited by Moroccan King Mohamed V.

COSMETICS, PERFUME, AND TOILET PREPARATIONS. Cosmetic and toiletry purchases by the American public reached an all-time high of almost $3 billion at retail in 1958. As reported by *Drug Topics* magazine, retail sales by cosmetic and toiletry categories in 1958, as compared with 1957, are shown in the following table:

Category	1958	1957
Oral hygiene items	$ 380,950,000	$ 351,790,000
Hair products	633,350,000	613,710,000
Shaving preparations	414,180,000	410,940,000
Hand preparations	112,350,000	110,240,000
Cosmetic items	445,230,000	420,590,000
Other toiletries*	992,990,000	932,110,000
Total	$2,979,050,000	$2,839,380,000

*Comprising (1958 retail values): fragrances, $120,890,000; paper products, $481,770,000; toilet soaps and deodorants, $324,340,000; and toilet accessories, $64,990,000.

Increases occurred in every major category, with cosmetics showing a $25 million rise over 1957. Fragrances and make-up preparations accounted for most of the rise in cosmetics, as women's purchases of aerosol colognes and more expensive lipsticks showed marked increases. The use of eye make-up products has also grown sharply, with such items as mascara and eye shadow revealing a rapid growth pattern over the past two years. On the other hand, certain cosmetic categories, such as loose face powder, bath salts, cake make-up, and manicuring implements have shown little growth from year to year.

In men's toiletries, sales of electric shavers decreased in 1958, dropping in retail volume from

[1] Following the ratification during 1959 of the Universal Copyright Convention by Lebanon, Czechoslovakia, and Brazil, the number of adherents rose to 34; they were: Andorra, Argentina, Austria, Brazil, Cambodia, Chile, Costa Rica, Cuba, Czechoslovakia, Ecuador, France, German Federal Republic, Great Britain, Haiti, Iceland, India, Ireland, Israel, Italy, Japan, Laos, Lebanon, Liberia, Liechtenstein, Luxembourg, Mexico, Monaco, Pakistan, Philippines, Portugal, Spain, Switzerland, United States, and the Vatican.

$133,140,000 in 1957 to $124,870,000, the lowest point in the past three years. Sales of razor blades and shaving cream, however, reached all-time peaks in 1958.

Sales of oral hygiene products in 1958 showed a $30 million increase over the preceding year, with large-scale gains noted particularly among such items as toilet soaps, tooth paste, and mouthwashes. Home permanents, for the third consecutive year, showed a sharp decline, dropping from over $86 million in 1956 to $74 million in 1958. On the other hand, hair coloring preparations have shown an opposite trend, growing from $28 million in 1956 to $37 million in 1958. Shampoos have continued to increase in retail volume, particularly in the category of medicated hair cleansers designed to combat dandruff.

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COSMIC RAYS. See Index entry.

COST OF LIVING. The general level of prices in the United States increased slightly in 1959, as it did in the previous year. In the first three quarters of 1959 the cost of living, as measured by certain retail prices, rose 1.2%. The level of wholesale prices increased only 0.4%. All of the rise in the cost of living occurred after the first quarter. Food prices on the average showed some fluctuations but were at the same level in September 1959 as in December 1958, and were appreciably lower than in September 1958. All other major groups of cost of living items showed price increases during the same period. Only fractional fluctuations occurred in the level of wholesale prices, but its relative stability was the result of offsetting price changes. Prices of farm products and processed foods decreased on the average during the first three quarters, while the average of industrial prices increased. Both consumer and wholesale prices reached an all-time high in 1959.

Demand for practically all consumer items increased appreciably during the first three quarters of the year, a period of continued economic improvement. This was true particularly of durable goods (mainly new passenger cars and major items of household equipment) for which a substantial decline in demand had occurred in the previous year. The sharp rise in consumer spending for durable goods reflected a higher level of personal income and a greater use of credit (see CONSUMER CREDIT) than in the previous year. Although personal income declined slightly in the third quarter because of the steel strike (see IRON AND STEEL; LABOR), total consumer expenditures showed no tendency to decline. The moderate increase in consumer expenditures in the third quarter was the result of increased use of credit and a substantial reduction in the rate of personal savings.

Government expenditures (federal, state, and local), which increased appreciably in 1959, contributed to the maintenance and expansion of demand for many goods and services. This effect was particularly important for materials used in the construction of highways, other state and local improvements, and various kinds of equipment. On the other hand, the federal government's bolstering of demand for farm products was lessened slightly. Basic farm products acquired by the government at relatively high support prices and in part exported at much lower prices failed by a slight percentage to maintain the average price of such products in the first three quarters of the year at the level of 1958.

The substantial increase in business investments (see BUSINESS DATA), particularly expenditures for residential construction, producers' durable equipment, and for inventories, raised appreciably the demand for many industrial raw materials, machinery, and construction products. This source of increased demand showed some tendency to expand at a slower rate in the third quarter of 1959, partly because of the huge increase in inventories of steel products in the previous quarter in anticipation of a steel strike. In general, business investments, which showed a heavy decline in 1958 and accounted in part for some lower industrial prices, were expected to make an important contribution to aggregate demand in 1959.

On the supply side of markets, there was no lack of capacity to make goods and services available. Agricultural output (see AGRICULTURE) nearly reached the all-time high of the previous year. In industry, private investment in plant and equipment, particularly the latter, provided adequate additional capacity for a greatly expanded output. The only shortages which appeared in the second half of the year resulted mainly from the strike in the steel industry.

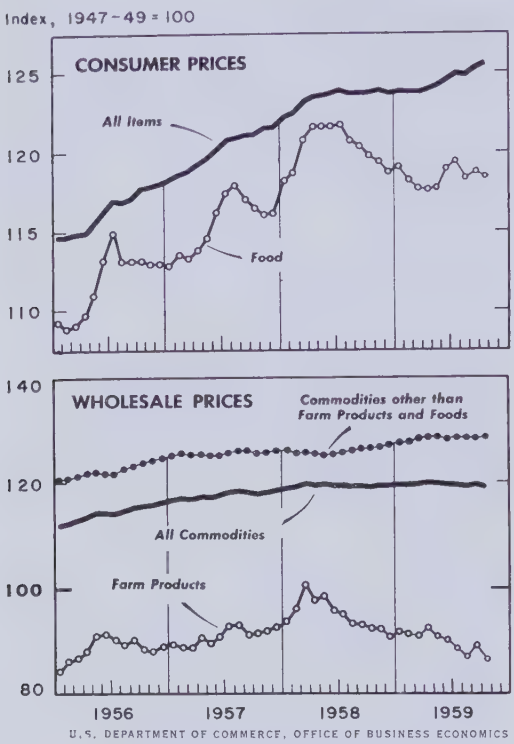
There were in general no labor shortages, with unemployment ranging from 4.7 million workers in the early part of the year to 3.2 million in September. Moreover, the very moderate increases in wage rates during the first three quarters were probably offset in many instances by improvements in production, so that unit costs and supply prices were not affected.

The average level of prices was expected to remain relatively stable in the last quarter of 1959. However, the nature of settlements of the steel strike and of strikes in nonferrous metals industries injected an element of uncertainty into future price trends.

The federal government sought in 1959 to prevent the economy from re-entering another period of creeping inflation such as occurred in 1956–57, when the price level rose about 6%. This policy was indicated by its efforts to balance the budget, to shift some of its borrowing to a longer term basis at higher interest rates, and its approval of the Federal Reserve System's restraint on the expansion of credit (see BANKING). The effectiveness of the policy in maintaining a relatively stable price level, or in confining any increase approximately to 1% or less in 1960 was also difficult to estimate.

Consumer Price Index and Retail Prices.—The Consumer Price Index indicated a slight rise in the cost of living in the United States in 1959.[1] It remained approximately at 123.7, the level of December 1958, until April, when it showed a tendency to rise, and reached an all-time high of 125.2 in Sep-

[1] The index is published by the U.S. Bureau of Labor Statistics. It shows average changes in retail prices of selected goods and services (about 300 items: 87 foods; 78 articles of apparel; 70 housing items, including rent, fuel, and house furnishings; and 61 other items, mainly services) which are important in the purchases of city wage-earner and clerical-worker families. Since these moderate-income families spend more, for example, on food than on apparel, a change in the price of food is of greater importance or weight in the cost of living than an equal change in the price of apparel. Consequently, based on their importance in 1952-expenditures, the 87 foods of the index have about 30% of total weight, and the 78 apparel items about 10% (housing items, 32%, and other items, about 28%). An average price change on foods, therefore, has about three times as much influence in the index as an equal change on apparel items. The moderate-income families, for which the 300 consumer items constitute important expenditures, represent about 64% of all people living in urban areas and about 40% of the total population. Hence, changes in the index do not accurately reflect changes in the cost of living of families at the lowest and highest extremes of the income scale. The average level of prices of the 300 items, weighted as indicated above, for the three years 1947–49 is called the base period and is designated as 100. Averages of prices for other periods can then be related proportionately to the base period of 100.



tember. Lower food prices in February and March offset increases for most other groups of goods and services, and the index remained stable. A slight decline in food prices in April did not offset the higher prices for transportation, medical care, recreation, and personal care, and the index rose to 123.9—the previous record level attained in the second half of 1958. Thereafter, practically all groups of goods and services showed monthly price increases. In August, however, lower food prices more than offset price increases of other items, and the index declined from 124.9 to 124.8. In September the peak index of 125.2 was 25.2% above the base period of 1947–49 and 8.5% above the record (115.4) of October 1953 which preceded the period of relative retail price stability ending in May 1956.

In September 1959 the Consumer Price Index was 1.2% higher than in the previous September. The food component of the index was 1.3% lower. Retail prices of meats, poultry, and fish were substantially lower than a year earlier; cereals, bakery products, and dairy products were slightly higher; and fruits and vegetables were appreciably higher. The housing component of the index, which was 1.4% higher than in the previous September, reflected appreciable increases for rent, gas and electricity, and household operations. Apparel prices were 1.8% higher for the year, largely because of a substantial increase in the prices of footwear. In the same period the remaining components of the index (transportation, medical and personal care, reading and recreation, and miscellaneous items) showed an increase ranging from 2.6% for personal care and reading and recreation, to 3.9% for medical care.

Consumer Price Indexes for Ten Large Cities.—Prices of items included in the cost of living index are collected in 46 cities which are representative of urban areas in the United States. Separate indexes are calculated for each of the 20 largest cities. Figures for ten of these, having indexes available in August, are presented in the accompanying table. Comparison of city indexes shows that prices in one place may have changed more or less than in another. They do not measure differences in the cost of living between cities. Among the ten cities represented in the table, the greatest increase in the cost of living between 1947–49 and August 1959 occurred in Seattle (28.9%); the smallest increase, in Scranton (21.2%). During this period the national Consumer Price Index increased 24.8%. From August 1958 to August 1959, the greatest increase in the cost of living occurred in Seattle (2.1%) and the smallest increase in Detroit (0.0%). During the same period the national Consumer Price Index rose 0.9%.

CONSUMER PRICE INDEX FOR TEN LARGE CITIES
AUGUST 1959 AND 1958 (1947–49 = 100)

City	August 1959	August 1958	Per cent change 1958 to 1959
Chicago	128.3	126.9	1.1
Cleveland	125.8	125.1	0.6
Detroit	123.7	123.7	0.0
Houston	124.8	124.0	0.6
Los Angeles	127.5	125.5	1.6
New York	123.0	121.1	1.6
Philadelphia	124.4	123.4	0.8
Scranton	121.2	120.4	0.7
Seattle	128.9	126.3	2.1
Wash., D.C.	122.0	121.2	0.7

(Source: U.S. Department of Labor, Bureau of Labor Statistics.)

Wholesale Commodity Prices.—The monthly wholesale price index of the U.S. Bureau of Labor Statistics showed a fractional increase of 0.4% in the first three quarters of 1959.[2] It rose from 119.2 in December 1958 to 120 in April 1959—an all-time high exceeding the previous record of 119.7 in March 1958. Later, the index fell to 119.1 in August and then rose to 119.7 in September. Increases in the early part of the year were the result primarily of higher prices of farm products (particularly fresh vegetables) and secondarily of industrial products (particularly hides and leather, and lumber and wood products). Prices of processed foods declined. In the May–September period prices of processed foods increased slightly, those of farm products declined (particularly livestock and live poultry), and those of industrial products remained relatively stable. During the three quarters the combined index for farm products and processed foods decreased about 1.3% and the index of industrial prices increased about 1.0%—partially offsetting changes which resulted in only a fractional increase in the all-commodities index.

The wholesale index of 119.7 in September 1959 represented an increase of 0.5% over September 1958. All of the increase resulted from an average increase of 1.7% in the prices of industrial products. Prices of hides, skins, leather, and leather products; of lumber and wood products; and of tobacco manufactures and bottled beverages were substantially higher. Also, appreciable increases occurred in the prices of textile products, metals and metal products, and machinery and motive products; only fractional increases occurred for chemicals, paper and allied products, furniture, and nonmetallic minerals (structural). The other three commodity groups in the wholesale index of industrial products (fuel, power, and lighting material; rubber products; and miscellaneous products) showed appreciable decreases in average prices.

On the other hand, prices of farm products and processed foods were lower in September 1959 by 4.5% and 3.0%, respectively, than a year earlier. Substantially lower prices prevailed for livestock and live poultry, plant and animal fibers, and eggs. The latter reached the lowest price since 1941. Only wholesale prices of fresh vegetables and fruits were appreciably higher. Wholesale prices of the majority of processed foods were appreciably lower (for example, meats, poultry, and fish; canned and frozen fruits and vegetables; packaged beverage materials; and fats and oils). Only prices of cereal, bakery products, and dairy products were slightly higher.

[2] It includes prices of nearly 2,000 basic commodities: that is, prices charged by manufacturers or producers, or prices prevailing on organized commodity exchanges. The monthly index is calculated from prices collected for a single day of the month, usually the Tuesday of the week containing the 15th. Since the different commodities priced are of different importance in relation to total trade, each price is multiplied by a weight determined by its sales in 1954. The average of prices for 1947 through 1949 is used as the base period (100). Since many of these prices are for raw materials, changes in such prices often indicate the future movements of some retail prices and of the cost of living. A few consumer prices, however, particularly rents and charges for many services, have no direct counterpart among wholesale prices.

Canada.—The cost of living in Canada continued to rise moderately in 1959. During the first three quarters the index of consumer prices rose 0.7%, and in September it was 1.2% higher than a year earlier. In these two periods prices of shelter, household operations, and other commodities and services showed a moderate increase. Food prices, however, increased only fractionally in the first three quarters and in September were slightly lower than in the previous September. Prices of clothing, the remaining component of the index, decreased slightly in 1959, but were fractionally higher in September than a year earlier.

The level of wholesale prices showed an increase almost identical with that of the consumer price index. In the first three quarters of 1959 the wholesale index rose 0.7%, and in September was 1.1% higher than a year earlier. Prices of animal products (particularly hides and skins, and leather) increased substantially. In this commodity group only prices of eggs and cured meats decreased. Prices of lumber also increased substantially. Slight increases occurred in the average prices of iron and steel products, nonferrous metals, and chemicals. Prices of vegetables, grain products, fibers, and textiles remained relatively stable. Of the eight commodity groups included in the index, only prices of nonmetallic minerals decreased slightly, particularly prices of petroleum products and asphalt.

United Kingdom.—The price level was highly stable in the United Kingdom in 1959. In the first three quarters of the year the cost of living declined fractionally, but in September was fractionally above the level of the previous September. This trend also appeared in food prices. A substantial decrease occurred in the price of beverages. Prices of fuel and light declined appreciably in 1959, but in September were at about the same level as a year earlier. A slight decrease occurred in the average price of household durable goods. Prices of clothing and tobacco remained practically unchanged. The price of housing, the remaining component of the index, showed a slight increase.

The wholesale price level showed very little change for the 9 or 12 months ending September 1959. Prices of materials used in manufacturing industries increased slightly, but there was a fractional decrease in the price of materials used in building and civil engineering and in house building. The price of raw cotton declined slightly, but prices of other basic commodities, such as raw wool and rubber, increased appreciably. Prices of the products of manufacturing industries decreased slightly. This was particularly true of iron and steel products.

(For further references, see the Index entry, *Cost of Living.*)

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COSTA RICA. This compact Central American country (area, 19,965 square miles) is bounded by Nicaragua on the north and Panama on the southeast. Except for approximately 22,000 Negro plantation workers on the Caribbean coast and some 1,200 Indians, nearly all of Costa Rica's 1,072,000 inhabitants (1958 est.) are of Spanish descent. The central plateau, with its "eternal spring" climate, is set among volcanic peaks ranging over 11,000 feet. Principal cities (with 1957 est. populations) are San José, the capital (133,734); Cartago (23,498); Limón (20,764); and Puntarenas (20,108).

Government.—The constitution of 1949 established a unicameral Legislative Assembly (45 members elected for 4-year terms), a popularly elected president (Mario Echandi Jiménez, inaugurated May 8, 1958, for a 4-year term) who may not succeed himself, and a Supreme Court (17 justices chosen by the assembly for 8-year terms). Following the elections of Feb. 2, 1958, President Echandi's National Union Party held only 10 seats in the assembly; ex-President José Figueres' National Liberation Party had 20; the National Republicans, 11; Civic Union, 1; and independents, 3. Suffrage is extended to men and women at the age of 20, and there are no literacy restrictions.

Education and Religion.—Primary instruction is free and compulsory; 167,846 pupils were enrolled in primary schools in 1957. Secondary education has been free since 1949; there were 20,514 secondary students in 1957. The University of Costa Rica in San José (2,458 students) is setting up the country's first medical school in cooperation with Louisiana State and Tulane Universities; premedical training was to begin in 1959.

Most Costa Ricans profess Roman Catholicism, the state religion (the government contributes to church budgets and controls church patronage), but the strong democratic traditions and the constitution allow individual freedom of worship.

Finance.—The colón remained stable in 1959 at 5.60 to the U.S. dollar for most exports and 5.67 for essential imports (6.65 for other imports). The country's gold and foreign exchange reserves (chiefly U.S. dollars) rose substantially to $24.6 million by July 1959 (end of 1957, $11.75 million; end of 1958, $19.52 million). The cost-of-living index (1953 = 100) declined during 1959 to 112 in July, from 114 in January. The government budget showed a deficit of 77 million colones for 1956, but a surplus of 6 million for 1957.

PLETCHER IN THE SIOUX CITY JOURNAL

"KEEPING UP WITH THE JONESES"

Transportation and Communications.—Reassessment of the cost of completing the missing link of the Inter-American Highway in the mountainous jungle terrain of southern Costa Rica led to a $5 million loan by the Export-Import Bank of Washington in 1959 to finance Costa Rica's share; the United States defrays two thirds of the cost directly, and the U.S. Bureau of Public Works supervises construction. In 1959, Costa Rica ceased its "flag of convenience" practice of registering alien ships; 233 foreign-owned vessels were affected. In 1959, after 60 years of operation, the United Fruit Company discontinued, for lack of business, its freighter service to the east coast (Puerto Limón). San José is connected by rail with Limón and with Puntarenas on the Pacific; a number of short-run railways are also in operation. Principal highway mileage is approximately 350; 22,103 motor vehicles were registered at the end of 1957. San José's modern El Coco airport is served by several international airlines; the national carrier, Líneas Aéreas Costarricenses, provides daily flights from El Coco to the major towns and cities.

Production.—Coffee and bananas are the main cash crops. Production of coffee for export in 1958–59 was estimated at 760,000 bags, or double the 1950–54 annual average and 11% above 1957–58. By international agreement, 20% of this crop is to be retained. Banana shipments declined in 1959 from about 9 million stems in 1958 because of storm damage. Cacao production has been stimulated by favorable market and price conditions; 9,000 metric tons (up 17% over 1957–58) were estimated for 1958–59. To meet the needs of a new slaughterhouse, 40,000 Nicaraguan cattle had to be imported to fulfill 1959 meatpacking requirements. Increased acreage and improved techniques resulted in an exportable surplus of cotton for the first time in 1958–59.

Per capita agricultural output in 1956–57 was 37% above the 1935–39 annual average. As a consequence of modernization (new and improved equipment, fertilizers, weed killers, insecticides,

etc.), productivity has improved markedly in rice, beans, corn, and meat, and the coffee yield is now some 500 pounds per acre (1949–54 annual average, 365 pounds). The continuing weakness of coffee prices caused the government to expand its diversification projects in light industry and agriculture, with the assistance of a World Bank loan (Feb. 11, 1959) of $3.5 million. Dependence on coffee as a foreign exchange earner has been growing sharply in recent years; coffee accounted for 55% of total exports in 1958, compared with 30% in 1948.

The gross national product was 2,287 million colones in 1957 (2,122 million in 1956). Business in general in 1958 prospered, but in recent years precipitation on the central plateau (rainy season, May to December) has been subnormal, with the result that a major water and power shortage has developed.

Foreign Trade.—Exports in 1958 continued to expand and totaled $91,900,000 (1957, $83,030,000). Coffee exports accounted for $50,560,000 (1957, $40,620,000), as the greater volume more than made up for the drop in price; bananas, $26,450,000 (1957, $32,200,000); and cacao, $5,850,000 (1957, $3,990,000). Other exports include lumber, abacá, live cattle, seafood, and insecticides. Beef should soon replace cacao as the nation's third export; in 1957–58, 17,000 head were shipped (1956–57, 3,700 head). Imports in 1958 were valued at $99,320,000 ($102,780,000 in 1957), and consisted chiefly of manufactures and foodstuffs. Exports to West Germany (mainly, coffee) have soared from 1.7% of the total in 1952 to 24.1% in 1957, and imports from West Germany have increased from 5.2% of total imports in 1952 to 9.2% in 1957. Exports to the United States declined in the 1952–57 period from 71.6% of the total to 55.2%; imports from the United States also declined, from 62.9% in 1952 to 55.2% in 1957.

Principal Events, 1959.—President Echandi found it difficult to retain his unpopular policy of neutrality toward political conflicts in the Caribbean area and Central America. The Legislative Assembly approved a resolution in January condemning the dictatorial nature of governments in Nicaragua, Paraguay, and the Dominican Republic; and on March 10 the assembly censured the president for being cordial (during a border ceremony in February) to President Luis Somoza of Nicaragua.

Ex-President José Figueres' falling out with Fidel Castro, after he had pronounced the Cuban executions justified and Castro a great leader, was the most disconcerting development for Costa Ricans. As a guest of the Cuban government in March, Figueres spoke frankly about the Latin tendency to abuse the United States and to underestimate the danger of world war. He was rudely interrupted by David Salvador, Cuban labor leader, who shouted that there could be no friendship between the United States and "oppressed" Cuba. This incident initiated an estrangement and verbal battle between the moderate left-wing, democratic forces in the Caribbean (exemplified by Figueres) and the radical ultranationalist elements of the region (led by the Cuban revolutionaries). Figueres, in Costa Rica, opined that acceptance of Communist support would end in a "dictatorship of the mob." Manuel Mora, Costa Rican Communist leader, returning from a visit to Cuba, denounced Figueres as "a servant of Yankee imperialism."

Revolutionary operations against the Somoza regime in Nicaragua continued to be based in part on Costa Rican soil despite the efforts of the incumbent administration. In June the assembly voted a resolution of support for the rebels. University students also declared their "moral and material" support of the rebels' "noble cause." Two Costa Rican congressmen, Marcial Aguiluz and Frank Marshall, were leaders in the anti-Nicaraguan activities.

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COTTON. Increased acreage boosted the 1959 cotton crop of the United States 3.2 million bales above production in 1958. The crop, estimated by the Agricultural Marketing Service of the U.S. Department of Agriculture at 14,701,000 bales (500 pounds gross weight each), also was above the 1948–57 average of 14,046,000 bales. The 1959 crop included 72,800 bales of American-Egyptian cotton, 10,800 less than was produced in 1958. Yields in 1959 fell just one pound short of the 1958 record of 466 pounds per acre. (Yields have moved sharply upward during most of the postwar period; the 1947–49 average was 287 pounds.)

Farmers planted 15,803,000 acres in 1959, compared with 12,379,000 in 1958. Abandoned land, including acreage removed for compliance with acreage allotments, was estimated at 4% of the planted acreage. In 1959, 15,164,000 acres were harvested, compared with 11,849,000 in 1958. Most of the increase in acreage over 1958 resulted from the termination of the acreage reserve program of the soil bank, in which nearly 5 million acres of cotton allotment land had been placed in the preceding year. Increased acreage also resulted from a new provision of agricultural legislation, which permitted cotton farmers to plant up to 40% more than their acreage allotment, though in doing so they received a lower price support than did farmers who planted within their allotments.

U.S. COTTON PRODUCTION, BY LEADING STATES
(In thousands of bales)

	Average 1948–57	1958	1959*
North Carolina	419	256	325
South Carolina	598	299	415
Georgia	655	352	525
Tennessee	572	419	665
Alabama	844	439	720
Mississippi	1,710	961	1,570
Missouri	386	275	505
Arkansas	1,429	925	1,555
Louisiana	624	297	495
Oklahoma	367	313	385
Texas	3,956	4,308	4,500
New Mexico	275	301	327
Arizona	740	734	750
California	1,424	1,604	1,920
Other states	48	29	44
United States	14,046	11,512	14,701

* Preliminary. Production is in 500-pound gross weight bales, which contain about 480 pounds of lint. (Source: Agricultural Marketing Service, U.S. Department of Agriculture.)

Stocks of cotton on Aug. 1, 1959, the beginning of the 1959–60 marketing year, amounted to 8,899,700 running bales, 163,000 more than a year earlier, but well below the 1956 peak of 14,528,800 bales. The total supply of cotton for 1959–60, including the carry-over, the 1959 crop, and an allowance for imports, was estimated at 23,729,700 running bales. This was above the 1958–59 total of 20,146,500 bales, but considerably short of the record supply of 27,643,900 for the 1956–57 marketing year.

Production of cotton outside the United States in 1959–60 declined for the first time in the postwar period. The Foreign Agricultural Service estimated production at 31,918,000 bales, 785,000 less than in 1958–59, but 7,651,000 above the

COTTON PRODUCTION, BY LEADING COUNTRIES
(EXCLUDING THE UNITED STATES)
(In thousands of bales)

Country	Average 1950–54	1958	1959*
China (mainland)	4,520	8,500	8,000
USSR (Europe and Asia)	5,880	6,800	6,900
India	3,382	4,100	4,000
Egypt	1,705	2,048	2,074
Mexico	1,333	2,345	1,710
Brazil	1,655	1,400	...
Pakistan	1,320	1,260	1,375
Turkey	624	825	825
Sudan	383	573	625
Peru	450	505	493
Argentina	557	460	...
Syria	231	443	400
Iran	186	320	330
Uganda	291	330	...
Greece	137	286	271

* Preliminary. Years shown refer to crop years beginning August 1 in which the major portion of the crop was harvested. Production is in bales of 480 pounds net. (Source: Foreign Agricultural Service, U.S. Department of Agriculture.)

average for 1950–54. The largest reductions occurred in China and in several of the foreign exporting countries. Production increased in a number of importing countries which are attempting to produce more of their cotton needs.

Production in Communist countries in 1959–60 was estimated at 14,984,000 bales, compared with 15,381,000 in the preceding year. Total output in the foreign free world was placed at 16,934,000 bales, 388,000 less than in 1958–59.

(See also TEXTILE INDUSTRY.)

WAYNE DEXTER,
Agricultural Marketing Service,
U.S. Department of Agriculture.

COUNCIL OF EUROPE. This 15-nation deliberative and consultative body completed in 1959 the first decade of its existence, the founding statute having been signed in London on May 5, 1949. (For membership of the Council of Europe, see EUROPEAN ORGANIZATIONS.)

The oldest and most broadly-based of the many European organizations, the Council of Europe may be said to have two general functions. First, it constitutes an open European forum in which viewpoints are explained and defended. Secondly, it maintains a constant and informed watch on the activities of the purely "functional" organizations, and in so doing promotes technical cooperation in specific fields. The council continued throughout 1959 to fulfill (within the basic limitations on its powers) this dual role.

The council's Consultative Assembly (its quasi-parliamentary body) met three times at Strasbourg in 1959. The third part of the Tenth Ordinary Session was held on January 19–22; there was also a special ceremonial sitting of the Assembly on April 20 to mark the council's tenth anniversary. The first part of the Eleventh Ordinary Session met on April 21–27, and the second part on September 14–18. The Committee of Ministers (the foreign ministers of the member countries) met on April 20 and December 14–15.

The highlight of the year was the inauguration of the European Court of Human Rights, based on the European Convention for the Protection of Fundamental Rights and Human Freedoms, whose ratification was completed in 1958. The court has 15 judges, but they will act in an individual capacity, and not as national representatives. On Jan. 21, 1959, the court was elected from a list of 43 candidates presented to the Assembly by the Committee of Ministers. The court held its first meeting on February 23–28. It set up a working party to draw up draft rules of procedure. The work was completed in September when Lord McNair (United Kingdom) was elected president of the court and René Cassin (France), vice president.

At the end of the January session of the Assembly, Senator Fernand Dehousse (Belgium) announced he would not seek re-election as president. At the opening of the April session, John Edwards, British Labour M.P., was elected president, thus becoming the Assembly's fifth president and the first from England. He died suddenly on Nov. 23, 1959, at Strasbourg, France.

Two themes were prominent in the Assembly's debates during the year. One was the danger of an economic division of Europe; the other was the need for the rationalization of European institutions. On the first point, the topic was given urgency by the first tariff reductions within the six-power European Economic Community (q.v.). In both April and September the Assembly called for a multilateral European trade organization. On the second point, it was suggested that the social and cultural activities of the Western European Union (q.v.) should be transferred to the council.

Among other proceedings of interest were resolutions strongly affirming the need to maintain the freedom of West Berlin (January 19 and April 23). In the legal field, the council made considerable progress toward the simplification of frontier formalities in Europe.

ARTHUR C. TURNER,
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COUNTERFEITING. See SECRET SERVICE, U.S.
COURTS OF LAW. See LAW.

COUVE DE MURVILLE, Maurice, French minister of foreign affairs: b. Reims, France, Jan. 24, 1907. Appointed minister of foreign affairs in Premier de Gaulle's cabinet in June 1958, he continued in that post when Michel Debré became the first premier of the Fifth Republic on Jan. 8, 1959.

A career diplomat, he came to the Quai d'Orsay by way of the Ministry of Finance. An "inspector of finance" at 23, after graduating first in his class from the École des Sciences Politiques, he remained in the Ministry of Finance until he was dismissed from the Vichy government in 1943. He fled to North Africa where he served in a variety of advisory capacities, first with General Giraud and then with General de Gaulle. He entered the Ministry of Foreign Affairs with the establishment of the Fourth Republic, and thereafter held the posts of director general of political affairs (1945–50), ambassador to Egypt (1950), France's permanent representative to NATO (1954), and ambassador to the United States (1955–56) and to West Germany until entering de Gaulle's cabinet.

Although authoritative statements on French foreign policy generally came from President de Gaulle during 1959, it was Foreign Minister Couve de Murville who in March defended France's abrogation of part of her naval agreement with NATO, who announced in October France's willingness to negotiate a cease-fire with the Algerian National Liberation Front (FLN), and who sought Britain's approval in November of France's intention of strengthening the political and economic bonds between the major continental and Benelux countries. (See also FRANCE.)

CRANBERRIES. See FRUITS.
CREDIT, Consumer. See CONSUMER CREDIT.
CREDITS, Foreign. See Index entry.

CRETE. A mountainous Mediterranean island southeast of Greece, forming (with adjacent islands) a Greek prefecture. Area (of prefecture), 3,235 square miles; pop. (1951), 462,124. Canea (33,211) is the capital, and the port of Candia (51,144) is the chief city. Farming, sheep and goat raising, and light manufacturing are the chief occupations. Exports include citrus fruit, wine, olive oil, cheese, and almonds.

CRIME. Highlights of the year in crime incidence, and in juvenile delinquency and crime prevention, are reviewed below in two sections: (1) U.S. Crime Statistics; and (2) Delinquency and Crime Prevention. For additional information, see CHILD WELFARE; FEDERAL BUREAU OF INVESTIGATION; LAW; NARCOTICS; POLICE; PRISONS.

U.S. Crime Statistics

Figures compiled by the Federal Bureau of Investigation for 1958 (under its new Crime Index) indicate that crime in the United States is again on the increase. The estimated number of serious offenses committed during 1958 was 1,553,922, an increase of 131,637, or 9.3%, over 1957. From 1957 to 1958 the estimated population in the United States increased 1.7%; therefore the percentage increase in the Crime Index was five times as great as the growth in population.

Crime Trends.—In determining the volume of crime as measured by the new Crime Index, it should be noted that the offenses of negligent manslaughter, minor larcenies, and statutory rape are no longer considered. The overall increase of 9.3% in crime is, however, supported by increases in each of the seven crime classifications which form the basis for the Crime Index.

Forcible rape, which increased 13.0%, was followed closely by robbery and burglary, which were up 12.7%, and 12.6%, respectively. Larceny over $50 rose 10.3%. The remaining Crime Index offenses showed lesser increases as follows: aggravated assault, up 2.6%; auto theft, 2.2%; and murder, 1.9%.

Although crimes of all types occur throughout the year, certain rather definite seasonal patterns emerge when crime data are arranged by months. Aggravated assaults and forcible rapes, for example, occurred at the greatest rate during the warmer months of 1958. On the other hand, negligent manslaughters tended to rise during the last quarter of the year, and robberies and burglaries were also more prevalent during the darker and colder months.

Each day during 1958, an estimated 22 people were feloniously slain, 40 forcible rapes occurred, and 311 other felonious assaults were committed; 1,073 larcenies over $50 were committed; 742 cars were stolen; and 206 robberies and 1,862 burglaries were perpetrated. A further breakdown of these figures indicates that three Crime Index offenses occurred every minute; 177 such serious offenses were committed each hour; and 4,257 occurred each day.

Persons Arrested.—The following data concerning the age, sex, and race of persons arrested are from annual reports prepared by city police. The figures include persons arrested and later released, as well as those held for prosecution under a formal charge, and are for arrests during the year 1958 in 1,586 cities, covering a total population of 52,329,497.

Sex.—Over eight times as many men as women were arrested in 1958, about the same proportion as in previous years. Of the 2,340,004 persons arrested in 1,586 cities during 1958, 248,439 were females and 2,091,565 were males.

Age.—Of the 2,340,004 persons arrested in 1,586 reporting cities during 1958, 284,215 (or 12.1%) were under the age of 18. Of those persons under 18 arrested in 1958, 37.6% (or 106,892) were not yet 15 years of age. Juveniles (under 18) represented 64.1% of all persons arrested for auto theft and 49.9% of those arrested for burglary. Similarly, 48.5% of the arrests for larceny and 22.8% of the arrests for robbery were of young persons who had not reached their 18th birthday.

Of the 2,340,004 persons arrested in 1958, 685,654 (or 29.3%) were under 25 years of age. Of the remaining arrests, 260,117 involved persons who were 25 to 29 years of age. The age group 30 to 34 accounted for 279,461 of the arrests; the age group 35 to 39, for 275,803; the age group 40 to 44, for 239,538; and the age group 45 to 49, for 211,998. Persons who were 50 or older accounted for 387,049 arrests, and the age of persons involved in 384 arrests was not known.

Race.—Of the total 2,340,004 arrests in 1,586 reporting cities, 97.4% were members of the white and Negro races. Arrests of members of the white race totaled 1,583,070 (67.7%) of all arrests in the reporting cities, while 696,209 (29.8%) were of members of the Negro race. The remaining arrests, totaling 60,725, were made up of 43,126 Indians, 1,252 Chinese, 296 Japanese, and 16,051 others.

Offenses Cleared by Arrest[1].—During 1958, police continued the relatively high clearances of crimes by arrest. In an average group of 100 crimes against the person, the police made 69 arrests and through these arrests solved 79 crimes in 1958. For each 100 crimes of all types as a group, the arrest of 21 persons cleared up 26 offenses on the average.

J. EDGAR HOOVER,
Director, Federal Bureau of Investigation.

Delinquency and Crime Prevention

Delinquency Areas.—Some insight into the nature of the juvenile delinquency problem is provided by a look at the sociological conditions in a specific neighborhood near the center of a Midwest metropolis.

This community, less than a square mile in size, had a population of approximately 20,000 in 1950; by 1958 the population had doubled. The increase in population, however, was not accompanied by a comparable increase in housing facilities. Residential property was subdivided and left without repair. In addition, there was an almost complete change in the type of resident families. The former home-owning and apartment-owning residents moved out in the face of an overwhelming influx of migrant workers, who were attracted by the prospects (often vague) of industrial employment. Housing is now so inadequate that even the newcomers move out as soon as their income permits; indeed, the neighborhood has a nearly complete population turnover every two years.

Families newly arriving in this community from rural areas and smaller cities do not bring with them the formal social organizations, such as religious or national solidarity, which characterized previous immigrations. The temporary nature of their moves makes these people singularly uninterested in trying to develop community spirit, which is important to the welfare of families in a new environment. There is, seemingly, no one to care what happens to youthful newcomers, no one to challenge the viciousness of the older youths who dominate the streets by ganging together.

In the process of investigating reported crimes,

[1] The term "cleared by arrest" is used in those instances in which one or more of the offenders responsible for the commision of a particular offense were arrested and subsequently made available for prosecution.

the police of this community have identified 40 street corner groups which engage in delinquent acts. Many youths find themselves coerced into lining up with one gang or another for their own safety. These gangs are indeed a new terrorizing development on the American scene; and depreciated areas of large cities, formerly described as slums, now often may be better characterized as gangland jungles.

While large cities account for the big statistics on crime increase, other locations, formerly presumed to be practically immune to youth crimes, are also faced with spreading delinquency. Metropolitan suburbs, with their above-average standard of living and their high proportion of business executives whose promotion depends on a willingness to move their families from one city to another at frequent intervals, are also faced with increasing youth problems.

Delinquency Statistics.—There is a tendency to interpret year-to-year fluctuations in the number of delinquent youth commitments to correctional agencies as indicating a trend in regard to an increase or decrease in delinquency. Such short-range figures are misleading. Commitment data, therefore, must be based on the average of a period of several years if they are to be reliable as indicators of significant trends.

The Illinois Youth Commission, in an attempt to provide a valid yardstick by which to measure delinquency trends, annually issues a report which shows commitment averages over a five-year period, computed for the current and preceding four years. The following table shows the actual number of commitments to the Illinois Youth Commission in each fiscal year from 1955 to 1959, and the 5-year average commitment rate per 1,000 population in the 10–17 age group:

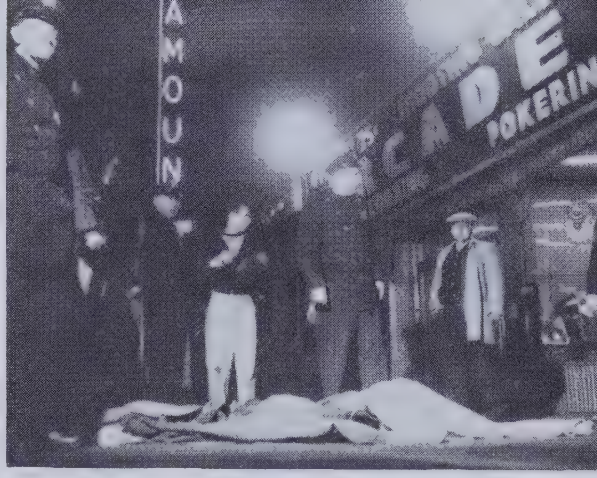
Commitments		Commitment Rate	
Fiscal year (ending June 30)	No. of commitments	5-year period	Rate per 1,000 pop. (ages 10–17)*
1955	1,157	1951–55	4.94
1956	1,318	1952–56	5.67
1957	1,555	1953–57	6.52
1958	1,944	1954–58	7.75
1959	1,881	1955–59	8.63

*Rate for each period based on 1950 census population, uncorrected for subsequent population growth.

The number of commitments to state facilities indicates an increasing tendency for counties to call on state services for help with delinquency problems. Also, the upward trend in the commitment rate reflects the fact that the courts, finding that more and more delinquent youth come from neighborhoods where rehabilitation under probation or other forms of supervision is highly improbable, are turning over an increasing number of delinquents to the Youth Commission.

New York Antidelinquency Drive.—The alarming increase in juvenile delinquency in New York City (q.v.) resulted in a set of proposals by Gov. Nelson Rockefeller to meet the youth crime problem. The governor's program, announced on Sept. 8, 1959, contained the following items: (1) the establishment of work camps for potential delinquents and for the rehabilitation of youths convicted of minor crimes[1]; (2) the acceleration of additional detention facilities to avoid overcrowding; (3) the augmentation of probation and parole services; (4) the review of youth and work laws; (5) the overhaul of the continuation school program; and (6) cooperation with management and trade unions in regard to part-time employment for youth, and a more effective apprenticeship training program.

[1] The federal government, as well as the states, is recognizing the potential value of work camps as a deterrent to juvenile delinquency. (Already, 11 states have launched forest work camps for delinquents.) A bill pending in Congress provides for a system of camps (probably to be known as the Youth Conservation Corps) which aims at preventing possible delinquency among youths "of good character." Two other bills, also due for consideration in 1960, provide for federal-state work camps for youths who have committed delinquent acts.



UPI

Police stand beside the covered body of a teen-ager killed in a gang fight in downtown Brooklyn on Feb. 23, 1959.

Senate Investigation.—The Senate Subcommittee to Investigate Juvenile Delinquency continued its work in 1959. During the year, the committee held hearings in New York City and Chicago regarding the effectiveness of the juvenile court system. The problems given major attention included: (1) the increase in the number of juvenile cases, which in some instances may overload court facilities to a point where services become ineffectual, or break down entirely; (2) the proper selection of cases referred to juvenile courts; and (3) the preservation of offenders' constitutional rights.[2]

Surveys and Reports.—The National Education Association (NEA) conducted a survey project in 1958–59 on juvenile delinquency. This study, completed in June, was undertaken because of the "concern of the teaching profession with the spiralling problem of juvenile delinquency." Specifically, its aim was to seek ways by which teachers and school administrators might help predelinquent and delinquent youth.

The report of the NEA study has been published in two booklets. The first, *Delinquent Behavior: Culture and the Individual* by Dr. William C. Kvaraceus, offers a working philosophy for dealing with the problem of delinquent

[2] The committee's report, *The Effectiveness of the Juvenile Court System,* has been published in an 87-page booklet by the Government Printing Office. A briefer description of these findings appeared in an article by Sen. Thomas C. Hennings, Jr., subcommittee chairman, in the June 1959 issue of *Federal Probation.* The reader is also referred to the article, "The Dilemma of the Juvenile Court," in the March 1959 issue of *Social Service Review.*

Manual labor is prescribed for juvenile offenders held at the Youth Rehabilitation Facility, North Pharsalia, N.Y.

THE NEW YORK TIMES

behavior. Also, for planning and evaluating school practices designed to deal with behavior problems, the booklet provides a knowledge of their underlying causes. This document, the work of a team which drew on current developments in anthropology, sociology, criminology, psychology, psychiatry, and pediatrics, aims at presenting a theory which is consistent with the various aspects of the problem of delinquency and yet does not contain the conflicts that so often are found among the various sciences involved. As indicated by the title, the document points toward environment as the cause of the development of many personality traits and as the area where control of much behavior can be achieved.

The second NEA publication, *Delinquent Behavior: Principles and Practices*, also by Dr. Kvaraceus, deals with desirable school practices for the prevention and control of delinquency. It covers the principal areas in which the school should deal with young offenders—early identification of potential delinquents, school curriculum, pupil-teacher relationships, adjustment services, and school cooperation with community agencies—and gives specific examples of each.

Another significant contribution to the literature on delinquency prevention is contained in the March 1959 *Annals of the American Academy of Political and Social Science*. This issue, "Prevention of Juvenile Delinquency," is devoted to a series of reports describing various prevention projects conducted by social agencies in major cities. An attempt is made in each report to evaluate the effectiveness of the methods used in these scientifically designed programs, which have been set up to test or demonstrate certain innovations or points of emphasis, such as intensive casework services for offenders, coordination of police and social work services, organization of area projects, city block improvement committees, and the use of work camps. (See also SOCIOLOGY.)

White House Conference, 1960.—About 7,000 selected delegates are scheduled to attend the 1960 White House Conference on Children and Youth, Washington, D.C., March 27–April 2. The organization and management of the conference is an assigned function of the U.S. Children's Bureau. In every state during 1959, volunteer committees of professionals and interested lay workers have been surveying youth needs in preparation for the meeting. The major emphasis will be on social changes of the past ten years and the effect these changes have on the social values of today's youth. (See also CHILD WELFARE.)

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CROPS. See AGRICULTURE; FRUITS; GRAINS; VEGETABLES; and the Index entry, *Farm*.

CROSS-COUNTRY. See SPORTS, GAMES, AND SHOWS.

CUBA. With an area of 44,218 square miles and a population (1953 census) of 5,829,029 (1959 est., 6,666,000), Cuba is strategically and commercially the most important of the West Indian republics. The beautiful capital, Havana, has a population (est. 1959) of 1,249,000. Other large cities, with urban-area populations (est. 1959) are: Santiago de Cuba, 190,000; Camagüey, 128,000; Santa Clara, 91,000; Guantánamo, 77,000; Matanzas, 71,000; and Holguín, 70,000.

Government.—Dr. Fidel Castro and the 26th of July Movement seized power by force after Gen. Fulgencio Batista y Zaldivar resigned as president on Jan. 1, 1959, and fled the country, first to Ciudad Trujillo, Dominican Republic, and later to Lisbon, Portugal. (Batista established his residence at Madeira in September.) Castro proclaimed Dr. Manuel Urrutia provisional president on January 2, and Dr. José Miró Cardona was appointed premier. On January 6 the president dissolved Congress, abolished the Urgency Court (which had tried Castro rebels), and dismissed all governors, mayors, and councilmen. The revolutionary government also announced on January 6 that it would rule by decree for at least 18 months. Later, Castro declared that democratic elections and the re-establishment of constitutional government would not take place for 4 or 5 years. Castro assumed office as premier on February 16 after a new law was decreed on February 10 which reduced the required age for the presidency from 35 to 30 years in order to permit the 32-year-old Castro to take office. Castro resigned as premier on July 17 in order to be free to attack President Urrutia and force his resignation, but he resumed the premiership on July 26 after the Council of Ministers had appointed Dr. Osvaldo Dorticós Torrado as the new president.

Education and Religion.—Cuba's record in providing public primary and secondary education is among the most distinguished in Latin America. The budget of the Education Ministry for 1958–59 was 74,500,000 pesos, the largest amount for any governmental function. Education is compulsory and free between the ages of 7 and 14, and only about 22% of the population above 15 years of age is illiterate. The average length of primary school enrollment is 4–5 years. The Federation of University Students seized control of the University of Havana on Feb. 4, 1959, and announced the dismissal of all professors who had supported former dictator Batista. They also presented demands for various internal reforms. So many professors resigned during the year that the university had difficulty in maintaining operations.

Although most Cubans are nominally Catholics, the Roman Catholic Church has less social and political influence in Cuba than in most Latin American countries.

Transportation and Communications.—Cuba has about 3,714 miles of public service railways. In addition, there are 7,542 miles of private industrial lines, operated primarily by the large sugar estates. The country has 5,083 miles of all-weather roads, including a major highway extending for a total of 706 miles through the country's 6 provinces, from the cities of Pinar del Río to Santiago de Cuba. Damage to railroads, roads, and telephone lines produced by rebel military operations in 1958 was only partially restored in 1959. Cuba is served by some 30 shipping lines, with the port of Havana handling 65.5% of the traffic. There is also excellent international and domestic air service. Cuba has more television sets than any other Latin American country. There are 6 television channels and 80 radio stations. About 1,042,000 homes have radios and 364,560 have TV sets.

Economic Conditions.—On April 23, 1959, Dr. Rufo López-Fresquet, minister of the treasury, predicted that 1959 would be the most prosperous year in Cuba's history. He declared that on January 7 Cuba had gold and dollar reserves of $373,000,000, with an indebtedness of only $262,000,000, leaving a net of $110,000,000. The minister predicted that with expected collections of $100,000,000 in back taxes and with the benefits of the progressive economic plans of the new government, Cuba would prosper greatly. However, the national income was 2,140,000,000 pesos in 1958, as compared with 2,320,500,000 pesos in 1957—a decline of 7.7%. The gross national product was valued at 2,635,400,000 pesos in 1958, down by 200,100,000 pesos from 1957, or a decline of 7.1%. Real per capita income was $335 in 1958, compared with $368 in 1957.

The policies of the Castro government did not arrest the declines that began in 1958. By Feb. 27, 1959, the government had sealed safety deposit boxes, frozen bank accounts, and imposed currency controls. This had the effect of paralyzing construction. The value of private construction permits issued during July 1959, for example, was only two fifths of those issued during July 1958. Rents were reduced 30–50% in March, which had the effect of curtailing construction of new rental units. A new law was decreed on March 1 which permitted the government to confiscate all properties of Cubans who had collaborated with the Batista government at any time since 1952, and on May 13 the government confiscated the holdings of 117 companies and 18 individuals. Most of these companies were engaged in the construction of public works, but some were engineering firms and investment companies, and others included two hotels and two airlines. The government took over about 100 more concerns for investigation of graft chargès.

On March 4 the government seized control of the Cuban Telephone Company, an affiliate of the International Telephone and Telegraph Company, and decreed a reduction in its rates beginning April 1. On August 20, the government ordered the Cuban Electric Company, an affiliate of the American and Foreign Power Company, to cut rates by 30.5%. Although the government also ordered the company to continue its expansion program, the American and Foreign Power Company canceled $15,000,000 in public financing on August 26.

United States direct investments in Cuba almost ceased during 1959. Unemployment became acute by the end of the year. The government attempted to counteract the economic distress by a

program of public works, including expenditures of $134,000,000 in the second half of the year for new roads and streets, sewage systems, aqueducts, bridges, and similar public works. The government also proposed to spend $10,000,000 in each of the 6 provinces for low-cost public housing. However, increased government spending exerted further pressure on foreign exchange balances through increased demand for imported goods. Desperately short of dollars, the government imposed (on September 24) an ad valorem tax of 30–100% on hundreds of imports and drastically tightened restrictions on foreign exchange. It was hoped that this expedient might save $175,000,000 in dollars and foreign exchange.

Tense labor-management relations and government-decreed wage increases (18–20% for the lowest paid workers, 5–10% in the higher brackets) impeded economic development in other fields. Mining operations, for example, were slow during the year. The government intervened and took over operations of the largest manganese mine. A new petroleum law approved on November 21 reduced the size of petroleum claims to 20,000 acres for each individual or company, and imposed a government royalty of 60% on oil production. Another tax reform law, dated July 14 and made effective October 1, reduced the number of tax classifications from about 150 to about 25. Although designed to yield more revenue, some of the provisions of the new law are especially severe on foreign companies.

Agriculture.—At least 500,000 Cubans depend on the sugar industry for their livelihood, and about two thirds of the national income comes directly or indirectly from sugar. Investments in sugar total about $650,000,000, of which United States investments are about $300,000,000. United States interests control 30 of Cuba's 161 sugar mills. Because Cuba is the world's largest producer of cane sugar, domestic and international controls are used to limit production, allocate markets, and control prices. Cuba sells about half its sugar to the United States, which, under its quota system (the Sugar Act of 1948, as amended and extended to 1960), gives Cuba an average annual quota of 2,960,000 short tons at prices substantially above world market prices. Despite this virtual subsidy, Castro and members of his government repeatedly criticized the United States in 1959 for treating Cuba unfairly in respect to sugar imports.

Sugar production at the end of the 1959 grinding season was estimated at 5,787,823 Spanish long tons, or 12,177 tons below the authorized quota of 5,800,000 Spanish long tons set by the government. As of July 15, 1959, Cuba had exported 2,541,109 Spanish long tons of sugar, as compared with 3,444,469 Spanish long tons in the same period in 1958. Exports of sugar to the world market (excepting the United States) were only 744,393 tons, as compared with 1,470,485 tons for the same period in 1958. However, the sale in September 1959 of 330,000 tons of sugar to the USSR (of which 100,000 tons were scheduled for 1959 delivery) and of 150,000 tons to France (30,000 tons in 1959) helped to reduce Cuba's sugar surplus. Low world prices for sugar, plus a decline in sugar production and in exports, created many of the economic difficulties faced by the Castro government during 1959.

Cuba produces high-quality tobacco, exports of which increased from $39,500,000 in 1951 to $98,325,700 in 1956 but then declined to about $52,000,000 in 1958. Cuba must import about a third of the foodstuffs it requires.

Land Reform.—The heart of Castro's revolution is drastic reform of land tenure and methods of farming. The Agrarian Reform Law, signed on May 17 and promulgated on June 4, 1959, provides that no foreigner can be a shareholder in a Cuban cane stock company, that only Cubans can purchase land in the future, and that no foreigner can inherit land. All land holdings above 995 acres are subject to expropriation by the government, unless such lands are being used for cattle, rice, or sugar production, in which case the maximum is 3,316 acres.

DARCY IN (LONG ISLAND) NEWSDAY

"Babe in the Woods"

The government will pay for the land it expropriates with 20-year, 4½% bonds which are not convertible into dollars. The value of the expropriated lands will be determined by their tax value prior to Oct. 10, 1958. As tax valuations are extremely low in Cuba, this provision permits the government to take the land it wants at a fraction of its market value. The government proposes to divide some of the expropriated land among 200,000 landless Cubans, each receiving 66 acres without cost and with the privilege of forcing the owner to sell more land up to a total of 147 acres. However, the recipient cannot sell or mortgage the land he acquires, and only one person of a family may inherit it.

A National Agrarian Institute (INRA), headed by Castro and directed by leftist Prof. Antonio Núñez Jiménez, was created to administer the law and has absolute power over every aspect of the land-reform program. Each farmer must cultivate the crops INRA tells him to cultivate or forfeit the land. INRA will operate cooperatives and administer public monopolies for the domestic and international sale of various commodities. On June 11, 1959, the United States sent a note to Cuba expressing "serious concern" over the compensation to be paid United States citizens for their property (about 1,663,000 acres) which might be expropriated. Cuba rejected the protest on June 15. The first seizure of land took place on June 25, 1959, and involved 2,357,600 acres of ranch land in Camagüey Province. As much as 8,250,000 acres are subject to expropriation under the law. The largest property expropriated (on November 15) was the 33,500-acre King Ranch,

which was owned largely by United States interests.

Principal Events, 1959.—Military trials of supporters of former President Batista began in the capital almost immediately after Dr. Fidel Castro arrived in Havana on January 8. Many United States congressmen and newspapers protested the summary executions and trials, which proceeded without benefit of due process of law under the Cuban Constitution and legal system. Major Jesús Sosa Blanco was the first to be tried (January 22) in the great sports arena in Havana before 18,000 spectators and before radio and TV audiences. Although 45 witnesses testified against him, he was not permitted adequate legal facilities for his own defense. The major was condemned to death (January 23) in both this and a later trial, but the excesses of this kind of procedure were too great for the administration to bear, and other scheduled trials in the sports stadium were canceled on January 26.

On March 3, Castro denounced the acquittal on the previous day of 43 air force men by a court martial in Santiago de Cuba, and declared that the accused would be tried again. This was done and the men found guilty were sentenced to long prison terms. When questioned as to why due process of law was being denied accused persons, Castro declared that "revolutionary justice" was based not on legal precepts but on the "moral conviction" of the people. On May 11, the government announced that the military trials were to stop and civil courts were to try future cases. However, more than 500 persons met death by firing squads as a result of the military trials. In addition, civil courts were permitted to impose the death sentence and long prison terms for all counter-revolutionary activities. Persons so accused could be refused bail and held until trial. By the end of the year, Cuban jails held many political prisoners. Among them were three United States citizens who had been convicted December 8 for alleged counter-revolutionary activities and sentenced to 25–30 years in prison; two of the three men were pilots, and all denied the government's charges.

As early as April 18 it was charged that revolutionary organizations had been formed in Cuba to invade Panama, the Dominican Republic, Nicaragua, and Haiti. On April 26, armed men landed at Playa Colorado in Panama. Premier Castro denied (on April 28) that Cuba had anything to do with the invasion. The bulk of the invaders capitulated on May 1, and it was found that most of them were Cubans. On June 3, an airborne invasion of Nicaragua took place, for which Nicaragua blamed Cuba. On June 14, armed men landed at the airport at Constanza in the Dominican Republic, and on June 19 an invasion was attempted at Maimon Bay. The Dominican Republic blamed Cuba for the two invasions, although both were repulsed. On August 13, an abortive invasion of Haiti occurred, and the Haitian government charged (on August 24) that officers and soldiers in the Cuban revolutionary army had participated. The inter-American conference of foreign ministers held at Santiago, Chile, in August attempted to deal with tensions in the Caribbean. (See also INTER-AMERICAN AFFAIRS; ORGANIZATION OF AMERICAN STATES.)

Premier Castro visited Venezuela in late January, and the United States, Canada, Argentina, Uruguay, and Brazil in April and May. During his unofficial visit to the United States on April 15–27, he said he sought "good relations and good economic understanding" and declared that the revolution in Cuba had been "misrepresented" abroad.

By April 10, defectors such as Rafael del Piño were claiming that the 26th of July Movement was Communist infiltrated. Many Cubans were arrested on April 14 and April 20 for counter-revolutionary plots, and the government frustrated a plot on June 5. On June 30, Maj. Pedro Luis Díaz Lanz, chief of the air force, resigned and charged that the armed forces were Communist influenced. He escaped in a small boat to Miami, Fla., and later charged before a United States Senate committee that Castro and high officials in the government were Communists. These and similar charges were repeatedly denied by Castro and other Cuban officials throughout the year. Between August 10 and August 12, about 4,500 persons were arrested for allegedly plotting against the government. Late in the year sporadic gunfire and bombings occurred in the capital and subversive pamphlets were dropped from airplanes. The main opposition group seemed to be an organization called the White Rose, which was headed by Dr. Rafael Díaz-Balart, former brother-in-law of Castro who was residing in New York City. On November 10 the White Rose movement named Dr. Domingo Gomez Gimeranez, physiologist at Columbia University, as its choice for provisional president. Maj. Hubert Matos, military chief of Camagüey Province and one of the leaders of the revolution, was arrested after he had resigned his position on October 20 and had charged that Communists had penetrated the government. On December 15 he was sentenced by a military court to 20 years' imprisonment.

On October 21, a plane dropped leaflets over

(*Left*) Cuban revolutionary troops made a triumphal entry into Havana, January 8, after week-long victory march from Santiago. Here, the son of Fidel Castro, revolutionary leader, stands among rebel troops atop a tank during celebration. (*Right*) Fidel Castro (at microphone), shown with his brother Raúl, led insurgent forces that overthrew the Batista regime.

WIDE WORLD

WIDE WORLD

In January, Batista followers accused of "war crimes" faced large public trials, as did Major Jesús Sosa Blanco, who appeared on trial before 18,000 spectators in a Havana sports arena (right photo). Following a courtroom retrial during which he was confronted (left photo) by a woman who accused him of killing her son, Major Sosa Blanco was executed on February 18. Military tribunals (suspended in May but re-established in the fall) ordered over 500 executions in 1959.

Havana and armed men in cars fired at street crowds, reportedly killing 2 persons and wounding 45 others. Two days later, Premier Castro accused the United States of permitting a plane to bomb the capital. At a huge rally held in Havana on October 26, many violent anti-American speeches were made by officials of the government. The United States replied that there was no evidence of any bombing, although the Federal Bureau of Investigation reported that Maj. Pedro Díaz Lanz (who was arrested by United States authorities in Florida on November 4) had admitted piloting a plane which dropped leaflets over Havana on October 21. A United States note delivered on November 9 describing Cuban reports of the so-called bombing incident as "inaccurate, malicious, and misleading" was rejected by Cuba and termed "absolutely false." In early November the Justice Department took steps to prevent unauthorized flights to Cuba from the United States.

During the tenth National Labor Congress held in Havana on November 18–23, the Cuban Confederation of Workers announced its withdrawal from the anti-Communist Inter-American Regional Organization of Labor, which was described in a resolution as an "agency of American imperialism;" and the congress voted to form a confederation of revolutionary workers of Latin America. However, the labor movement refused to elect Communists to its executive committee. Premier Castro addressed two tumultuous sessions of the congress and called for labor's "complete unity" in defending the Cuban revolution.

To what extent the revolutionary government was Communist dominated could not be determined objectively by the end of the year. However, there was no doubt that Castro's government had taken no steps to suppress the Communists as long as they supported the revolution. Castro's campaigns against prostitution, narcotics, corruption, and unregulated gambling undoubtedly benefited the great majority of the Cuban people. Despite his personal popularity, however, opposition to Castro and his government was mounting by the end of 1959.

WILLIAM S. STOKES,
Professor of Comparative Political Institutions, Claremont Men's College.

CURACAO. See NETHERLANDS ANTILLES.

CURLING. See SPORTS, GAMES, AND SHOWS.

CUSTOMS, Bureau of. Revenue collected by this bureau for the fiscal year 1959 amounted to nearly $1,304 million. Of this amount, over $954 million was derived from duties and miscellaneous customs collections. The balance comprised internal revenue taxes on imported merchandise. Approximately 40% of all imports into the United States were duty free.

During 1959 more than 41 million vessels, aircraft, automobiles, buses, trains, and other vehicles brought over 143.5 million persons into the United States, and almost 28 million persons walked across the nation's borders, all subject to customs inspection.

Air travel continued to increase, with the arrival of over 169,500 aircraft carrying over 3,750,000 passengers. (See also TOURISM.) Preflight customs clearance for persons departing on direct flights to the United States was in effect at Montreal, Toronto, and Winnipeg, Canada.

During the fiscal year 1959, 1,312,000 formal entries of merchandise were filed involving 2,043,000 invoices covering imported merchandise. Appraisers' personnel examined 1,454,000 packages. Customs laboratories again analyzed over 120,000 samples, a large majority being "import" samples of dutiable merchandise analyzed to develop and report facts needed for tariff classification purposes.

Continuing as major enforcement problems in 1959 were the smuggling into the United States of narcotic drugs, marihuana, psittacine birds, and diamonds, and the smuggling out of arms, ammunition, and implements of war, due to conflicts in Cuba and other Caribbean countries. The use of fraudulently undervalued invoices for filing customs entries for imported merchandise also continued as a major problem.

Seizures of merchandise throughout the country for violations of laws enforced by the Customs Service totaled 13,116, with an appraised value of $10,876,858. This total included 580 automobiles and trucks, 22 aircraft, and 33 boats. There were 1,255 arrests for violations of laws enforced by the Customs Service.

During the fiscal year, 2,580 vessels never before documented were added to the nation's merchant fleet. The newly documented vessels roughly reflected the total number of such vessels of all sizes built. Of the total of 47,157 documented vessels, slightly more than 4,200 were listed as yachts, while nearly 43,000 were authorized through documentation to be used in commercial activities in the foreign, coastal, or fishing trades. There were 1,494 vessels removed from documentation.

The booklet *Customs Information for Exporters*

to the United States, designed to assist American importers and foreign exporters to the United States, was revised to incorporate all recent legislative and procedural changes.

Public Law 86–14, approved April 22, 1959, permits articles imported for exhibition or for use in constructing, installing, or maintaining foreign exhibits at trade fairs to be entered free under bond.

The uniform worn by customs employees has been redesigned and will be the same for all areas throughout the Customs Service. Customs inspectors will now be easily distinguishable from the inspectional force of other government agencies, thereby eliminating confusion in the minds of the public.

RALPH KELLY,
Commissioner of Customs.

CYCLING. See SPORTS, GAMES, AND SHOWS.

CYPRUS. Situated some 40 miles from the coast of Turkey, Cyprus is the third largest island (area, 3,572 square miles) in the Mediterranean Sea. Until 1959 the island had been for 81 years a British crown colony, but it was to become (sometime in 1960) an independent republic under a tripartite agreement signed in London a year earlier between the governments of Great Britain, Greece, and Turkey. The population was estimated in 1958 at 549,000 (80% of Greek origin; nearly 18% are Turkish). The capital and largest town is Nicosia (1956 pop., 81,700, including suburbs); principal ports (with 1956 estimated populations) are Famagusta (26,800), Limassol (36,500), and Larnaca (17,900).

Government.—In 1959, Sir Hugh Foot served (since Dec. 3, 1957) as governor and commander in chief of the crown colony. On Dec. 13, 1959, Archbishop Makarios was elected president of the new republic which is to come into being in 1960; earlier, Dr. Fazil Kutchuk had been chosen as vice president. (Details on the establishment of the new republican form of government are stated below under *Principal Events.*)

Finance.—In 1958, revenue was estimated at £23,328,653; expenditure at £23,719,296. Allocations to the development program totaled £2,449,646.

Education.—As of Oct. 1, 1958, there were 744 primary schools, with 80,000 pupils, and 54 secondary schools (23,600 pupils). Other facilities include a teacher-training college (360 students in 1958), a technical institute, two secondary technical schools, and one preparatory technical school.

Economy.—Predominantly agricultural, production in 1958 consisted chiefly of wheat (78,000 tons, from 197,000 acres), barley (71,900 tons, from 148,000 acres), and grapes (68,700 tons). Livestock comprised sheep (394,000), goats (132,000), and cattle (31,300). Industrial production in 1958 included cement (81,700 tons), and 178 million kw.-hr. of electricity were generated. Copper deposits have been worked since ancient times. Mineral production for export in 1958 consisted chiefly of iron pyrites (820,000 tons) and cupreous pyrites (229,000).

Total imports, valued at £36,700,000 in 1958, were chiefly unworked iron and steel (30,404 tons), metal manufactures (valued at £1,380,000), motor cars (3,251 units), commercial vehicles (410), and nitrogenous fertilizers (26,800 tons). The value of total exports in 1958 was £17,600,000. Besides copper concentrates, exported products included oranges, 73,300,000 pounds; grapefruit, 8,863,000 pounds; lemons, 12,574,000 pounds; cattle hides and skins, 3,120 cwt.; and sheepskins, 2,270 cwt. Cyprus' chief customers are the United Kingdom, West Germany, the Netherlands, and the United States, which in 1958 took exports valued at £1,143,000.

Transportation and Communications.—Seven airlines maintain regular services to Cyprus; 102,223 civilian passengers passed through Nicosia airport in 1957. Regular steamship passenger services are supplied by the Adriatica Line, Hellenic Mediterranean and Nomikos Lines, and the Zim (Israeli) Line. Cyprus' 800 miles of asphalted roads are linked with a network of 2,900 miles of good secondary roads.

Principal Events, 1959.—After four years of guerrilla warfare in mountainous terrain, and of murderous civil strife in the principal towns, agreement on the future of Cyprus was reached with unexpected ease when the prime ministers of Greece and Turkey met in Zurich, Switzerland, early in February. With the assent of the Greek ethnarch of Cyprus, Archbishop Makarios, the demands of Greek Cypriotes for *enosis* (union with Greece) were withdrawn; in turn, the Turkish government no longer insisted that Cyprus be partitioned but agreed instead to a comprehensive plan for an independent republic, with a presidential regime as the basic structure of future government of the island.

British interests affected by the plan were satisfied by provision that military bases would remain under full British sovereignty in two areas at Akrotiri-Episkopi-Paramali and Dhekelia-Pergamos-Ayios-Nikolaos-Xylophagou. Britain would also retain use of facilities at the port of Famagusta and the Nicosia airport. Prime Minister Harold Macmillan accordingly signed on Feb. 19, 1959, a joint memorandum with the heads of the Greek and Turkish governments, in which future political and administrative arrangements were defined as follows:

Not later than a year from the agreement, a republican State of Cyprus was to be formed, with a Greek president and Turkish vice president elected by universal suffrage for 5-year terms by the Greek and Turkish communities, respectively. Sharing authority with the executive will be a Council of Ministers (7 Greek and 3 Turkish members), designated respectively by the president and vice president, who together have final veto powers over the council's decisions. Legislative authority is to be vested in a House of Representatives (a membership of 50 was determined later) elected in the proportions of 70% Greek and 30% Turkish by the chief ethnic communities on the basis of universal suffrage. In addition, each community is to have its own communal chamber, with the right to impose taxes to support local organizations and institutions. Specific areas of authority for the communal chambers include religion, education, sporting and charitable foundations, and producers' and consumers' cooperatives and credit establishments. Separate municipalities are to be created in the five largest towns by the Turkish communities in them.

A High Court of Justice constitutes the chief organ of the judicature, superseding the Supreme Court which, under British administration, had appellate jurisdiction over the decisions of all other courts. Both civil and criminal justice in the republic are on a communal basis, with the High Court determining the composition of mixed tribunals in cases where parties to disputes belong to different communities.

The civil service is to be composed of 70% Greeks and 30% Turks. The same proportions hold good with respect to the 2,000 members of the security forces (gendarmery and police). The regular army of 2,000 men is to consist of 60% Greeks and 40% Turks.

Under the tripartite agreement, Cyprus' foreign relations are governed by a treaty of guarantee, which the contracting parties must register with the Secretariat of the United Nations and which provides that the republic shall not participate in any political or economic union. A further agreement (in effect a treaty of alliance) provides for the setting up in Cyprus of a tripartite military headquarters, in which Greek and Turkish contingents are to number respectively 950 and 650 men of all ranks.

To effect the transfer of authority to the new republic, a joint commission was at once established for the drafting of a constitution. The reorganization of governmental machinery was in the

hands of a transitional committee, while in London there was formed a tripartite committee to deal with questions of nationality, the treatment of liabilities of the existing government, and other financial and economic problems.

The British administration proceeded at once to liquidate the emergency restrictions imposed on Cyprus in 1955, although there was an aftermath of political threats amid occasional incidents of continued terrorism. Amnesty was announced on Feb. 27, 1959, for political prisoners, 83 of whom were immediately released. Major terrorists, including Lt. Gen. George Grivas, head of the outlawed Greek underground organization, EOKA, were assured freedom from arrest and trial if they agreed to leave for Greece or Turkey and not return to Cyprus.

In August a new secret political organization calling itself KEM (Greek initials for Cyprus Enosis Front) declared its intention of renewing the struggle to free Greek Cypriotes "by force if need be." Earlier in the year 5,000 Greek Cypriote delegates attended a congress in Nicosia of EDMA, a right-wing political organization formed by district leaders of the old EOKA movement. Reportedly, arms continued to be smuggled into Cyprus, but interference with the smooth transition to republican independence came principally from the activities in his native Greece of General Grivas. Having at first endorsed the tripartite agreement, he dissociated himself from it on returning to Athens, and, after a split with Archbishop Makarios, attacked the leadership of Greek Premier Constantine Karamanlis in the context of the Cyprus settlement.

The rift with Makarios was reported healed on October 9. On October 17, Governor Sir Hugh Foot, British leader on the transitional committee, left for London to discuss with colonial officials difficulties in the way of setting up an independent Cyprus, including evidence which had come to light of a conspiracy by a new Greek Cypriote movement to overthrow the incoming regime.

The Greek community elected Archbishop Makarios president of the new republic by an overwhelming majority on December 13. Parliamentary elections to choose 35 Greek and 15 Turkish members of the House of Representatives were scheduled to be held in 1960.

DONOVAN ROWSE,
Author and Publicist.

WIDE WORLD

Glasses are raised in toast by Prime Ministers Constantine Karamanlis (left) of Greece and Adnan Menderes of Turkey, following agreement in Zurich, February 11, on a plan for the future of Cyprus. Final approval of independence for the British crown colony came in London, February 19.

CZECHOSLOVAKIA. A Soviet-dominated and Communist-ruled people's republic in central Europe, Czechoslovakia is bounded on the north and northeast by Poland, on the east by the USSR, on the south by Hungary and Austria, and on the west and northwest by Germany. It has an area of 49,354 square miles, and its population is estimated (December 1958) at 13,518,000 (9,596,000 in Czech parts of the country and 3,922,000 in Slovakia). The chief cities, with their 1957 census populations, are Prague (Praha), the national capital, 978,049; Brno, 306,662; Ostrava, 221,831; Bratislava, capital of Slovakia, 246,523; Pilsen (Plzeň), 134,188; and Olomuoc, 73,800. Of the total population (1957), 66% are Czechs, 28% are Slovaks, and 3.5% are Magyars. There are also German (163,000), Polish (78,000), and gypsy (120,000) minorities.

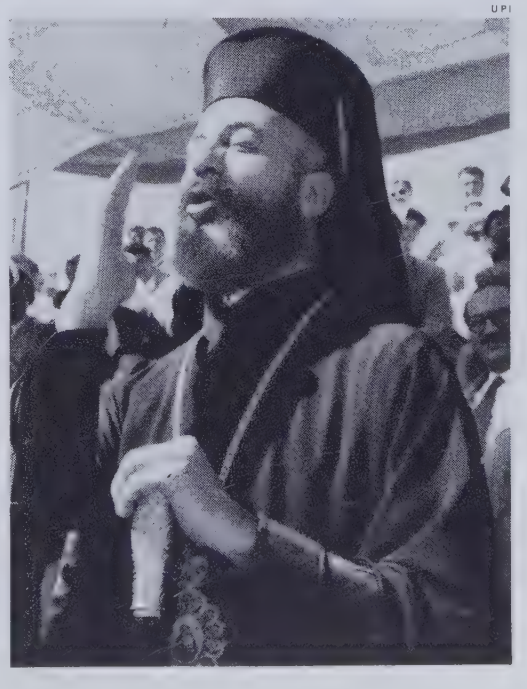
Government.—The constitution of 1948 provides for a unicameral National Assembly, whose 368 deputies are elected for 6-year terms; the Presidium of the National Assembly, the highest legislative body when the assembly is not in session; and the cabinet. The present National Assembly was elected on Nov. 28, 1954. The assembly elects the president of the republic for a term of 7 years; Antonin Novotný, first secretary of the Communist Party, was elected president on Nov. 19, 1957. Vilém Široký, the premier, was elected on March 21, 1953. Slovakia, which is guaranteed a small measure of local autonomy, has its own 100-member National Council and Board of Commissioners. A constitutional amendment of July 1956 granted Slovakia extended powers in matters of economic planning and development.

All power in Czechoslovakia is vested in the Communist Party, which rules the country through its own local and national organizations and through the National Front and its branches. In addition to the Communist Party, the National Front includes splinter groups from the prewar democratic parties. The Communist Party of Czechoslovakia is headed by President Antonin Novotný, first secretary of the Central Committee, and Karel Bacílek, first secretary of the Slovak Communist Party, a subsidiary of the Czechoslovak Communist Party. In 1958 the party had 1,422,199 members; its Slovak subsidiary had 191,690 members (1956).

Education.—The Czechoslovak educational system has been secularized and nationalized. A law of April 24, 1953, established a unified school system. Objectives are to model the school system of the country on that of the Soviet Union; the Soviet-type 11-year schools have been established, and, as in the Soviet Union, a law provides for nine years of obligatory schooling, including part-time work in

Archbishop Makarios, Greek Cypriote leader, who was elected president of Cyprus in balloting on December 13.

UPI



agriculture and industry. Also, a more thorough study of Marxism-Leninism was prescribed in order to give the students an "adequate" preparation for life in a Communist society. In 1956 there were 1,943,638 students in primary and secondary schools, 192,000 students in technical and vocational schools, and 75,000 in universities. In 1959, 1,590 foreign students from 52 countries were enrolled in Czechoslovak universities. There are four universities: Charles University in Prague and the universities of Brno, Bratislava, and Olomuoc. In May 1959 a Czechoslovak Institute was opened in Cairo, the announced purpose of which is to avail Czechoslovak scholars of the opportunity to specialize in Egyptology and Arabic studies.

Religion.—According to a 1951 estimate, the population was distributed as follows: Roman Catholics, 9,600,000; Protestants, 1,000,000; members of the Czechoslovak Church, 950,000; Jews, 15,000 (est. 1959); Eastern Orthodox, 60,000, and persons claiming no religious affiliation, 900,000. A law of Oct. 14, 1949, made the clergy civil servants of the government, and clergymen were obliged to sign an oath of allegiance to the state. A special agency for church affairs handles religious matters. The official policy of the government is to discredit and destroy religion.

Finance.—The Czechoslovak monetary unit is the koruna (crown), with an exchange value of 1.80 koruny to 1 ruble, or 7.20 koruny to U.S.$1 (1 koruna = U.S.-$0.1389; the tourist rate in 1959 was 14.34 koruny to U.S.-$1). The 1959 budget provides for revenues of 96.2 billion koruny (94.7 billion in 1958) and expenditures of 95.9 billion koruny (94.5 billion in 1958). Of the total expenditure, 45.7 billion koruny was allotted to the national economy and 8.8 billion koruny to national defense. In 1959, 23% of the national expenditures will go to social insurance, an increasingly important factor in the Czechoslovak economy. Slovakia's share in the 1959 national budget amounted to 15.7 billion koruny in revenues and 17.5 billion koruny in expenditures.

Transportation and Communications.—Czechoslovakia had 8,182 miles of railways in 1956, and 43,867 miles of roads (1946). The Danube and Vltava (Moldau) rivers are navigable for a total of 281 miles. The state airline service connects Czechoslovakia with 18 foreign countries and serves major cities inside the country. The country had 764,000 telephones and 3,020,000 radio receiver licenses in 1958; there were 450,000 television receivers in 1959. The Czechoslovak merchant fleet consists of eight vessels, three of which were launched in 1959.

Agriculture.—In 1959, Czechoslovakia endeavored to increase its agricultural production, which still represented the weakest sector in the nation's economy. The Second Five-Year Plan (1956–60) provided for a 27% increase in farm production by 1960, but indications are that this target is not being achieved. In 1958 the country imported 1 million tons of grain and 92,000 tons of meat. A plan for the reorganization of collective farms and the transfer to them of the equipment of the Machine Tractor Stations was announced in March 1959. Also, the multiple-price system was abandoned in June and farm prices were increased by 14.7%. Simultaneously, price cuts were effected in farming tools, electricity, and certain other items important in agricultural production. By mid-1959 there were 12,365 collective farms, with a total membership of 912,000 people, controlling 74.7% of the country's arable land. President Novotný, at the Fourth Congress of Collective Farms in Prague on March 19–22, 1959, called for the complete collectivization of Czechoslovakia by 1961.

Production of major agricultural items in 1957 and 1958 was as follows (in thousands of metric tons):

1957		1958	
Wheat	1,525	Meat products	173
Barley	1,362	Sugar beets	6,906
Rye	948	Fats	59
Oats	899	Hops	7
Potatoes	8,756	Milk (million liters)	898

Industry.—The official production figures for 1958 indicate increases over 1957 in the following percentages: industrial production, 11.3%; consumer goods, 10.6%; and the means of production, 11.8%. The Second Five-Year Plan (1956–60), which emphasized the development of heavy industry, was revised in October 1957 to increase gross industrial production by 56% instead of the 50% originally planned. Goals for 1959 (the fourth year of the plan) provided for a 9.3% increase in industrial production and a 12.6% increase in capital construction. An important aspect of the emphasis on rapid industrial growth has been the increase in the number of women in the labor force. In 1958, 2,563,000 women were employed, representing 42.2% of the labor force.

CZECHOSLOVAK INDUSTRIAL PRODUCTION

Product (and unit of production)	1957	1958
Coal, hard (million tons)	24.2	25.8
Coal, brown (million tons)	49.0	54.3
Lignite (million tons)	2.2	2.5
Pig iron (million tons)	3.6	3.8
Crude steel (million tons)	5.2	5.5
Rolled steel (million tons)	3.5	3.8
Sulfuric acid (thousand tons)	445	463
Nitrogenous fertilizer (thousand tons)	...	108
Phosphorous fertilizers (thousand tons)	...	117
Gasoline (thousand tons)	...	355
Synthetic fibers (thousand tons)	...	55
Electric power (billion kw.-hr.)	17.7	19.6
Motor vehicles (units)	50,820	43,000
Motorcycles (units)	138,347	147,000
Radios (units)	254,169	...
Television sets (units)	79,107	...

The midyear report for 1959 indicated that total industrial production increased by 11% above the corresponding period in 1958, and that labor productivity was up 8.5%. (See also IRON AND STEEL.)

Industry's share of the Czechoslovak gross national product in 1955 was 65.2%, compared with 14.3% for agriculture; the Czechoslovak Chamber of Commerce forecast for 1960 a ratio of 67.7% to 11.8%.

Foreign Trade.—In 1958, Czechoslovakia's foreign trade totaled about 21.1 billion koruny, as compared with 20 billion koruny for 1957. Chief exports were industrial equipment and machinery; principal imports were agricultural products and raw materials. Most of the foreign trade of Czechoslovakia is with Communist countries (68% of total trade in 1958), principally with the USSR, East Germany, China, Poland, and Hungary. In 1958 trade with non-Communist countries was dominated by West Germany, Great Britain, Switzerland, and Austria. Trade with China in 1957 climbed to 587.8 million rubles, as compared with 105 million rubles in 1950. United States imports from Czechoslovakia in the first half of 1959 totaled $5.1 million, as compared with $2.7 million in the corresponding period of 1958. In the first half of 1959, total foreign trade was up 7.6% over the comparable period in 1958.

Principal Events, 1959.—The Communist theorists of Czechoslovakia continued in 1959 to insist on ideological purity and the application of policies determined by Moscow. A few governmental changes occurred during the year. In January the minister of foreign trade, Richard Dvořak, became ambassador to the Soviet Union; he was replaced by František Krajcir, former minister of internal trade, who in turn was succeeded by Ladislaw Brabec, first deputy minister of internal trade. In March, Otokar Simunek was appointed deputy premier and chairman of the state planning commission, Rudolf Barak became deputy premier, and Lubomir Strougal replaced Michal Bakula as minister of agriculture and forestry. Josef Tesla, minister without portfolio, resigned. On February 19, Miloslav Ruzek was appointed ambassador to the United States, succeeding Karel Petrzelka.

In February, 175 people were arrested for "stockpiling arms for an antistate plot," and alleged "American intelligence agents" engaged in nefarious Western plots were reported on several occasions. Also in February, six persons were convicted on charges of serving as foreign spies and

agents. The witch hunt of previous years continued although there were fewer officially concocted spy scares.

More important, however, was the continued drive to harness writers, artists, composers, and other intellectuals to unswerving loyalty to the government and the Communist Party. At a conference of the Czech Writers' Union held in March, the hard core of the one-time Stalinist group was elected to the Central Committee of the union. The speakers urged continued struggle against all manifestations of revisionist tendencies. At a meeting in February, the Composers' Union similarly voted loyalty to the party. As the year closed, it appeared that Stalinists were in full command of the political situation.

President Novotný told other Communist leaders on October 24 that the existing territorial administrative units had outlived their usefulness and that the time had come to shift economic responsibility to smaller units closer to the centers of production. This policy is similar to that announced by the Soviet Union in 1957 and by certain other Communist states since then. Accordingly, the number of administrative units will be reduced, and many economic chores will be transferred from national and regional committees to district committees. Novotný also noted that the number of intermediate agencies between factories and stores must be reduced in order to facilitate distribution of goods.

In its foreign relations Czechoslovakia also echoed Soviet pronouncements and followed Soviet actions. Certain developments, however, concerned Czechoslovakia more directly. One of these was Czech shipments of arms and ammunition to certain troubled areas and the Western reaction to this kind of trading. In March and April it was reported that three ships had arrived in Guinea carrying small arms and light artillery pieces, and a number of Czech military advisers. On April 8 a similar shipment of arms bound for Morocco was seized by the French, who charged that the supplies were actually being sent to the Algerian rebels. Both Morocco and Czechoslovakia protested against the French action.

During the year Czechoslovakia protested alleged border violations by United States planes, and was in the forefront of Soviet-bloc press campaigns against West Germany. The most flagrant attack against West Germany came on the anniversary (March 15) of the German occupation of Czechoslovakia. A statement given to diplomatic representatives in Prague drew attention to many similarities between the present Bonn government and Hitler's Germany. The anti-West Germany campaign continued throughout the year as Czechoslovakia protested against the United States supplying West Germany with atomic armaments.

A propaganda campaign against Yugoslavia was carried on intermittently throughout the year. Premier Hoxha of Albania made a state visit to Prague on January 12–18, and the two governments issued a communiqué calling for a vigorous fight against "contemporary revisionism." New attacks against Yugoslavia came in June, and relations between the two countries were strained by the rupture of official talks concerning the extension of time for Yugoslavia to avail itself of Czech credits obtained in 1956.

Czech representatives attended a meeting of foreign ministers of the Warsaw Pact countries at Warsaw on April 27–28, where it was decided to assume a "moderate" position in the approaching East-West foreign ministers talks at Geneva. At the meeting on May 13–16 of the Council for Mutual Economic Assistance at Tiranë (Albania), Czechoslovakia was included in the new electrical grid system which will combine eastern European power networks with those of the Soviet Union in the Ukraine and Kaliningrad. Czechoslovakia was also included in the ten-nation Disarmament Committee which was established in September outside the United Nations by the United States, Great Britain, France, and the Soviet Union (see DISARMAMENT).

The most important state visit in 1959 was that by President Novotný, who visited (September–October) Communist China, North Korea, and the Mongolian People's Republic. Czechoslovakia closely followed Khrushchev's visits to the United States and China in September, and lauded the Soviet leader for his alleged efforts in working for peace.

In the course of the year, two minor diplomats defected from their posts and requested asylum. On May 21, Jan Maier, second secretary of the Czechoslovak embassy at Teheran, was granted asylum by Great Britain, and it was announced on November 4 that Lt. Col. František Tisler, Czechoslovak military attaché in Washington, D.C., had asked asylum for his family and himself.

WAYNE S. VUCINICH,
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DAHOMEY. The Republic of Dahomey is an autonomous republic of the French Community (q.v.), situated in western Africa on the northern coast of the Gulf of Guinea. Estimated area, 44,696 square miles; pop. (est. 1958), 1,725,000, including (in 1956) 2,767 nonindigenous persons, mainly French. The official language is French. Chief cities are Porto-Novo, the capital (est. pop., 30,500), and Cotonou (21,300), an important port.

Government.—A former French overseas territory included within the federation of French West Africa (q.v.), Dahomey chose the status of a member state of the French Community on Dec. 4, 1958. As an autonomous republic, Dahomey has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Dahomey adopted its constitution on Feb. 14, 1959. The Legislative Assembly consists of 70 members elected for a five-year term by universal suffrage. The premier and his ministry are invested by an absolute majority in the assembly. Hubert Maga, leader of the Democratic Rally of Dahomey, is premier of a three-party government formed on May 22, 1959.

Education and Religion.—In 1958 there were 448 schools with a total of 78,224 pupils (29.1% of the school-age population). Expenditure on education amounted to 791.5 million francs CFA, or 24.6% of the budget. The natives are mostly animists, with some Christians in the south and Moslems in the northern interior.

Finance.—The ordinary budget for 1958 amounted to 3,209 million francs CFA; the extraordinary budget 325 million (the franc CFA equals 2 metropolitan francs). In the period 1947–57, funds granted to Dahomey under France's Economic and Social Investment Development Fund (FIDES) were equivalent to $49.9 million.

Transportation.—Railroads total 355 miles; the chief line connects Parakou, in central Dahomey, with the port of Cotonou in the south. Roads and trails aggregate 3,233 miles (1956), including 794 miles of highways. The main airport is at Cotonou. In 1959 an agreement was signed with France for the French financing of 10 billion francs over a 4-year period for the development of the port of Cotonou.

Production.—Agriculture, fishing, and cattle raising are the chief occupations. There is little industry other than handicrafts and local manufactures. Native subsistence crops include corn, cassava, yams, sweet potatoes, plantains, vegetables, and tropical fruits and nuts. Cattle, sheep, and goats are raised in the northern uplands, and fishing is of importance in the southern lagoons. Cash crops include palm kernels and palm oil, peanuts, coffee, and cotton.

Foreign Trade.—Exports in 1958 totaled 3,371 million francs CFA; imports, 4,329 million. Chief exports were palm kernels, 60,044 metric tons (1,665 million francs CFA); shelled peanuts, 15,617 (616 million); and palm oil, 12,178 (602 million). France took 79% of exports and provided 61% of imports.

Principal Events, 1959.—Elections for the 70-member Legislative Assembly took place on April 2. As a result of the gerrymandering of election districts, Premier Sourou Migan Apithy's Republican Party of Dahomey, with 144,000 popular votes, obtained 37 seats; Hubert Maga's Democratic Rally of Dahomey, with 62,000 votes, obtained 22 seats; while Justin Ahomadegbe's opposition Democratic Union of Dahomey, with 172,000 votes, received only 11 seats. Ahomadegbe violently protested the disproportionate seating, and clashes took place on April 3–4 between his supporters and those of Premier Apithy. At Apithy's request, French troops were flown to Cotonou on April 6 to maintain order. A compromise settlement was negotiated whereby Apithy's party obtained 28 seats; Maga's 22; and Ahomadegbe's 20. Maga then headed a new three-party coalition government on May 22.

M. J. G.

DAIRY PRODUCTS. United States milk production in 1959 was about 124.7 billion pounds, according to preliminary estimates of the Agricultural Marketing Service of the U.S. Department of Agriculture. Such production would be slightly less than the 125.2 billion pounds in 1958 and 1% below the 1957 record output of 125.9 billion. Annual milk production per cow rose to 6,430 pounds, compared with 6,330 in 1958 and 5,272 in 1949. The number of milk cows at midyear 1959 was estimated to be 19,320,000, as against 19,799,000 a year earlier and 22,027,000 in 1949. The general trend in milk cow numbers has been downward since 1944, the sole exception being 1953.

The milk equivalent of the Commodity Credit Corporation's purchases for price support was about 30% lower in 1959 than in 1958. Total purchases were about 3,170 million pounds in 1959, compared with about 4,504 million pounds a year earlier. The 1959 purchases were equivalent to about 2.5% of milk production, as against 3.6% the preceding year. Purchases of butter and nonfat dry milk were lower in 1959 than in 1958, but cheese purchases were moderately larger. The corporation's holdings of butter were exhausted in 1959, and uncommitted stocks of dry milk and cheese were reduced to very low levels, partly because of the European drought.

Per capita consumption of dairy products was a little larger in 1959 than in 1958. Consumption of fluid milk and cream was estimated at 348 pounds per person, 3 pounds above 1958 but otherwise one of the lowest levels in recent years.

U.S. PER CAPITA CONSUMPTION OF CERTAIN DAIRY PRODUCTS AND MARGARINE

(In pounds)

	1935–39	1946	1950	1958	1959[1]
Fluid milk and cream	330	389	349	345	348
Evaporated milk	15.1	17.1	18.1	12.4	11.7
Frozen dairy products	24.9	57.9	45.0	48.8	50.3
Cheese	5.6	6.7	7.7	8.2	8.3
Butter	17.0	10.5	10.7	8.4	8.3
Margarine	2.9	3.9	6.1	9.0	9.2

[1] Preliminary.

According to preliminary estimates, milk production in the principal dairying countries decreased about 1% during 1959. Output in Western Europe was down 2% due mainly to droughts in France, Sweden, Ireland, and the United Kingdom. In some other Western European countries, such as Austria, Denmark, West Germany, and Italy, there were moderate increases in production.

MILK PRODUCTION IN PRINCIPAL COUNTRIES

(In million pounds)

	1951–55	1957	1958	1959[1]
Canada	16,026	17,306	18,057	18,005
Mexico	3,806	4,819	5,005	5,539
United States	118,959	125,939	125,236	124,700
Denmark	11,521	11,781	11,292	11,800
Finland	6,147	6,942	7,012	7,025
France	38,045	46,762	46,535	42,040
Germany, West	36,023	38,058	39,392	40,000
Ireland	5,256	6,365	6,139	5,525
Italy	16,663	18,614	19,045	19,425
Netherlands	12,654	13,098	13,759	13,895
Norway	3,554	3,843	3,790	3,870
Sweden	9,829	8,896	8,655	8,240
United Kingdom	23,251	26,481	25,874	24,845
Argentina	10,334	11,350	10,215	10,500
Australia	12,516	13,285	13,414	13,890
New Zealand	11,186	11,270	11,903	11,896

[1] Preliminary.

Compared with the annual average in 1951–55, world milk production was up about 8% in 1959. Sweden was the only major milk producing nation in which 1959 output was less than the 1951–55 average.

(See also AGRICULTURE; CHEESE; and the Index entry, *Dairy Products.*)

C. J. ENZLER,
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DAMS. Glen Canyon Dam.—This biggest dam under construction in the United States suffered in 1959 from a construction workers' strike which lasted from July 6 to December 22. It was the third construction year for this major dam in the U.S. Bureau of Reclamation's $760 million Upper Colorado River Project. The 700-foot-high, $108 million concrete structure has been figured as a seven-year project.

Before the strike slowed construction at Glen Canyon—which is in Arizona, 135 miles from Flagstaff and just south of the Utah state line—progress had been made on major diversion and spillway tunnels in the canyon walls. The river was diverted, and the damsite was completely dewatered and ready for the 4,770,000 cubic yards of concrete it will take to complete the massive structure. Spillway tunnels, mined in solid rock, had a 113-foot-wide clear opening, the widest tunnel opening ever spanned by support steel in United States construction history.

Flaming Gorge Dam.—Work proceeded on two other units of the Upper Colorado River Project. Flaming Gorge Dam was one of these. The sec-

ond year of construction began on this $30 million structure on the Green River, a Colorado tributary in northeast Utah. This 490-foot structure will be a relatively thin concrete arch, among the highest of its type.

Navajo Dam.—This is the other unit of the Upper Colorado River Project on which a start has been made. A $23 million project on the San Juan River in northern New Mexico, it will be a 385-foot-high earthfill dam to store water for irrigation of 110,000 acres. Fast progress was made in 1959 on placing and compacting some of the 26 million cubic yards of earth it will take to complete the dam by 1962. As the builders approached a million-yard-a-month rate of production in the summer of 1959, they had a chance to better the planned completion date by a year; the fill could be done by the end of 1961.

Priest Rapids Dam.—This $98 million Columbia River project in the state of Washington made news in 1959 because of its early completion. Its powerhouse began producing power in October, 16 months ahead of schedule. One by one the ten hydroelectric units will be put to work for an ultimate potential of 630,000 kilowatts. It is a local power agency's project.

Wanapum Dam.—Eighteen miles up the Columbia River from Priest Rapids Dam, the same power agency began construction in 1959 of Wanapum Dam, also in Washington. Construction bids taken in May proved the competing contractors to be anxious for the project, as all bids were far below the estimated cost. The low bid of $89 million was more than $48 million under the engineers' estimate. Wanapum will be largely an earthfill dam about 185 feet high from its crest to the bottom of its cut-off wall. Its spillway section and powerhouse section (10 generators to total 831,000 kilowatts) will be of concrete. Five years of construction are scheduled.

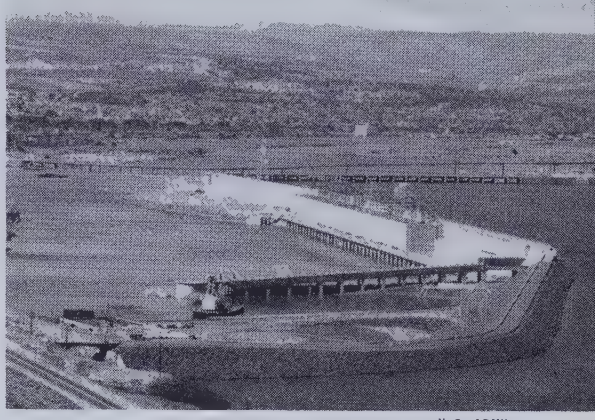
Rocky Reach Dam.—Farther north is another major power dam on the Columbia, Washington's $245 million Rocky Reach Dam which is to provide 775,000 kilowatts. Scheduled for completion in 1962, it was about half finished by the end of 1959.

The Dalles Dam.—Another Columbia River structure, The Dalles Dam in Oregon, was dedicated on October 10 in ceremonies in which Vice President Nixon participated. He pressed a button to start the tenth of 14 generating units which will be in operation by 1960, to produce a total of 1,119,000 kilowatts.

John Day Dam.—Approximately 25 miles upstream from The Dalles Dam, this $350 million structure went into its second year of construction. When finished in 1969, the John Day Dam is to yield a 1.2-million-kilowatt power capacity and provide a navigation lock with a 110-foot lift.

Hebgen Dam.—A very small and relatively old earth dam made news in 1959 as it held back the Madison River west of Yellowstone National Park, when a severe earthquake shook southeastern Montana. The 44-year-old structure suffered severe cracks along its crest, but its concrete corewall did not suffer seriously. The dam held, even though successive waves of water washed over it from its reservoir as the earthquake caused movement along its shore. Downstream from Hebgen Dam a quake-caused slide of 20 million cubic yards of earth and rock blocked the Madison River with a "natural dam," sloping from 200 to 400 feet in height. Engineers quickly had to bulldoze a 250-foot-wide spillway in this earth plug, so that the "lake" which formed behind it would flow over it in a controlled manner as it rose.

Oroville Dam.—This California structure, which at 730 feet will be the tallest dam in the United States and the tallest earthfill dam anywhere, moved nearer to construction with start of a $10 million bridge to relocate rail and road routes past its Feather River site. Oroville Dam is part of California's $1.6 billion Feather River Project, a plan to store water in the north for use all the way to the southern end of the state.



U.S. ARMY

The Dalles Dam, on the Columbia River 88 miles east of Portland, Oreg., was dedicated on October 10 by Vice President Nixon. Snow-capped Mount Hood towers in the background.

Trinity Dam.—Also in northern California is this 537-foot-high earthfill structure which the U.S. Bureau of Reclamation had well under way in 1959. The dam figured in the political news of 1959, when Congress turned down an administration-sponsored "partnership" proposal for the privately owned Pacific Gas & Electric Company to be permitted to develop power at this federal project. Instead, Congress voted $2.4 million to let the Bureau of Reclamation start work on what will be a $60 million powerhouse at the dam.

Snake River Dams.—Ice Harbor Dam on the lower Snake River is a $135 million project which was about half finished in 1959. It will produce power and also provide a 103-foot lift for navigation into the lower Snake. In the Upper Snake in Hells Canyon, Brownlee Dam had reached its capacity power output in January 1959. Oxbow Dam was due to be completed in 1960. These two plus a third scheduled dam to be started in 1961 will supplant a single high dam proposed for construction by the federal government in a long, drawn-out fight between public and private power protagonists over Hells Canyon.

Table Rock Dam.—The White River, between Missouri and Arkansas, is spanned by $66 million Table Rock Dam, completed in 1959. A flood-control and power project, this structure will also yield recreational benefits as it creates a great new lake in the Ozark Mountains.

Oahe Dam.—Work continued in 1959 on this 91-million-cubic-yard earthfill structure which will back the Missouri River up into a 250-mile lake in South Dakota. It is located near Pierre.

Tuttle Creek Dam.—Basically a flood-control structure on the Big Blue River near Manhattan, Kans., this $86 million project was under way in 1959 toward completion in 1962.

Hartwell Dam.—This is a $98 million concrete dam on the Savannah River between South Carolina and Georgia. It is due to be completed in 1963.

St. Lawrence Dams.—All units of the St. Lawrence Seaway and Power Project on the International Rapids section of the river between New York State and Ontario were finished in 1959 (see also SAINT LAWRENCE SEAWAY AND POWER PROJECT).

Europe.—In Italy, Vajont (Vaiont) Dam passed the halfway mark in construction in 1959. When finished it will, at 870 feet, be the world's highest arch dam. Because it will plug a very narrow gorge, its crest length will be only 623 feet. Built for hydroelectric power production, the dam will create a 220,000-kilowatt potential. Grandval Dam, completed in 1959 on the Truyère River in central France, is a novel multiple-arch structure with buttresses supporting the arches on the downstream side. A circular powerhouse nestles in one of the arches, and ski-jump spillways will carry reservoir discharge to either side of the powerhouse. The dam is 262 feet high and extends 1,100 feet across its valley, but required only 220,000 cubic yards of concrete.

In northern Spain, floodgates of the new Yesa Dam on the Aragon River were opened on April 8 to start Europe's largest irrigation project. Approximately 648,000 acres of the Bardeñas and Monegros deserts are expected to be reclaimed.

Asia.—After four years of construction near the Siberian city of Bratsk, the Soviet Union closed off the Angara River in June in a major step toward completion of one of the world's largest hydroelectric developments. The dam has to be raised an additional 300 feet to its expected above-river height of 400 feet. During the year some 100,000 persons were removed from the area expected to be covered by a 350-mile-long reservoir containing a record 145 million acre-feet of water. The project's power plant is expected to produce 3.6 million kilowatts. This capacity is more than that of the Lenin Volga Hydroelectric Station (2.1–2.3 million kilowatts), completed northwest of Kuibyshev in 1958, but less than that of the Krasnoyarsk project (4 million kilowatts), which is under construction on the Yenisei River. The reinforced concrete dams of the Volga project extend almost three miles from bank to bank, creating a body of water known as the Zhiguli Sea, which is 375 miles long and 25 miles wide.

Of the reportedly many hydroelectric, flood-control, and irrigation projects being built in Communist China during 1959, the biggest is on the Yellow River in Honan Province. This is the Sanmen Gorge water storage and hydroelectric project, which includes Chingtung Gorge Dam.

At India's great Bhakra Dam, which at 740 feet will rank behind the 940-foot height of Switzerland's Grand Dixence Dam when they both are finished, there were construction troubles in 1959. A break in a diversion tunnel sent waters of the Sutlej River pouring through access and inspection galleries in completed portions of the dam, bringing work to a standstill. A method of plugging the diversion tunnel must be undertaken, with a resulting delay in the project's completion.

Africa.—Construction continued on the first stage of the Kariba Dam, a great concrete arch structure on the Zambezi River in Rhodesia. The dam was scheduled to produce the first of its initial 600,000 kilowatts of power capacity in 1960. In a second stage, another 900,000 kilowatts will be added. During 1959 the clearing of land and the rounding up and transplanting of wild animals readied the reservoir area as water rose behind the dam. (See also RHODESIA AND NYASALAND.)

Egypt's Aswân High Dam remained in the news in 1959 as the USSR won control of the first stage of its construction through a Soviet loan of $92 million, announced Dec. 28, 1958, and sought control of the second stage as well. Stage one involves cofferdams and diversion of the Nile River; stage two would involve the main dam and powerhouse.

(See also CANALS; FLOOD CONTROL; RECLAMATION; and the Index entry, *Dams.*)

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DANCE. Ballets: U.S.A.—The United States, long the stronghold of modern or expressional dance, saw a minor swing toward the classic idiom of ballet during the 1958–59 season. Not classic in point of view, but definitely so in basic technique, was Jerome Robbins' *Ballets: U.S.A.*, which had as its major offering, *N.Y. Export, op. Jazz,* an excursion into the pulse, tension, and brusque charm of slum-bred adolescents. A projected nationwide tour of the Robbins company, beginning with a New York City engagement in September and October 1958, had to be curtailed because of poor box office receipts. The dancers temporarily disbanded, then rejoined in the summer of 1959 to appear for a second time at the Festival of Two Worlds in Spoleto, Italy. A summer-into-autumn tour of Europe followed, with foreign audiences heaping acclaim on both choreographer and dancers. A new work, *Moves,* an abstract piece without music, was added for the European journey.

New York City Ballet.—During September 1958, the New York City Ballet presented the first part of a three-part 10th anniversary celebration. Only one new work was offered during this engagement —a *pas de deux* entitled *Waltz-Scherzo* (music by Tchaikovsky) in which choreographer George Balanchine created an array of quicksilver solos and duets for leading dancers Patricia Wilde and André Eglevsky.

Part two of the company's "birthday party" (Nov. 25, 1958–Feb. 1, 1959) was an ambitious midwinter season, which included the American première of *Medea* (Bartók) by Swedish choreographer Birgit Cullberg; the première of *Octet* (Stravinsky) by William Christensen; the première of *Native Dancers* (Rieti) by Balanchine; and the introduction into the repertoire of Balanchine's monumental lyric theater work, *The Seven Deadly Sins,* first produced in Europe in 1933.

The Seven Deadly Sins, using the spare-framed jazz of Kurt Weill and the mordant verse of Bertolt Brecht, as translated for this production by W. H. Auden and Chester Kallman, was a blend of satire and sentimentality. Balanchine reflected this duality with choreography that had a bite and restlessness unusual for him, and the stage designs of Reuben Ter-Arutunian provided a brilliant evocation of the chrome-plated harshness of the post-World War I era. Personifying the central character, a young girl on the make who is both innocent and crafty, dancer Allegra Kent and *diseuse* Lotte Lenya gave sensitive portrayals of the heroine's dual personality.

The third part of the company's anniversary season (May 12–June 14, 1959) saw the première of the provocative *Episodes,* and the first American performance of the Gagaku, the musicians and dancers of the Japanese Imperial Household. *Episodes,* a two-section work set to miscellaneous orchestral selections by Anton von Webern, was a clever reconciliation of the contrasting esthetic viewpoints of Martha Graham and George Balanchine. In the first section Miss Graham, a modern dance choreographer, illumined with sumptuousness and formality the last hours of Mary, Queen of Scots. In the second section Balanchine created his own personal image of elegance—spare, abstract, measuring the music.

American Ballet Theatre.—The season of the American Ballet Theatre consisted of three weeks in the fall of 1958 at the Metropolitan Opera House and a single summer performance in 1959 at the Lewisohn Stadium, both in New York City. The company's most controversial premières were three ballets by Herbert Ross: the exquisitely sensuous *Paean* (Chausson), the romantic *Concerto* (Tchaikovsky), and the licentious *Tristan* (Wagner). The production of Birgit Cullberg's *Miss Julie,* with music by Swedish composer Ture Rangström, as arranged by Hans Grossmann, underscored the dramatic potential of guest star Violette Verdy, a young French dancer who later joined the New York City Ballet.

Regional Ballet Festivals.—In terms of the future, the most promising events in 1959 were two regional ballet festivals—the Southeastern (April 23–25) in Miami, Fla., and the Northeastern (May 21–24) in Scranton and Wilkes-Barre, Pa. Each of these festivals consisted of companies of adolescent dancers, who, while being nonprofessional in that they do not receive salaries for dancing, are, for the most part, highly professional in motivation. The Southeastern Festival consisted of eight offerings by groups from Miami, Birmingham, Memphis, Atlanta, Nashville, and Jacksonville. The Northeastern Festival drew its 18 ballets from companies in Boston, Ottawa, Scranton, Erie, Wilkes-Barre, Bethlehem, Cleveland, Newark,

PHIL BLOOM; S. HUROK

(*Left*) Jacques D'Amboise and Patricia Wilde in the New York City Ballet's première of *Native Dancers*, a feature of the company's 10th anniversary program during the 1958–59 season. (*Center*) Galina Ulanova, the superb prima ballerina of Moscow's Bolshoi Ballet, which thrilled United States audiences in 1959. (*Right*) The Bayanihan dancers from the Philippines, who also visited the United States in 1959, shown in a dance called *Singkil*. Tapping of long poles in background supplies rhythm. Other dancers from abroad who entertained American audiences were troupes from Africa, Japan, Poland, and Israel.

Woonsocket, Detroit, Philadelphia, Toledo, and Dayton.

Bolshoi Ballet.—As has been the case for almost every year since World War II, a foreign dance company made the greatest impression on the American dance scene. This time it was the Bolshoi Ballet from Moscow, which, after completing its stay at New York's Metropolitan Opera House in April and May 1959, toured major American cities. Like the Soviet Union's Moiseyev Dance Company of the previous year, the Bolshoi won countless American admirers for the Slavic dance temperament.

Although the Bolshoi Company exhibited great vitality, the choreography was literal and conventional, and the décors and costumes were a half-century behind the times. Yet, despite these drawbacks, nobody could fail to be captivated by the touching simplicity of the great ballerina, Galina Ulanova, and by the fiery mime of Vladimir Levashev. In addition, audiences were thrilled by the endless charm and physical daring of such dancers as Yuri Zhdanov, Vladimir Vasiliev, Ekaterina Maximova, Marina Kondratieva, Raissa Struchkova, Alexander Lapauri, Stanislav Vlasov, and Liudmila Bogomolova. Also, there were surprising moments of poetry, principally in traditional works like *Giselle* and *Les Sylphides*.

Ballet Rambert.—A more modest foreign visitor was the Ballet Rambert, of London. This company, long identified as the cradle of experiment in British ballet, made its American debut in a 1959 engagement at the Jacob's Pillow Dance Festival in Lee, Mass. Both in dancing and staging, the Rambert group lacked the expected creative *élan*, although a single work, *Two Brothers* (Dohnányi), by a 23-year-old member of the company, Norman Morrice, indicated a bright hope for the future.

Metropolitan Opera Ballet.—In March 1959, during its first season without a resident choreographer, the Metropolitan Opera sponsored an evening made up entirely of ballet. New works by John Butler, Alexandra Danilova, Antony Tudor, and Herbert Ross were presented. The program, although artistically superficial, did mark an additional rung in the Met's climb toward separate performances for its ballet.

Concert Dance.—Concert dance in the United States—both modern and ethnic—had an active season without offering much of lasting value. Among the foreign visitors was the Beryozka Russian Dance Company, which toured the country after its New York debut in November and December 1958. An all-girl ensemble, the Russian group featured an agreeable though innocuous fusion of ballet and folk dances. Les Ballets Africains, directed by Keita Fodeba, Guinea's minister of the interior, began its month-long American tour on Feb. 2, 1959, in Philadelphia, presenting a stylish if somewhat self-conscious collection of dances and dancers from West Africa. The autumn of 1959 brought two groups from the Orient: the Takarazuka all-girl ensemble from Japan, and the Bayanihan dancers from the Philippines. The first combined Oriental and Occidental styles with great precision, but with an utter lack of taste; the second was a beautiful expression of the composite culture of the Philippines. In November the Polish State Folk Ballet presented a three-week season in New York. The company, known as Slask, numbered 100 spirited dancers and singers, performing for most of the time at breakneck speed. Later that month, Inbal, the Dance Theater of Israel, was seen in a two-week engagement in New York. The company's program was essentially different from that presented during its previous visit two years before. However, audiences which had seen both programs felt that the second was as fine as the first.

In the realm of modern dance, the spring season (May 8–12, 1959) of the Juilliard Dance Theater offered only two items of major importance. These were Valerie Bettis' *The Closed Door* (von Webern) and Doris Humphrey's posthumous *Brandenburg Concerto #4 in G Major* (Bach). Choreography for the latter was completed by Ruth Currier, who collaborated with Miss Humphrey before her death in December 1958. The 12th annual American Dance Festival, at Connecticut College, New London, saw only one important new work: José Limon's *The Apostate* (Krěnek).

Dance Films.—Two films made valuable contributions to the modern dance idiom. Peter Glushanok produced Martha Graham's *Appalachian Spring*, with Miss Graham in the leading role. George Jacobson made a motion picture record of Helen Tamiris in *Negro Spirituals*. The latter, a series of solos that Miss Tamiris had first performed more than 30 years ago, were revived with amazing vitality and immediacy.

(For discussions of the year's dance activities in commercial films, television, and the musical

comedy stage, see, respectively, MOTION PICTURES, RADIO AND TELEVISION, and THEATER.)

DORIS HERING,
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DATES. See FRUITS.

DEAFNESS. Recent advances have been made not only in the surgical correction of certain types of deafness, but in the medical treatment of ear disease to prevent deafness, the rehabilitation of deaf children and adults, and the reduction of noise in industry to prevent impairment of the hearing of workers.

The most dramatic results have been obtained in the surgical correction of deafness by means of an operation which again permits sound waves to get to the fluids of the inner ear. Some persons are deaf because of a condition known as otosclerosis, which prevents the movement of the tiniest ear bone, the stapes. One operation, to make an opening directly into the ear canal, produces a new window or fenestra through which the sounds enter. Another, known as the "stapes mobilization" operation, may bring hearing close to normal in certain otosclerosis victims. In this operation the surgeon lifts the eardrum from its position; views the tiny ear bones through an operating microscope; mobilizes the stapes, permitting it to transmit sounds again; and replaces the eardrum.

The use of newer antibiotics has permitted more satisfactory control of ear infections, thus preventing the serious after effects and eardrum destruction that in the past often followed colds, scarlet fever, and other childhood diseases. In those persons with chronic ear infections, such as persistent running ears, many new reconstructive surgical operations have been devised to eradicate infection and restore the hearing to a serviceable level.

Not all hearing loss can be treated by an operation. In many cases the new, tiny, lightweight transistor hearing aids provide immeasurable help. Aids are now being used in many children to bring sound to them so they may learn to speak. Some deafness in infants is the result of German measles (rubella) occurring in the mother during the first three months of pregnancy. Prevention of this and other viral infections may provide the answer to many cases of so-called congenital deafness. Children with this type of severe hearing loss require a long period of patient training, amplification of sound, and education in lip reading.

As man moves rapidly into the jet age, he is faced with new types of noise, including that of the jet engine, which exert their potentially damaging effect on the inner ear. Researchers are learning more of the destructive effects of loud noises, particularly when they are present over a long period of time—in many cases for months and years. New tests to determine those individuals whose ears would be harmfully susceptible to noise are being sought in laboratories throughout the world. In the meantime, efforts are being made in industries to reduce noise and to shield workers from it.

Doctors, audiologists, and engineers are working closely together to prevent deafness in children and adults, and to rehabilitate those who have lost their hearing. The surgical treatment of deafness is advancing so rapidly that many operative procedures have been modified several times. All deafness cannot be cured, but almost all deaf patients can be helped.

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DEATH, Causes of. The estimated number of deaths in the United States in 1958 was 1,647,000. This resulted in a crude death rate of 9.5 per 1,000 population, slightly lower than the rate for 1957 (9.6) and close to the level of mortality that prevailed for the years 1949–53. In the years 1954–56,

DEATHS AND DEATH RATES FOR SELECTED CAUSES: UNITED STATES, 1957 AND 1958

(Includes only deaths occurring within the continental United States and excludes fetal deaths. Rates per 100,000 estimated midyear population residing in area. Numbers after causes of death are category numbers of the Seventh Revision of the International Lists, 1955.)

Cause of death	Category	Number		Rate	
		1958*	1957	1958*	1957
All causes		1,647,000	1,633,128	950.6	959.0
Tuberculosis, all forms	001–019	12,070	13,324	7.0	7.8
Syphilis and its sequelae	020–029	3,770	3,825	2.2	2.2
Dysentery, all forms	045–048	380	440	0.2	0.3
Diphtheria	055	140	81	0.1	0.0
Whooping cough	056	110	183	0.1	0.1
Meningococcal infections	057	750	785	0.4	0.5
Acute poliomyelitis	080	240	221	0.1	0.1
Measles	085	490	389	0.3	0.2
All other infective and parasitic diseases	030–039, 041–044, 049–054, 058–074, 081–084, 086–138	5,190	5,008	3.0	2.9
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues	140–205	252,320	253,183	145.6	148.7
Diabetes mellitus	260	26,670	27,180	15.4	16.0
Major cardiovascular-renal diseases	330–334, 400–468, 592–594	907,870	891,825	524.0	523.7
Diseases of cardiovascular system	330–334, 400–468	894,100	876,793	516.0	514.9
Vascular lesions affecting central nervous system	330–334	192,980	187,709	111.4	110.2
Rheumatic fever	400–402	860	900	0.5	0.5
Diseases of heart	410–443	633,590	628,504	365.7	369.1
Hypertension without mention of heart	444–447	14,270	11,128	8.2	6.5
General arteriosclerosis	450	34,760	33,272	20.1	19.5
Other diseases of circulatory system	451–468	17,640	15,280	10.2	9.0
Chronic and unspecified nephritis and other renal sclerosis	592–594	13,770	15,032	7.9	8.8
Influenza and pneumonia, except pneumonia of newborn	480–493	57,430	61,001	33.1	35.8
Ulcer of stomach and duodenum	540, 541	10,740	10,365	6.2	6.1
Gastritis, duodenitis, enteritis, and colitis except diarrhea of newborn	543, 571, 572	8,180	7,971	4.7	4.7
Cirrhosis of liver	581	18,490	19,317	10.7	11.3
Acute nephritis and nephritis with edema, including nephrosis	590, 591	2,310	2,275	1.3	1.3
Deliveries and complications of pregnancy, childbirth, and the puerperium	640–689	1,490	1,746	0.9	1.0
Congenital malformations	750–759	21,350	21,818	12.3	12.8
Certain diseases of early infancy	760–776	68,550	66,569	39.6	39.1
Symptoms, senility, and ill-defined conditions	780–795	18,170	19,164	10.5	11.3
Motor-vehicle accidents	E810–E835	38,620	38,702	22.3	22.7
All other accidents	E800–E802, E840–E962	54,470	56,605	31.4	33.2
Suicide	E963, E970–E979	18,490	16,632	10.7	9.8
Homicide	E964, E980–E985	7,100	7,641	4.1	4.5
All other causes	Residual	111,610	106,878	64.4	62.8

* Estimates based on a 10% sample of death certificates. The sampling error varies with the number of deaths; for example, the sampling error is 25% for the estimate of 140 deaths from diphtheria, 5% for 3,770 deaths from syphilis, and 0.3% for 633,590 deaths from diseases of heart. (Source: National Office of Vital Statistics, U.S. Public Health Service.)

death rates were the lowest on record, owing in part to the absence of any general outbreak of respiratory disease during this period. The mortality rate for 1958 was affected by the epidemic of influenza that was first reflected in increased mortality for October 1957 and continued through April 1958.

The estimated infant mortality rate in 1958 was 26.9 deaths under 1 year of age per 1,000 live births, more than 2 per cent higher than the rate for 1957 and the second increase in the infant mortality rate since 1936. The maternal mortality rate in 1958 was 3.5 maternal deaths per 10,000 live births.

The chief cause of death among the infectious and respiratory diseases is influenza and pneumonia. The death rate for this cause was 33.1 per 100,000 population in 1958, about 8 per cent lower than that for 1957. Tuberculosis, once the leading cause of death in the United States, has dropped to 15th place. The tuberculosis death rate was 7.0 for 1958, about half the rate five years earlier. The death rate for poliomyelitis in 1958 was 0.1 per 100,000 population, the same as in 1957.

The death rate for motor vehicle accidents in 1958 (22.3 per 100,000 population) was about the same as in 1957 (22.7). For all other accidents the rate was 31.4 per 100,000 population. Among persons aged 1 to 34 years, more deaths resulted from accidents than from any other cause. At ages 15–24 years, the death rate for accidents among males exceeds the rate for females for all causes by nearly a half. (See also ACCIDENTS.)

Of all the persons dying in the United States in 1958, 58% were 65 years or older, and about four fifths of these died from the major cardiovascular-renal diseases or malignant neoplasms.

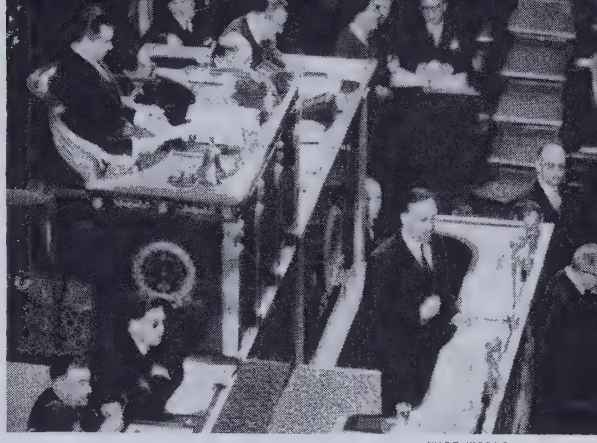
HALBERT L. DUNN,
Chief, National Office of Vital Statistics, U.S. Public Health Service.

DEATHS (OBITUARIES). For a list of prominent persons who died in 1959, see the NECROLOGY at the end of this volume.

DEBRÉ, Michel (Jean Pierre), premier of France: b. Paris, France, Jan. 15, 1912. Brought into Premier de Gaulle's cabinet in June 1958 as minister of justice, Debré was designated first premier of the Fifth Republic on Jan. 8, 1959, when de Gaulle became president.

A lawyer and graduate of the École Libre des Sciences Politiques, he was a deputy delegate to the French Committee of National Liberation during the German occupation of France. After his country's liberation, he held an administrative post in the foreign ministry. He also organized the curriculum of the École Nationale d'Administration, a school for training civil servants and diplomats. In 1948 he was elected to the Council of the Republic (Senate) as a Gaullist.

Though he served as a member of the Council of Europe and of the European Coal and Steel Community, he remained as fervent a nationalist as de Gaulle. He asserted in pamphlets and newspapers, in the Senate, as delegate to the Consultative Assembly of the Council of Europe, and latterly as premier, that France's sovereignty must not be sacrificed to plans for greater European integration. Only a few days after he assumed the premiership, he made it clear that France's participation in various European economic and atomic communities did not presage political integration. Neither he nor President de Gaulle has countenanced outside interference with French policy in Algeria. On June 4 Debré hinted that France might re-examine all of her alliances if there were



WIDE WORLD

French Premier Michel Debré (at rostrum) presents government's program to the National Assembly on January 15.

interference. He and de Gaulle have refused to allow stockpiling of NATO atomic weapons in France. At the same time, they proceeded in 1959 with their plans to hold a nuclear test in the African Sahara as a step toward making France a nuclear power, in spite of a U.N. General Assembly resolution of November 20 requesting France to refrain from making the test.

The Constitution of the Fifth Republic was chiefly the work of Debré, although it is reported that he wanted an even stronger executive. On June 4 the National Assembly upheld the premier's view that it had no right to vote resolutions disapproving government policies unless it was prepared to vote a censure of the government with the intent of forcing it out of office.

(See also FRANCE.)

DEBT, Public and Private. Net public and private debt in the United States totaled $770.2 billion at the end of 1958, a rise of 4.6% during the year, as compared with a 4.1% rise in 1957. (Data for 1958 are preliminary.) The pattern of debt formation in 1958 reflected the business recession and recovery during the year. In the period of downswing early in the year, the cutback in durable goods production and purchases was accompanied by a falling off in corporate and consumer borrowing. In the recovery period, outlays for durable goods advanced, as did the associated forms of debt.

PUBLIC AND PRIVATE DEBT IN THE U.S., END OF CALENDAR YEARS 1957 AND 1958[1]

(In billions of dollars)

	Net debt		Gross debt	
	1957	1958	1957	1958
Public debt:				
Federal[2]	$224.4	$232.7	$301.7	$310.6
State and local	46.7	50.9	52.5	57.2
Total	271.1	283.5	354.2	367.8
Private debt:				
Corporate long-term[3]	111.5	119.5	134.2	143.9
Corporate short-term[3]	132.3	127.5	155.7	150.4
Farm[4]	20.3	23.3	20.3	23.3
Nonfarm mortgage[5]	131.6	144.4	131.6	144.4
Nonfarm nonmortgage[5,6]	69.2	72.1	69.2	72.1
Total	464.9	486.6	510.9	534.0
Total public and private	$736.0	$770.2	$865.1	$901.8

[1] Data for state and local governments are for June 30 of each year. Components may not add to totals because of rounding. [2] Includes categories of debt not subject to statutory debt limit. [3] Long-term debt is defined as having an original maturity of 1 year or more from date of issue; short-term debt as having an original maturity of less than 1 year. [4] Comprises debt of farmers and farm cooperatives to institutional lenders and federal government lending agencies, and farm mortgage debt owed to individuals and others. [5] Data for noncorporate borrowers only. [6] Comprises debt incurred for commercial (nonfarm), financial, and consumer purposes, including debt owed by farmers for financial and consumer purposes. (Source: *Survey of Current Business*, May 1959, U.S. Department of Commerce.)

In the public sphere, the total net debt of all levels of government rose by $12.4 billion ($3 billion in 1957). The $8.3 billion advance in the federal debt (the largest increase in the postwar period) resulted from a rise in expenditures and a decline in tax receipts. The expenditure rise was mainly in the form of personal transfer payments, agricultural price support, and grants-in-aid under the highway program.

In the private sphere, net corporate debt rose by only $3 billion, as compared with $12.2 billion in 1957. The substantial increase in long-term indebtedness in 1958 was largely a result of the extensive refinancing of short-term bank debt into longer maturities during the period of low interest rates early in the year. The net total of $18.7 billion in new obligations incurred by individuals and unincorporated enterprises was $5 billion more than in 1957. The chief factor in this rise was the expansion in mortgage debt by nearly 10%, reflecting a sharp increase in residential construction and an upsurge in sales of existing homes. (See also CONSUMER CREDIT.)

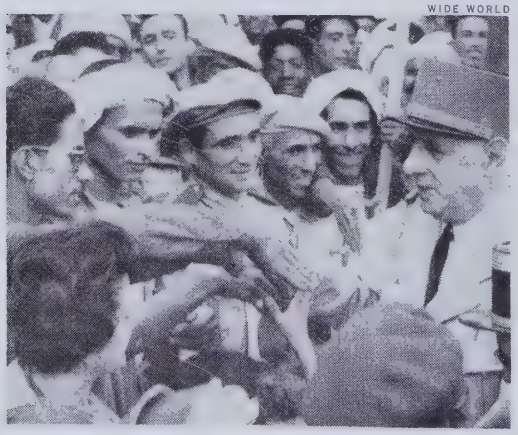
DEFENSE. See NATIONAL SECURITY; OFFICE OF CIVIL AND DEFENSE MOBILIZATION; and the Index entry, *Military*.

DE GAULLE, Charles André Joseph Marie, president of France: b. Lille, France, Nov. 22, 1890. In his first full year as president of the Fifth Republic, de Gaulle succeeded in restoring domestic stability, both political and economic, and in elevating national morale to a postwar high, but he failed to make any appreciable progress toward ending the five-year Algerian rebellion. Under his guidance, the French Community seemed to be evolving into an association of states constructed on the commonwealth pattern, with growing prospects of sovereignty for the individual members. On the international scene, de Gaulle's insistence on a larger role for France in mapping Western strategy, and on reduced integration of French armed forces within the North Atlantic Treaty Organization (q.v.), caused some consternation and embarrassment among Allied governments.

In the decades preceding World War II, de Gaulle became an authority on mechanized warfare, and in June 1940 was appointed undersecretary for war and national defense. After the fall of France, he became leader of the Free French resistance movement, and on June 2, 1943, organized and assumed the direction of the French Committee for National Liberation. When the Allies recaptured Paris, the general returned to the city on Aug. 25, 1944, and five days later he became head of the provisional government of the French Republic. Resigning on Jan. 20, 1946, he remained in the background until the threat of civil war in May 1958 brought his return to power. The National Assembly endorsed him as premier on June 1; his new constitution creating the Fifth Republic was promulgated on October 4; and on December 21 he was formally elected president, succeeding René Coty of the Fourth Republic.

French President de Gaulle, wearing general's uniform, shakes hands with well-wishing villagers in Saida, Algeria, on August 27 as he begins a four-day tour of the country.

WIDE WORLD



Sworn in on Jan. 8, 1959, for a seven-year term, President de Gaulle directed his attention again to finding a solution to the vexatious problem of Algeria. On January 15 he repeated his 1958 peace bid to the Algerian rebel leaders, inviting them to Paris to negotiate a cease-fire, and on September 16, in a radio-television address to France and Algeria, he proposed that the people of Algeria, in free elections, decide their own future. He offered them three choices: (1) independence; (2) integration with France in a full provincial status; and (3) autonomy. The latter, to which de Gaulle gave strong support, would provide for a "government of Algeria by the Algerians," acting in close association with France on such matters as foreign relations, economy, defense, and education. He predicated his plan on one important condition: that the balloting to determine Algeria's future take place only after (but not more than four years after) the cessation of hostilities. (See also ALGERIA.)

De Gaulle's attitude toward the NATO defense system posed a major threat to the continuance of that organization as presently constituted. NATO leaders learned on March 11 that de Gaulle was removing part of France's Mediterranean fleet from unified control in wartime, because, as he said on March 25, the NATO defense perimeter did not include North Africa. In June it was announced that 200 NATO fighter-bombers were being shifted from French airbases as a result of demands by Paris for greater control over nuclear arms on its soil, contrary to United States policy. And on November 3, de Gaulle spoke bluntly on the question of France's military role vis-à-vis unified Western defense, declaring, "The system of integration which prevailed during a certain epoch has had its day." He said that France would administer its own defenses and that it would acquire its own missile and nuclear arsenal. In these moves, observers saw evidence of de Gaulle's determination that France be given full partnership with the United States and Britain in formulating Western military and political policies on a worldwide basis —a view unacceptable to the other allies.

De Gaulle reached close accord with West German Chancellor Adenauer in 1959 on cold war issues, often to the dismay of Britain, which favored a more flexible approach to Berlin and other East-West contentions. In a meeting near Paris on March 4, the French and West German leaders agreed that negotiations with the Soviet Union should involve no revision of the Berlin status; and in discussions with British Prime Minister Macmillan on March 9–10, de Gaulle rejected consideration of a military disengagement in central Europe or of any plan for a neutralized Germany.

De Gaulle met with President Eisenhower in Paris on September 2–3, when they reportedly exchanged frank views on policy differences between the two nations. These conflicts were further discussed at the Western summit meeting in Paris on December 19–21. On the question of a Big Four summit parley, the French president had opposed an early conference (in the fall of 1959), and on this point he prevailed over his two major allies. (See also SUMMIT CONFERENCE.)

De Gaulle's travels abroad in 1959 included a state visit to Italy, on June 23–27, and three visits to Africa: a nine-day tour of French Somaliland

and the Malgache Republic (Madagascar) in July; a tour of Algeria on August 27–30; and another of Senegal, where he presided over a meeting of the Community's Executive Council in Saint-Louis on December 11–12. There and at Dakar, which is to be the capital of the new Mali Federation (q.v.), he made his most specific statements concerning French intentions to aid in the accession to sovereignty of the former possessions.

(See also FRANCE.)

DELAWARE. Middle Atlantic state, United States; one of the original 13 states. The "Diamond State" ranks 49th in area and 46th in population among the 50 states.

Area and Population.—Area: 2,057 square miles (land, 1,978; inland water, 79), divided into Kent, Sussex, and New Castle counties. Population: (1950) 318,085; (est., July 1, 1958) 444,000. Urban places with 1950 populations above 5,000 are: Dover, *the capital*, 6,223; Elsmere, 5,314; Milford, 5,179; Newark, 6,731; New Castle, 5,396; and Wilmington, 110,356.

Executive.—Chief state officers in 1959:
Governor: J. Caleb Boggs (Republican)
Lieutenant Governor: David P. Buckson
Secretary of State: George J. Schulz
Treasurer: Belle Everett
Attorney General: Januar D. Bove, Jr.
Auditor: Ernest E. Killen
Supt. of Public Instruction: George R. Miller, Jr.

Constitution and Judiciary.—The present constitution went into effect in 1897. The Supreme Court comprises three justices; chief justice in 1959 was Clarence A. Southerland.

Legislature.—The General Assembly (Senate, 17 members; House of Representatives, 35) convenes in odd-numbered years, commencing the first Tuesday in January, but in 1961 a new constitutional amendment requiring annual sessions will go into effect. Sessions in odd-numbered years will begin as before, but in even-numbered years the General Assembly will convene on the first Tuesday in February.

A second constitutional amendment adopted in 1959 raised all assemblymen's annual salaries from $1,000 to $3,000, and many other salaries were raised by statute. After passing supplementary appropriations of over $2.5 million for the fiscal year ending June 30, 1959, the legislature passed an appropriation bill of $66.5 million for the next year and soon supplemented this with funds of more than $15 million, including almost $14 million for road construction to be raised by the sale of bonds. Excepting the Wilmington Board of Education, all local school boards were made elective, although provision was made for the holding of local referenda on the subject wherever a sufficient demand was expressed for appointed school boards. The legislators revised the election departments of Kent and Sussex counties and approved a procedure for the establishment of park districts in the northern end of the state. Wilmington was granted permission to float bonds for city improvements and to move the existing curb markets into a new market house, for which provision was made. Among miscellaneous legislation, a new Boat Registration and Safety Law was passed, and another statute created a Delaware Citizens' Council on Aging.

Finance.—In the 1958–59 fiscal year, state revenue of $173,520,455 comprised $68,112,144 from state tax sources, $23,427,792 from the federal government, and $81,980,519 from all other sources. Tax revenue consisted of $27,509,307 from individual income taxes, $5,162,630 from corporate income taxes, $8,125,175 from motor fuel taxes, $1,846,885 from licensing, and $25,468,147 from all other state tax sources. Expenditures of $181,299,913 comprised $73,581,105 for education, $18,100,697 for health, welfare, and safety, $33,858,045 for highways, and $55,760,066 for all other purposes. State long-term indebtedness on June 30, 1959, amounted to $166,018,000.

Banking.—As of June 10, 1959, the state's 4 national banks had assets of $11,934,000 and, on June 30, 1959, the 20 state banks and their 53 branches had $856,302,602.59 in assets.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $27,842,085 ($436 per pupil), comprising $3,084,336 from local school districts, $24,191,545 from the state, and $566,204 from the federal government. Outlays for construction and improvements amounted to $21,560,153, and teachers' salaries (1958–59) averaged $5,475 (high school, $5,732; elementary, $5,259).

DELAWARE SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–8)	146	1,750	43,897
Public junior high (7–9)	43	...[1]	17,523
Public senior high (10–12)	35	1,463	12,131
Private and parochial elementary and secondary	50	...	17,339
Colleges and universities	4	...	6,865

[1] Included in public senior high figure.

Social Welfare.—In the fiscal year 1958–59, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $4,519,709, including $880,678 for the aged, $1,754,705 for dependent children, and $1,415,729 for general relief. A monthly average of 12,590 persons received assistance.

Labor Force.—The state's labor force totaled 190,600 on July 15, 1959, including 15,000 agricultural workers. Nonagricultural employment was up to 153,200 from 149,200 on the previous July 15, and also above the 149,000 average for the intervening 12 months. Of the nonfarm total, 39.6% were employed in manufacturing, 18.3% in trade, and 11.2% in service industries. Unemployment stood at 6,400 on July 15, 1959, well below the 9,600 reported for the previous July 15. The state paid $8,173,848 in unemployment compensation claims during the year ending June 30, 1959.

Manufacturing.—Delaware's 56,643 persons employed in manufacturing in 1957 received $307,424,000 in wages. Value added by manufacture totaled $497,717,000, and outlays for new plant and equipment amounted to $58,976,000. The principal manufacture is that of chemicals and chemical products, which in 1957 employed 5,351 persons who received $29,952,000 in wages, and which added $109,061,000 in value by manufacture. Other important industries are food processing, apparel and related products, and primary metals. Production workers in manufacturing averaged $87.02 for an average workweek of 40.1 hours in August 1959.

Mining.—Delaware had the smallest mineral output of any state in the Union in 1958, representing 0.01% of the national total. The 1958 value was $1,142,000, of which $962,000 was received for 1,090,000 short tons of sand and gravel.

Fisheries.—The commercial fish and shellfish catch in 1958 amounted to 276,538,000 pounds valued at $5,974,000. Principal species were menhaden (269,667,000 pounds valued at $3,776,000) and oysters (2,410,000; $1,717,000).

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $72,290.000 from $83,747,000 for the same period of 1958. For the full year 1958, income comprised $83,789,000 from livestock and livestock products, $31,250,000 from crops, and $1,859,000 from government payments. Principal income sources in 1958 were: broilers, $62,676,000; dairy products, $9,452,000; and corn, $7,742,000.

The 6,200 farms in the state (1958) had a total acreage (1954) of 814,000 (412,000 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 65,000 cattle and 773.000 chickens (excluding commercial broilers). There were

DELAWARE CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	322	280	360
Corn (1,000 bu.)	6,760	8,580	9,075
Potatoes (1,000 cwt.)	1,033[1]	2,310	2,400
Soybeans (1,000 bu.)	1,529	3,622	3,442
Wheat (1,000 bu.)	972	714	742

[1] Average, 1949–57. (Source: U.S. Department of Agriculture.)

13,716 family and hired workers engaged in farming during the week of Oct. 24–30, 1954.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $25,629,755, and new construction and improvements completed in the 1958 calendar years aggregated 464.4 miles, including bituminous surfacing of dirt roads.

Highways and roads totaled 4,125.5 miles on July 1, 1959 (3,813.6 miles surfaced). Registered *motor vehicles* numbered 177,471 on the same date, including 125,909 passenger cars. There were (1959) 3 *railroads* operating 841 line miles; 2 regularly scheduled *airlines;* and 13 *airports and airfields* (8 commercial and municipal, 1 military, 3 private, and 1 restricted).

Communications media (1959) included 8 AM and 3 FM *radio stations;* (1958) 3 daily *newspapers* (circulation, 111,186) and 17 other newspapers (45,741); and (Jan. 1, 1959) 57,200 business and 141,200 residential *telephones.*

Principal Events, 1959.—The problem of racial integration in the Delaware public schools approached a peaceful solution in 1959 when U.S. District Court Judge Caleb R. Layton, III, on April 24 approved the State Board of Education plan for gradual desegregation. This plan, which calls for grade-by-grade integration over 12 years, was quietly put into effect in September by the admission of a few Negroes to the first grade in seven hitherto-segregated schools in Kent and Sussex counties, where, except in Dover, no public schools had previously been successfully desegregated. Milford, scene of an anti-integration riot in 1954, was one of the towns where the new plan was peacefully put into operation.

Most Negro students are now in schools that either are entirely integrated racially or are in the process of being desegregated. It was probably with this in mind that the Delaware Civil Rights Advisory Committee reported to the federal Civil Rights Commission that the poor housing available for Negroes is the most obvious of all racial discriminations in Delaware. Of 7,000 dwelling units judged to be dilapidated, approximately 5,500 units were occupied by Negroes. Except for the racially integrated developments opened by the Wilmington Housing Authority, little new housing is available to Negroes. When a Negro family named Rayfield moved into Collins Park, a Wilmington suburb, white neighbors protested vigorously outside the Negro-occupied house and before the home of the realtor who sold the property. Police protected the Rayfield house for a time, but weeks after the mobs disappeared the house was twice damaged by bombings, which occurred when no one was at home. Police seized suspects, but the Rayfields moved back to Wilmington.

Democratic control of the legislature was so strong that excepting bills creating a debt, which require a three-fourths majority, any legislation could be passed on a party vote, even if the Republican governor chose to exercise his veto power. The state constitution was amended to provide for annual sessions of the legislature, and though this provision was not to go into effect until 1961, the legislature departed from past precedent by making appropriations for only one year instead of two. Although appropriations seemed likely to exceed revenue and thereby to increase the already large state debt, and although the total of state and local taxes was very low in proportion to income, no new revenue measures were adopted. (See also above, *Legislature.*)

Economists noted the likelihood that additional satellite factories, like that of the Motor Wheel Corporation at Newark, would be established near the automobile assembly plants and the Tidewater refinery, and that Delaware's strategic location in reference to Eastern population centers would draw more distributing facilities, like the established General Foods and the projected Ginn and Company warehouses. The Pusey and Jones Corporation, an old Wilmington shipbuilding and machine manufacturing firm, closed in November and was placed in the hands of receivers.

Legislature and Principal Events by:
JOHN A. MUNROE,
Professor of History, University of Delaware;
Author of "Federalist Delaware, 1775–1815."

DE MILLE, Cecil Blount (77), American motion picture producer and director: b. Ashfield, Mass., Aug. 12, 1881; d. Hollywood, Calif., Jan. 21, 1959. To speak of motion picture extravaganzas—lavish, opulent, costly—is to speak of Cecil B. de Mille, one of the legendary moguls of filmdom. Catering to the public's penchant for spectacular screen fare, de Mille was responsible for a number of Hollywood's most successful films, which, if not always paragons of good taste, were box-office favorites. Among his big money-makers were a number of pictures with Biblical themes: *The Ten Commandments* (1923; remake, 1956), *The King of Kings* (1927), *The Sign of the Cross* (1932), and *Samson and Delilah* (1949).

UPI

Cecil B. de Mille (1881–1959)

Cecil B. de Mille was the son of Henry Churchill de Mille (1853–93), a popular playwright of the last decades of the 19th century; the brother of William Churchill de Mille (1878–1955), also a playwright and, after 1914, a motion picture director; and the uncle of Agnes de Mille, dancer and choreographer. After attending New York's American Academy of Dramatic Arts, from which he was graduated in 1900, he was connected with the Broadway stage, first as an actor and later as a play broker and playwright.

In 1913, joining Jesse L. Lasky (1880–1958) and Samuel Goldfish (later Goldwyn) in founding the Jesse L. Lasky Feature Play Company, he went to Hollywood, where he directed *The Squaw Man,* his first film and one of the pioneer feature-length motion pictures. Between 1914 and 1924, the year he founded his own company, his productions included *The Virginian* (1914), *Rose of the Rancho* (1914), *The Girl of the Golden West* (1914), *The Trail of the Lonesome Pine* (1916), *Male and Female* (1919), and *The Affairs of Anatol* (1921). In 1928 he joined Metro-Goldwyn-Mayer, returning in 1932 to the Lasky organization (by then Paramount Pictures Corporation) as an independent producer. His first sound film, *The Sign of the Cross,* appeared in that year. Later films of note were *Cleopatra* (1934), *The Crusades* (1935), *The Plainsman* (1936), and *Union Pacific* (1939).

During his 45 years as a Hollywood showman, de Mille was responsible for 70 films, a number of which bore the stamp of bigness and were remarkably successful at the box office. For example,

the second version of *The Ten Commandments*, produced for about $13 million and for which 25,000 extras were used in shooting the scene of the Exodus of the Israelites from Egypt, was reported to have grossed $60 million by the fall of 1958. (The total receipts for all his films is estimated at $750 million.) In spite of their vast cost and overwhelming popularity, few de Mille productions were regarded as artistic milestones, and only one, *The Greatest Show on Earth* (1952), received an award of the Academy of Motion Picture Arts and Sciences.

The Autobiography of Cecil B. De Mille, on which he had been working, was posthumously published, as edited by Donald Hayne.

DEMOCRATIC PARTY. Basically united in their desire to prepare for and win the presidential election of 1960, and generally encouraged by political omens from scattered elections in 1959 (see ELECTIONS, U.S.), leaders of the Democratic Party were nevertheless divided over issues of policy and strategy. Differences were deep-rooted between North and South on issues of civil rights and also between moderates and liberals in economic policy.

The heavily Democratic 86th Congress (opening with divisions of 64–34 in the Senate and 283–153 in the House—with Hawaii on July 28 choosing one senator from each major party but electing an additional Democrat to the House) was guided in a relatively moderate program by Senate Majority Leader Lyndon B. Johnson and House Speaker Sam Rayburn, both of Texas. Senator Johnson, summarizing the session on September 14, called it "solid and substantial."

Chairman Paul M. Butler of the Democratic National Committee had urged a more liberal program, supported by a majority of the National Committee, the Democratic Advisory Council, and probably by a majority of state party chairmen. "Let us Democrats not be deterred by threat of presidential veto from providing that positive legislative action so essential to our security and well-being," Butler said on May 24 in opposing administration emphasis on "a balanced fiscal budget." Liberal opinion of the party, in and out of Congress, supported greater national investment in defense, education, housing, slum clearance, health, social security, conservation of natural resources, and aid for the free-world economy. Liberals also advocated policies favoring growth of the national product at a yearly rate of 5%, control of inflation through full employment and competitive pricing, and federal enforcement of civil rights. Senator Johnson held to the position that, with Congress and the presidency divided between the two parties, the choice was one "of doing something or doing nothing—of creating laws or creating issues."

The Democratic Advisory Council, meeting in New York on December 5–7, proposed on the first day that the 1960 party platform contain planks for (1) a National Peace Agency to help solve world problems of disarmament and overpopulation and (2) effective price stabilization and disapproval of high interest rates. On December 6 the council issued a 10,000-word blueprint for a platform indicting the Republican administration for its economic policies and advocating stronger federal programs in such areas as education, civil rights, health, housing, and natural resources, and recommending increases of 30% in social security benefits and a minimum hourly wage of $1.25. Four United States senators were actively receptive candidates for the presidency: John F. Kennedy, Massachusetts; Hubert H. Humphrey, Minnesota; Stuart Symington, Missouri; and Lyndon Johnson (qq.v.) of Texas. Adlai E. Stevenson (q.v.) remained aloof from politics but was much discussed as a candidate. Gov. Edmund G. (Pat) Brown (q.v.) was favored by many Californians as a favorite son.

WIDE WORLD

Adlai Stevenson (right), twice the Democratic presidential nominee, talks to National Chairman Paul M. Butler (left) and former Secretary of State Dean Acheson, at meeting of the Democratic Advisory Council in Washington on June 13.

The National Committee voted 71–35 on February 27 to convene the 1960 Democratic National Convention in Los Angeles on July 11, partly because of a pledge of $350,000 made by leaders from that city. Appeals from Chicago and Philadelphia were rejected. On September 16 the National Committee readopted the 1956 "loyalty rule" requiring delegates from each state to strive for election ballot space for the name of the convention nominee. At the same time, rules for apportioning convention votes were revised to provide that: (1) no state have fewer than in 1956; (2) 2½ votes be assigned every state for each of its seats in either house of Congress, any fraction in the total being raised to the next number; (3) each member of the National Committee be given a half vote, with other individual delegates given full or half votes at state discretion; and (4) one alternate delegate be permitted for each full vote. The total convention vote was therefore to be 1,521, with a majority (761) required for nomination. The new rules made only minor changes in regional voting strength but slightly reduced the proportionate power of large states.

The National, Congressional, and Senatorial committees announced total expenditures of $1,268,734 in 1958 Democratic campaigns, against receipts of $1,239,480. The National Committee had carried a deficit of $750,000 from the 1956 campaign, and in 1959 a 750 Club was organized to pay the debt through $1,000 pledges. By October 6, $354,382.50 had been pledged or paid. The committee was hard pressed for current expenses in 1959. On November 7 Chairman Butler reported that 30 states and territories had paid nothing toward 1959 quotas and declared that 1960 convention delegations would be seated and housed in accordance with state financial performance.

FRANKLIN L. BURDETTE,
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DENMARK. The Kingdom of Denmark consists of the peninsula of Jutland (Jylland) and 496 adjacent islands (109 inhabited), of which the largest are Zealand (Sjaelland), Fyn, Lolland, Falster, and Bornholm. The Faeroe (Faroe) Islands, in the At-

lantic between Scotland and Iceland, and Greenland, a former dependency, are integral parts of the kingdom, although both have some political autonomy. Denmark proper borders on Germany to the south and is separated from Norway to the north by the sea channel of the Skagerrak, and from Sweden to the east by the Kattegat and the Øresund. Excluding the Faeroe Islands and Greenland, the area of the kingdom is 16,619 square miles, and the population (est. 1959) is 4,552,200. The principal cities and their 1959 populations are Copenhagen (København), the capital, 942,058 (Greater Copenhagen, 1,246,969); Aarhus, 118,205; Odense, 109,136; and Aalborg, 85,318.

Government.—Denmark is a constitutional monarchy, ruled under a parliamentary system since 1901. King Frederik IX (b. 1899; acceded 1947) is chief of state, acting through a cabinet responsible to the Folketing, which has been a unicameral body since the adoption of a revised constitution in 1953. This same revision permits the king's eldest daughter, Princess Margrethe, to succeed her father. The Folketing elected on May 14, 1957, consists of 70 Social Democrats, 45 Moderate Liberals (Left), 30 Conservatives, 14 Social Liberals (Radical Left), 9 Single Taxers, 5 Communists, 1 member of the Socialist People's Party, 2 representatives each from Greenland and the Faeroe Islands, and 1 from the German minority. Since May 28, 1957, Premier Hans Christian Hansen, a Social Democrat, has headed a coalition government of 9 Social Democrats, 4 Social Liberals, and 3 Single Taxers, giving the government an absolute majority of the Folketing's 179 members.

Religion.—The Evangelical Lutheran Church, of which over 98% of the people are members, is the state church, but other religions (aggregating about 70,000 members) enjoy complete freedom.

Education.—Since 1814 education for all children between the ages of 7 and 14 has been required by law. A school law enacted in 1959 provides for the elimination of one stage in the process, an aptitude examination at the fifth grade, a voluntary continuation of schooling after the seventh grade, and examinations for admission to the upper secondary schools. In January 1959 there were 3,726 primary and secondary schools with 664,240 students, 405 technical schools with 53,445 students, and 29 agricultural schools with 2,928 students. The universities of Copenhagen (founded in 1479) and Aarhus (opened in 1933) had enrollments of 4,783 and 1,878, respectively. The world-famous folk high schools, numbering 62, had a combined enrollment of 6,478.

Social Welfare.—Since the beginning of the 20th century the Danish government has assumed an ever-increasing responsibility for its citizens. Social insurance is obligatory for low-income groups, and payments are made by all employed persons. In addition, subventions are made through private associations. The insurance system covers sickness, old-age pensions, disability, unemployment, and workmen's compensation.

Free medical assistance and hospitalization are provided for 80% of the population, and pensions, starting at the age of 67, are graduated according to individual income resources. Low-income families living in subsidized housing are entitled to allowances of 20 to 75% of the rent. Mothers are given housekeeper services for vacations and illnesses. In 1958–59 public expenditures for health and welfare amounted to more than 1.8 billion kroner (1 krone = U.S.$0.1448).

Finance.—The national budget for the fiscal year 1959–60 anticipated income of 6.02 billion kroner and expenditures of 5.5 billion. The chief sources of revenue were excise and customs taxes (3.4 billion kroner), personal and property taxes (2.1 billion), and corporate income taxes (0.4 billion). The main expenditures were for social and welfare purposes (2.1 billion kroner), other civil purposes (1.8 billion), military and defense purposes (0.9 billion), and investment (0.7 billion). The gross national product in 1958 totaled 33.5 billion kroner, or about 4% more than in 1957. The cost-of-living index (1953 = 100) was 117.

Transportation and Communications.—The Danish merchant marine, which aggregated 2,051,162 gross registered tons at the beginning of 1958, plies all the waters of the world and is a vital source of foreign exchange. During the year, however, income from this source declined by about 250 million kroner. Railroads are still the most important means of domestic transport and are being modernized by the purchase of diesel locomotives, efficient business methods, and improved freight handling. The rail network, including an extensive fleet of train ferries, is 2,880 miles long. For the 550,000 motor vehicles registered in 1959 there were 5,217 miles of main highways and 28,644 miles of byroads. The major airline connecting Denmark with foreign countries is the Scandinavian Airlines System, in which Danish Air Lines is a partner. Kastrup Airport at Copenhagen is now equipped to handle jet flights over the North Pole. As of 1959, Denmark had more than 1,116,000 telephones, 1,290,000 radios, and 280,000 television sets.

Production.—Some 27.1% of the Danish people derive their livelihood from agriculture, 30.7% from industry and handicrafts, 8% from construction and transportation, 13% from commerce and distribution, 9% from the professions and government, and 12% from investments and pensions. Agricultural products account for more than half of Denmark's export earnings. In 1958 the output of milk reached 11,292 million pounds, 8,342 million of which were used to make 348 million pounds of butter (251.8 million pounds exported) and 236 million pounds of cheese (161.1 million pounds exported). Other major exports are eggs (2,456 million produced in 1958) and meat (903.9 million pounds exported). Crop production in 1958, in thousands of bushels, included barley (114,180), oats (44,850), rye (12,000), apples (11,968), and wheat (10,100). In addition, 26,400,000 metric tons of root crops and 194,000 tons of hay and fodder were produced. A smaller harvest because of drought cut agricultural exports in 1959, but higher prices reduced the loss to Danish farmers.

Without natural resources except for clay, stone, and salt, Denmark must import her fuels, metals, and forest raw materials. Decreases in prices of these commodities in 1959 raised the earnings from such manufactures as plywood, furniture, pulp, merchant ships, cement, electric motors, machine tools, and heavy machinery. The industrial production index (1955 = 100) rose from an average of 109 in 1958 to 119.5 by May 1959, with the stone, clay, and glass industries showing the largest increase. In the same month unemployment declined to an all-time low of 2.7% of the insured workers.

In 1958, Denmark produced 3,528 million kw.-hr. of electric power. A new 135,000-kw. plant went into operation at Asnaes in June 1959. Meanwhile, a loan of $40 million for the expansion of power plants and transmission lines was arranged through the International Bank for Reconstruction and Development and the sale of Danish bonds in New York.

The favorable position of the Danish economy has been enhanced by tourist income, which totaled 552 million kroner in 1958 and was expected to exceed this figure in 1959. Growing interest in the Scandinavian countries, combined with improved air transport and hotel facilities, has made tourism a major business in Denmark.

Foreign Trade.—Exports in 1958 totaled 8,596 million kroner, and imports 9,252 million, the imbalance being corrected by loans and earnings on investments. In the first half of 1959 exports amounted to 4,468 million kroner, or 176 million more than in the same period of 1958; imports rose even higher, to 5,166 million, as compared with 4,436 million in the earlier period. Great Britain and West Germany continued to be Denmark's chief customers. As of June 30, 1959, Danish holdings in gold and foreign exchange totaled $255 million.

Principal Events, 1959.—Debate on Danish membership in the proposed free trade area of the Outer Seven continued in the Folketing throughout the year. Inclusion of agricultural goods was the main stumbling block, although Denmark also feared being put in an unfavorable position between Great Britain of the Outer Seven and West Germany of the European Economic Community (q.v.). While the Folketing voted to continue negotiations, 77 members abstained. Eventually, on November 20, the Outer Seven countries initialed a treaty forming the European Free Trade Association (q.v.).

A two-year trade agreement was signed with

the USSR in May, and a visit to Denmark, Norway, and Sweden by Premier Nikita S. Khrushchev was scheduled for August. On July 20, the premier canceled his trip, alleging unfriendliness on the part of the Scandinavian peoples and press. There were no further repercussions, however, and when Nike missiles were delivered to Denmark in August, expected Communist demonstrations did not materialize.

Danish obligations to the North Atlantic Treaty Organization (NATO) came under discussion when the government reduced the term of military service from 16 to 14 months and formulated a defense budget that fell short of NATO standards. Meanwhile, negotiations with West Germany on the joint construction of ammunition depots in Jutland were halted.

Municipal elections showed a decline in Social Democratic strength even while the coalition government's popular support increased. In the Faeroe Islands the Social Democrats gained a slight advantage at the polls. Both the Faeroe and the Danish legislatures ratified a new fishing agreement with Britain.

Premier Hansen visited the United States on March 24–31. In September, Dr. Albert Schweitzer visited Denmark to receive the Sonning Prize for his humanitarian work in Africa.

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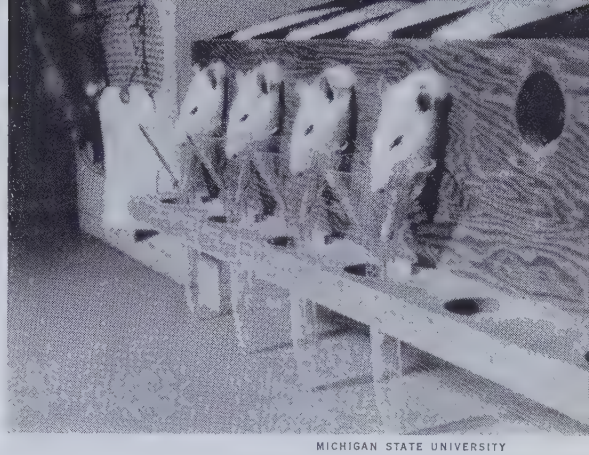
DENTISTRY. Dental Profession.—In August 1959 the dental profession closed its first century of activity as a health service. While dentistry as a branch of the healing arts has been practiced since the dawn of recorded history, its recognition as a truly basic health service was indeed slow. The occasion was marked by a great centennial celebration held in New York City during the week of Sept. 14–18, 1959. The meeting was attended by more than 25,000 dentists, physicians, educators, government representatives, and guests from more than 30 countries.

Most of the scientific programs and exhibits of the New York meeting were held at the Coliseum. A vast number (about 800) of essays, papers, clinics, films, and lectures covering a wide range of dental subjects were presented. The centennial banquet was held in the main ballroom of the Waldorf-Astoria Hotel, despite the fact that the mayor of the city had sought to obtain the ballroom on the same date for a luncheon tendered Premier Nikita Khrushchev of the USSR, who was visiting the United States at that time.

The Post Office Department issued for the first time in 1959 a special commemorative stamp marking the 100th anniversary of the American Dental Association. The association held its first meeting on Aug. 3–4, 1859 at Niagara Falls, N.Y., and its first publication appeared in September 1913. This publication preceded the present *Journal of the American Dental Association*, which in 1958 had a circulation of 100,000.

The first regular dental school in the United States was the Baltimore College of Dental Surgery, established in 1840. In 1959 there were 47 schools of dentistry in the United States, and 34 schools of dental hygiene. As late as 1800 there were only about 100 dentists in the United States. During the next half-century the number increased to about 4,000, and by 1959 the American Dental Association had a membership roll of over 95,000.

Operating Technic.—The recent announcement by a major manufacturer of hospital and medical supplies, that it is developing a new type of pain eliminator, holds promise of a very welcome nature.



MICHIGAN STATE UNIVERSITY

Saliva samples are taken from white rats in a Michigan State University research project into the causes of tooth decay. Saliva is believed to be a contributing factor.

Called an "audio-analgesic," the instrument emits sound waves of a special amplitude which, reaching the patient through a pair of high-fidelity earphones, are capable of blocking out pain. Intended primarily for dental use, it has proved 90% effective in thousands of test cases.

Public Health.—On June 12–13, 1959, the first national conference of the Joint Council to Improve the Health Care of the Aged was held in Washington, D.C. The joint council is sponsored by the American Medical Association, the American Dental Association, and the American Nursing Home Association. Its major purpose is to correlate the efforts of all branches of the healing profession to enable them to cope more adequately with the fast-growing geriatric problem. There are in the United States at the present time over 15 million persons over age 65, and approximately a million more are added every three years. (See OLD AGE.) As the elderly population increases, the dental health problem increases enormously and disproportionately. Dentistry will find itself faced with a gigantic geriatric problem unless researchers can find ways of preventing dental disease and preserving the natural human dentition. These facts point up the urgent need to implement the recommendations which the American Dental Association has recently made to the Senate Subcommittee on Problems of the Aged, and which it hopes to make to the White House Conference on Aging, to be held in January 1961. Research and advance planning are foremost among these recommendations.

The U.S. Public Health Service has recently issued a report which indicates that the water supplies of 1,903 cities and towns in the United States, with a combined population of 7 million, contain 0.7 parts or more per million of fluoride. Eighteen hundred communities now use artificially fluoridated water, reaching a population of approximately 35 million people. The report shows that one out of every three persons consuming water from communal water supplies is now drinking water which is naturally or artificially fluoridated. (See also NUTRITION.)

During the past year the Academy of Dentistry in Toronto, Ontario, has inaugurated and maintained a new dental health service, which it calls "After Hours Emergency Service." Through a listing in the telephone directory and by the use of a telephone answering service, patients in distress are able to receive help daily during the hours of 7 P.M. to 6 A.M. and all day on Sundays and holidays. The academy has a roster of dentists who serve voluntarily on a rotating basis. The fact that as many as a dozen people have been helped in a single night in Toronto, a city of approximately

700,000 people, attests to the need for and the value of the emergency service.

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DEPARTMENT OF DEFENSE. See NATIONAL SECURITY; UNITED STATES.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE. See Index entry.

DEPARTMENT OF STATE, U.S. See FOREIGN POLICY OF THE U.S.; UNITED STATES.

DEPARTMENTS AND AGENCIES, Federal. See Index entry, *Government Departments and Agencies.*

DERMATOLOGY. Griseofulvin.—An antibiotic given by mouth and effective against a wide variety of pathogenic fungi, griseofulvin was made available in the United States in 1959—the outstanding dermatological advance of the year.[1]

Clinical reports by numerous authors, including Harvey Blank and Frank J. Roth, Jr., and Harry M. Robinson, have shown that a dose in adults of not more than 2.0 grams per day eliminates infections with *Microsporum canis, M. gypseum, M. audouini, Epidermophyton floccosum, Trichophyton mentagrophytes, T. tonsurans, T. rubrum,* and some other pathogens, even when an infection has been of long standing. Since these are the organisms causing a large majority of the cases of "ringworm" of the skin, hair, and nails, the value of the drug is apparent. It has revolutionized the treatment of fungus diseases, rendering obsolete X-ray epilation in tinea of the scalp and avulsion of nails in onychomycosis; and it makes possible the ready cure of such stubborn, or hitherto actually incurable, diseases as "black dot ringworm" of the scalp in adults, due to *T. tonsurans,* and *T. rubrum* infections of the nails.

The mode of action of griseofulvin involves its entrance into epidermal tissues after oral administration, rendering the epithelium invulnerable to fungus infection. Since epithelium proliferates while pathogens can no longer invade it, infected epithelium of the skin soon exfoliates and that of the hair or nails grows out and is cast off or removed by simple débridement. The duration of treatment depends on the time necessary for replacement of infected epithelium by uninfected—a few weeks at the most in cases other than those involving the nails, and a few months in nail infections.

The optimum and minimum dosage schedules have not as yet been determined. Doses such as one 250-milligram tablet per day, smaller than those originally recommended, have proved adequate to cure many cases.

The experiments of Harry M. Robinson, who attempted to produce griseofulvin resistance in fungus cultures, indicate that resistance to the drug does not develop. If this proves true in vivo as well as in vitro, the antifungal antibiotic affords conspicuous advantages as compared with the antibacterial, penicillin, which often intoxicates and to which resistance either often develops or, even before treatment, already exists.

[1] Colorless, crystalline, neutral, and thermostable, this substance was isolated from *Penicillium griseo-fulvum Dierckx* by Albert E. Oxford and collaborators in 1939. It was identified by J. F. Grove and J. C. McGowan in 1947 as identical with the "curling factor," isolated from cultures of *Penicillium janczewski* in 1945 by P. W. Brian and collaborators, which causes abnormal growth of hyphae of sensitive fungi. Its chemical structure, $C_{17}H_{17}O_6Cl$, has been established and its usefulness demonstrated against fungus infections in plants, particularly botrytis infection of lettuce and alternaria blight of tomatoes. The cure of fungus infections in human beings by the use of griseofulvin was first exhibited at a meeting of the Austrian Dermatological Association on Nov. 27, 1958, by Gustav Riehl, whose 15 patients included 3 with onychomycosis.

Griseofulvin is of remarkably low toxicity. Nausea, epigastric discomfort, diarrhea, and headache occasionally have been observed, along with a few instances of urticarial drug reaction. The side effects have seldom necessitated withdrawal of the drug. Massive doses given to animals experimentally have caused toxic reactions due to damage of the epithelium of the intestines and testes.

The use of griseofulvin does not eliminate need for measures aimed at promoting exfoliation and removal of infected tissues and for preventing reinfection from original sources and contaminated articles, such as shoes. Unfortunately the drug is not effective against a number of medically highly significant infections, including those due to *Candida (Monilia)* and the deep mycoses due to *Cryptococcus, Sporotrichium, Blastomyces, Phialophora,* and *Histoplasma.* (See also CHEMOTHERAPY.)

Psoriasis.—Valuable adjunctively in the treatment of this annoying, problematic, and common disease is the corticosteroid derivative, triamcinolone, which appears to be the only significantly helpful corticosteroid. Cases of psoriasis respond to its administration promptly with resolution of the inflammatory process, which yields more readily to standard topical therapy when triamcinolone is given. Relapse occurs, however, when the drug is withdrawn, unless combined treatment has eliminated the eruption for the time being. Untoward effects must be watched for; the contraindications are the standard ones when cortisone and related chemicals are used. The drug is "potent and valuable" in psoriasis, as noted by Walter B. Shelly and collaborators, and by Max R. Greenlee and William L. Epstein.

Scleroderma.—Indurative dermatoses in which calcium is bound in collagenous tissues have been found favorably responsive to decalcification by the intravenous administration of a chelating agent, Edathamil. This chemical binds metallic ions so that they are eliminated from the body via the urine. Prior to the discovery of its value in dermatology, it was recognized as highly effective in the treatment of lead poisoning.

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(See also ALLERGIES.)

RICHARD L. SUTTON, JR.
Author, "Diseases of the Skin" (11th ed. 1956).

DESIGN. See ARCHITECTURE; FASHIONS; FURNITURE INDUSTRY; INDUSTRIAL DESIGN; INTERIOR DECORATION.

DETERGENTS. See SOAP AND SYNTHETIC DETERGENTS.

DETROIT. Fifth most populous city in the United States (1950 census: 1,849,568; 1959 est.: 1,875,000), Detroit, Mich., occupies 139.6 square miles and is the center of a metropolitan area of 1,965 square miles including Wayne, Macomb, and Oakland counties (1950 census: 3,016,197; 1959 est.: 3,890,000). For the second successive year the city's estimated population declined from that of the previous year. The estimated 50,000 increase in the population of the metropolitan area was a smaller gain than in recent years.

The city is governed by Mayor Louis C. Miriani and a 9-member Common Council, all elected in November 1957 for 4-year terms.

Net city tax budget (1959–60 fiscal year): $123,745,178. Gross city budget (actual appropriations): $254,440,477. Total city budget, including self-sustaining agencies: $330,661,233. City tax rate (1959): $25.258 per $1,000 assessed valuation. School tax rate: $15.760. School budget:

$166,563,468.30. Net long-term debt of city and city agencies: $368,706,319, including $263,093,159 behind which the city's credit is pledged. Public school enrollment (Oct. 2, 1959): 283,409.

Imports and exports through the customs district of Michigan in 1958: $1,836,000,000, a decrease of $237,400,000 from 1957. Employment in the metropolitan area in 1958 averaged 471,000 in manufacturing and 521,300 in nonmanufacturing. The sharp decline in employment from 1957 reflected the serious effect of the 1958 recession on the Detroit area.

Retail sales in the metropolitan area in 1958 were estimated at $4,478,650,000. The drop of nearly $500 million from the 1957 estimate was also attributable to the recession. Contracts awarded for new construction totaled $528,175,000. On Sept. 15, 1959, the city cost of living index stood at 124.8, four tenths of a point below the national average. The 1958 city average was 123.4.

In a city whose economy depends heavily on the auto industry, the most important development of 1959 was the industry's recovery from the recession of the previous year. Unemployment declined steadily from its early-year level of slightly over 15% of the labor force, retail sales climbed, and the city's auto manufacturers reported substantial increases in earnings for the first nine months of the year. The optimism of business leaders, which had been reinforced by the favorable reception of 1960 cars, especially the new compact models (see AUTOMOBILES), was dampened by the late-year effects of the prolonged steel strike (see IRON AND STEEL; LABOR).

Detroit's importance as a seaport was heightened in 1959 by the opening of the St. Lawrence Seaway (q.v.). The amount of overseas general cargo handled by the port during the first eight months of the year was 300% greater than the total for the same period in 1958. In addition, terminal operators announced plans for $8 million in expanded port facilities during 1960. This expansion is expected to relieve congestion at the docks, at times a serious problem during the 1959 season.

Progress continued on the city's expanding network of expressways, its Civic Center, the redevelopment of blighted areas for industrial use, and the rehabilitation of middle-aged neighborhoods. The Edsel Ford Expressway was completed to the city limits, the last section of the John C. Lodge Expressway was opened to traffic, and work began on a new superhighway—the north-south Walter P. Chrysler Expressway. The National Bank of Detroit moved into a new $20 million downtown building, and land was cleared for a new 32-story Michigan Consolidated Gas Company office building. In the Northland section the new three-story Reynolds Metals Company building, whose architect was Minoru Yamasaki, featured an eye-catching exterior design (see ALUMINUM).

In April, Detroit voters approved a bond issue and a 3-mill tax increase which will raise $90 million for a five-year school construction program. In September, three new colleges opened in or near the city. They are the University of Michigan's Dearborn Center, whose students alternate classroom study with employment, Michigan State University–Oakland near Rochester, and Monteith College, a division of Wayne State University which emphasizes independent study in the humanities.

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DEVELOPMENT LOAN FUND, U.S. See FOREIGN AID PROGRAMS, U.S.

DIAMONDS. See GEM STONES and the Index entry, *Diamonds.*

DIEFENBAKER, John George, Canadian prime minister: b. Neustadt, Grey County, Ont., Sept. 18, 1895. A leading criminal lawyer, John Diefenbaker was elected to the House of Commons in 1940 as a Progressive Conservative from the traditionally Liberal and Socialist province of Saskatchewan. Although he was unsuccessful in his candidacy for the party's leadership in 1948, when the post went to George A. Drew, he won it with no difficulty in 1956 when Drew resigned as opposition leader.

As a result of the national elections of June 10, 1957, the Progressive Conservatives gained control of Parliament through a coalition with the Co-operative Commonwealth Federation (CCF) and the Social Credit Party, and Diefenbaker succeeded Louis S. St. Laurent, Liberal, as prime minister. General elections were held again on March 31, 1958, as a result of the prime minister's wish to increase his majority. The Progressive Conservatives' triumph in the greatest election landslide in Canada's history won them 97 additional seats, giving Diefenbaker a House of Commons majority of 153.

In 1959, Canadian concern for its part in the defense of North America and for the role of the smaller nations in NATO kept the prime minister actively involved in international affairs. On February 20 Diefenbaker announced that his government was reluctantly abandoning its $400 million program for the development of the CF-105 Avro Arrow jet plane, an interceptor for enemy bombers, partly because it would be obsolescent by the time it had become operational (1962). On May 25, in discussing the nuclear defense agreement with the United States of May 22, 1959, Diefenbaker assured Parliament that the pact meant not only that Canada would receive nonnuclear parts of weapons from the United States but that military reactors would be sent to Canada in the near future. He continued to stress throughout 1959, as in a speech to the Canadian Women's Press Club in Ottawa on September 8, that all members of NATO must be considered as equals, and that no triumvirate of power must be allowed to control policy.

On the death in March 1959 of Secretary of State for External Affairs Sidney E. Smith (q.v.), Diefenbaker took over the foreign affairs portfolio, which he had held for four months after becoming prime minister in 1957. Criticism of his dual role in the government mounted in both the press and Parliament until he appointed Howard Green (q.v.) on June 4 as Smith's successor.

With Queen Elizabeth II and President Eisenhower, the Canadian leader participated in the official opening of the St. Lawrence Seaway (q.v.) on June 26. (See also CANADA.)

DIETETICS. See FOOD RESEARCH; NUTRITION.

DIPLOMATIC LIST. See AMBASSADORS AND ENVOYS.

DIRKSEN, Everett McKinley, U.S. senator: b. Pekin, Ill., Jan. 4, 1896. When the U.S. Senate convened for the opening of the 86th Congress at noon on Jan. 7, 1959, Senator Dirksen became Republican minority leader. As such he is chief official spokesman in the Senate for both his party and administration policies. His emergence in this position represented a victory for the conservative segment of the party in face of a challenge from liberal members who claimed that the previous November's elections gave them right to a greater voice in party affairs.

Dirksen worked his way through the University of Minnesota, graduating in 1917, and went overseas with the U.S. Army in World War I, winning a commission from the ranks. He returned to Pekin to go into business and acted as its commissioner of finance from 1927 to 1931. Elected to the U.S. House of Representatives in 1932, he served in the

PLETCHER IN THE SIOUX CITY JOURNAL

"What Big Teeth You Have, Grandma!"

73d through 80th Congresses, resigning in 1949 because of an eye ailment. In 1950 he won a seat in the Senate from the then Democratic majority leader, Scott W. Lucas, and in 1956 was re-elected.

Dirksen is a seasoned and devoted party regular, adroit parliamentarian, and eloquent orator of the old-fashioned school. Originally a strict isolationist, he was also an ardent backer of the late Sen. Robert Taft at the 1952 Republican National Convention, which nominated Dwight D. Eisenhower. He subsequently moved closer and closer to the president's internationalist policies. In the 85th Congress, in which he was the minority whip, under the leadership of former Sen. William F. Knowland, Dirksen supported the president in 88% of his votes.

DISARMAMENT. Described by both President Eisenhower and Soviet Premier Khrushchev as "the most important question facing the world today,"[1] disarmament was again the subject in 1959 of much discussion, some negotiations, and little progress. Disarmament proposals advanced during the year by various national spokesmen had negligible effects in reducing the postwar East-West armaments race. In general, a principal division between the Eastern and Western powers on the disarmament issue appears to stem from the West's attitude that certain political differences should be solved before disarmament can be effected, and the East's belief that disarmament can take place without the prior settlement of political questions. In the absence of political settlements, the West has insisted that disarmament steps must be accompanied by self-enforcing international arms controls, and the East has advocated general agreement on disarmament measures with little, if any, provision for controls or enforcement.

The principal agreement on disarmament reached in 1959 was the unanimous sponsorship on October 28 by the members of the U.N. General Assembly of a resolution referring to a new 10-nation Disarmament Committee the disarmament proposals advanced before the General Assembly in September by Premier Khrushchev and British Foreign Secretary Selwyn Lloyd. A major step toward disarmament was the continued suspension in 1959 of nuclear weapons tests by the three nuclear powers. (See Atomic Energy.) Ironically, the three-power Conference on the Discontinuance of Nuclear Weapons Tests continued to meet at Geneva during the year without reaching an agreement to do permanently what the three nations had unilaterally done on at least a temporary basis.

Ten-Nation Disarmament Committee.—It was announced on Sept. 7, 1959, that a new 10-nation Disarmament Committee had been established to negotiate on disarmament. The new committee comprises five Western nations (Canada, France, Great Britain, Italy, and the United States) and five Eastern countries (Bulgaria, Czechoslovakia, Poland, Rumania, and the Soviet Union). Although the group was formed outside the United Nations, it will report to the 82-member U.N. Disarmament Commission, which approved of the committee's formation on September 10, and it is scheduled to hold its first meeting in early 1960 at the United Nations European headquarters at Geneva. The 10-nation Disarmament Committee, which was initially set up by the foreign ministers of the Big Four powers who met at Geneva in July and August, was formed primarily because of the Soviet Union's insistence on parity in the representation of East and West at all future disarmament negotiations.[2]

Soviet Proposals.—During his visit to the United States, Soviet Premier Khrushchev proposed before the U.N. General Assembly on Sept. 18, 1959, a three-stage plan for "general and complete disarmament" within four years. His proposals (by stages) provided for: (1) limitations in the armed forces of the Soviet Union, the United States, and Communist China to 1,700,000 men, and of Britain and France to 650,000; (2) liquidation of all armies and of military bases in foreign countries; and (3) abolition of air forces, nuclear weapons, and rockets under (unspecified) international controls. Anticipating objections to his plan for total disarmament, the Soviet premier recommended the following five alternate measures for partial disarmament:

(1) Formation of a control and inspection zone in western Europe, with reductions in the foreign armed forces based in these countries.
(2) Establishment of a zone in central Europe from which nuclear weapons would be banned.
(3) Withdrawals of foreign troops from European countries and the abolishment of foreign military bases there.
(4) Signing of a nonaggression pact between the NATO and Warsaw Treaty member nations.
(5) Conclusion of an agreement for the prevention of surprise attacks.

It was noted at the time that all of Khrushchev's proposals for partial disarmament had been previously advocated by the USSR in recent years. Many observers declared that his proposals for total disarmament were unrealistic in view of the USSR's many past refusals to agree to partial disarmament measures. However, U.S. Secretary of

[1] In a joint communiqué issued Sept. 27, 1959, at the conclusion of their private talks held at Camp David, Md.

[2] The USSR had announced on Nov. 4, 1957, that it would boycott meetings of the 11-member U.N. Disarmament Commission and its 5-nation Disarmament Subcommittee because of what it considered a lack of parity in their representation. The membership of the Disarmament Commission was increased to 25 nations on Nov. 19, 1957, but the USSR continued to boycott its work. The membership was then further increased, at Soviet insistence, to include all members of the United Nations on Nov. 4, 1958.

State Christian A. Herter stated that Khrushchev's speech may have been propaganda, but emphasized that it deserved serious study by the newly established Disarmament Committee.

Other Soviet disarmament proposals during 1959 included those proposed in June for establishing an "atom-free zone" in the Scandinavian Peninsula and the Baltic area, and in the Balkan countries and the Adriatic area. These proposals were similar to the so-called Rapacki Plan of 1957 (named after the Polish foreign minister, Adam Rapacki), which advocated a ban on stockpiling and manufacturing nuclear weapons in central Europe.

Western Plan.—On Sept. 17, 1959, British Foreign Secretary Selwyn Lloyd presented to the U.N. General Assembly a three-stage disarmament plan for consideration by the new Disarmament Committee. The plan (by stages) involved: (1) agreement by Britain, the Soviet Union, and the United States to ban nuclear weapons tests under effective international controls; (2) studies by these powers leading to agreements for the cessation of nuclear weapons manufacture and for the imposition of ceilings on conventional armed forces; and (3) bans on both the use and manufacture of nuclear weapons, prohibition of the use of outer space for military purposes, and "the reduction of other weapons and armed forces to levels which will rule out the possibility of aggressive war." These proposals were similar in many respects to the Western disarmament plan submitted in 1957 to the U.N. Disarmament Subcommittee and subsequently rejected by the USSR.

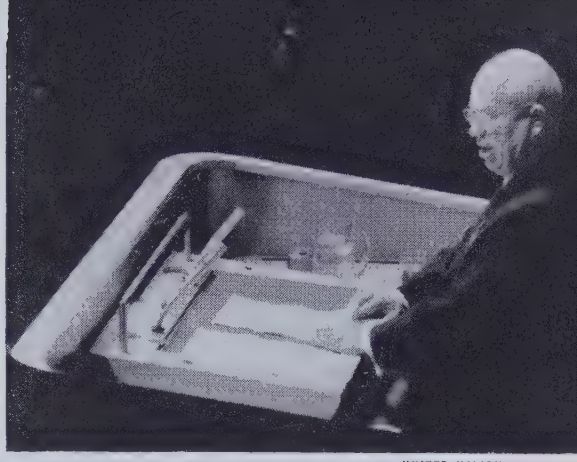
Conference to Ban Nuclear Weapons Tests.—The three-power Conference on the Discontinuance of Nuclear Weapons Tests, which convened at Geneva on Oct. 31, 1958, continued its efforts throughout 1959 to draft a treaty banning nuclear tests under a mutually agreeable detection and control system. At the end of the year the delegates had agreed to a preamble, 17 articles, and an annex of a proposed 25-article treaty, and were in the midst of negotiating concessions on such crucial issues as controls and inspection.

Major points of controversy at the conference were the staffing of international control posts on the territories of the countries concerned and the amount of freedom to be allowed inspection teams in investigating possible violations of the nuclear ban. The heads of the British and United States delegations, David Ormsby-Gore and James J. Wadsworth, respectively, initially insisted that a so-called host country should not staff the control posts on its territories with its own nationals, as was originally demanded by the Soviet chief delegate, Semyon K. Tsarapkin, who also asked that only one or two "outside observers" be stationed at each of these posts. After protracted discussions, the Western delegates agreed that a host country might fill one third of the service, technical, and supervisory positions at control posts with its own citizens, with one third provided by the other two nuclear powers and the final third by other countries. The Soviet delegation finally conceded that 10 or 11 foreign specialists might be stationed at the posts, but it has insisted despite Western objections that the chief of each post must be a citizen of the host country.

The Western delegates have also maintained that inspection teams should be allowed to investigate at the site all unidentified seismic events having a measurable force of 5 kilotons or more, and that they should be permitted to make "on-site" inspections of 20% of those events having a force less than that amount.[3] The Soviet position has been that the number of on-site inspections should be limited to a specified number each year.

Limited agreement was reached at the conference on technical matters. Following a proposal by the United States and Britain, which was accepted by the USSR, a meeting of technical experts was held at Geneva on June 27–July 10 to study measures for the detection of high-altitude nuclear tests. The experts recommended that 5 or 6 earth satellites should be orbited in order to monitor and detect possible high-altitude explosions. The Soviet delegation also accepted an American proposal for a meeting of technical experts to study new data accumulated by the United States relating to the difficulties of detecting underground nuclear weapons tests. However, a working party of technical experts which met on Nov. 25–Dec. 19, 1959, failed to agree on the scientific methods that could be used to detect underground nuclear tests, and the Soviet scientists rejected the test data submitted by the United States. (See also ATOMIC ENERGY.)

[3] The 3-power conference of technical experts which met at Geneva on July 1–Aug. 21, 1958, reported that the number of seismic events of 5 kilotons or more would vary each year from 20 to 100, and that unidentifiable events of less than that force would be much greater in number. (See also SEISMOLOGY.)



UNITED NATIONS

In an address before the United Nations General Assembly, September 18, Soviet Premier Khrushchev presents his proposals for "complete" world disarmament within four years.

Among the more important articles on which the delegates have agreed, after concessions by both sides, are provisions for the retention of a veto power by each nation on treaty amendments (excluding accusations of a treaty violation), and for a treaty of unlimited duration which would be reviewed after two years for possible improvements. Another major agreement, reached November 30 in the form of a draft annex, provided for the establishment of a preparatory control commission after the treaty is concluded. The conference was adjourned from Dec. 19, 1959, to Jan. 12, 1960.

(For details of other disarmament resolutions approved by the U.N. General Assembly, see UNITED NATIONS; for information regarding a future summit meeting at which disarmament would be discussed, see SUMMIT CONFERENCE.)

W. R. F.

DISASTERS. See the CHRONOLOGY at the front of this volume; METEOROLOGY AND CLIMATOLOGY; and the Index entry, *Disasters*.

DISCIPLES OF CHRIST. Total membership in the United States in 1959 was 1,921,899, organized into 7,945 congregations which were served by 8,671 ministers. World membership, organized in 10,139 congregations, was 2,244,039. Contributions for all missionary, educational, and benevolent causes amounted to $11,266,509.71 in 1958.

The 1959 assembly was held in Denver, Colo., August 28–September 2, with registrations numbering 9,049. Dr. Loren E. Lair of Des Moines, secretary of Iowa churches, was elected president for 1960. The convention celebrated the 150th anniversary of the address by Thomas Campbell which is considered to be the basic document upon which the denomination was launched. The assembly also acted to merge its student work with that of the Presbyterians, the United Church of Christ, and the Evangelical United Brethren churches, under the name Campus Christian Life.

Overseas missions were served in 14 fields with 244 missionaries and 2,183 national leaders. There was a net membership gain of 5,127 in the mission field, bringing the total to 130,539; baptisms overseas numbered 9,681.

Beginning in 1960 the Disciples of Christ will follow a 10-year program which is to be known as the Decade of Decision and which will stress evangelism and the establishment of new churches.

The national headquarters are located at 221 Ohmer Ave., Indianapolis, Ind. Publications include *World Call,* a monthly, and *The Christian Evangelist—Front Rank,* a weekly.

GAINES M. COOK,
Executive Secretary.

DISCOVERER SATELLITES. See SPACE FLIGHT.

DISEASES. See MEDICINE; PUBLIC HEALTH; and articles on specific diseases.

DISPLACED PERSONS. See REFUGEES AND DISPLACED PERSONS.

DISTILLING INDUSTRY. Production.—The production of beverage distilled spirits at registered and fruit distilleries during the fiscal year ended June 30, 1959, as compared with audited figures for the fiscal year 1958, was as follows, in tax gallons:[1]

	July 1, 1958—June 30, 1959	July 1, 1957—June 30, 1958
Whiskey	148,248,812	119,086,642
Brandy	7,398,929	5,738,903
Rum	1,968,722	2,197,738
Gin	16,660,639	16,370,280
Vodka	7,569,937	8,443,558
Spirits	78,550,323	72,634,535
Total	260,397,362	224,471,656

Rectified Spirits.—Data on rectified spirits in the fiscal year 1959 (with 1958 figures in parentheses) are as follows: rectifying plants used 80,424,744 proof gallons of domestic and imported liquors (77,919,808); production by rectification amounted to 81,467,933 proof gallons (78,691,899). Whiskey accounted for 65,238,107 gallons of the total production by rectification (63,923,356).

Output for Consumption.—During the calendar year 1958 the bottled output of domestic distilled spirits, plus imported spirits bottled after withdrawal from customs warehouses, totaled 188,957,867 wine gallons, as compared with 183,606,943 gallons during 1957, an increase of 5,350,924 gallons, or 2.9%. Whiskey bottled during 1958 amounted to 140,280,407 wine gallons, accounting for 74.2% of total distilled spirits bottled, as against 134,608,587 gallons during 1957, or 73.3% of total spirits. Of the total whiskey bottled during 1958, spirit blends amounted to 72,733,889 gallons; bonded, 11,146,962; straight, 55,431,574; and blended straights, 967,982. The remainder of the bottled output consisted of gin, 19,280,407 gallons; rum (bottled in continental United States and not including rum imported from Puerto Rico), 749,003; brandy, 4,644,962; cordials, liqueurs, and similar output, 7,161,286; vodka, 15,100,525; and miscellaneous (including products bottled for exportation), 1,389,369.

Withdrawals.—Tax-paid and tax-free withdrawals (in tax gallons) during the fiscal year 1959, compared with 1958, were as follows:

	July 1, 1958—June 30, 1959	July 1, 1957—June 30, 1958
Tax-paid withdrawals:		
Whiskey, bottled-in-bond[1]	10,605,515	11,710,983
Whiskey, total	81,241,284	79,515,387
Brandy	4,400,155	4,118,866
Rum	186,680	212,895
Gin	16,498,713	16,342,349
Vodka	7,540,524	8,345,530
Spirits[2]	49,890,738	46,123,716
Alcohol[3]	7,998,533	10,438,377
Total	167,756,627	165,097,120
Tax-free withdrawals:		
For addition to wine	36,774,498	32,328,869
For denaturation	1,826,395	1,698,804
For export	1,573,788	1,373,353
Transfers to customs manufacturing bonded warehouses	543,713	1,961,553
For vessels and aircraft	3,081	6,960
For use of the United States	...	442
To foreign trade zones	2,232	277,751
Total	40,723,707	37,647,732

[1] Included in total whiskey. [2] Produced at registered distilleries. [3] Produced at industrial alcohol plants.

Apparent Consumption.—The apparent consumption of distilled spirits in the United States during the calendar year 1958, as compiled by the Distilled Spirits Institute, amounted to 215,465,819 wine gallons, an increase of 1.6% compared with 1957. These figures are based on actual wholesale and retail sales in the monopoly states, and on tax collections or gallonage shipments to wholesalers in the license states. Consumption amounted to 159,257,005 gallons in the license states, or 73.9% of the total, and 56,208,814 gallons in the monopoly states, or 26.1% of the total.

The following table shows apparent consumption (in wine gallons) in the ten leading states in 1958, compared with 1957, and indicates the type of control:

	1958	1957	
New York	27,884,993	26,167,591	(license)
California	23,755,946	23,010,031	(license)
Illinois	15,391,251	15,620,873	(license)
Ohio	11,776,172	12,225,474	(monopoly)
Pennsylvania	11,025,114	11,032,749	(monopoly)
New Jersey	9,960,894	9,331,003	(license)
Florida	8,334,702	8,040,601	(license)
Michigan	7,955,667	8,795,231	(monopoly)
Massachusetts	7,824,136	7,468,521	(license)
Texas	7,805,210	8,223,681	(license)

Per capita consumption of distilled spirits in the United States during 1958 was 1.24 wine gallons.

Stocks.—Stocks of whiskey and other distilled spirits remaining in internal-revenue bonded warehouses on June 30, 1959, as compared with stocks of June 30, 1958, at original entry gauge and before determination of losses owing to leakage, evaporation, and related factors, were as follows (in tax gallons):

	June 30, 1959	June 30, 1958
Whiskey	782,853,090	750,528,319
Brandy	16,912,103	16,316,108
Rum	1,033,689	1,117,652
Gin	1,466,824	1,801,716
Vodka	441,032	447,130
Spirits	86,071,975	88,070,118
Total	888,778,713	858,281,043

Public Law 85–859, approved Sept. 2, 1958, extended the period during which distilled spirits may be retained in bonded warehouses from 8 to 20 years.

Revenues.—Revenues accruing to the federal government from distilled spirits during the calendar year 1958 amounted to $2,151,646,000, an increase of 3.3%, compared with 1957. This amount accounted for 71.3% of federal collections from alcoholic beverages. Taxes on beer ($3,015,967,000) amounted to 25.5% of the total alcoholic beverage receipts, and wine accounted for 3.2%. The federal excise tax rate on distilled spirits was $10.50 per proof gallon.

Imports.—United States dutiable imports of distilled spirits during the calendar year 1958 amounted to 30,144,102 tax gallons, with whiskey comprising 26,894,323 gallons of the total. In addition, 2,227,123 gallons of spirits were received from Puerto Rico and the Virgin Islands.

Exports.—In 1958 exports of distilled spirits from the United States to foreign destinations (exclusive of military shipments) amounted to 2,208,815 proof gallons. In addition, 616,632 gallons were shipped to Puerto Rico, the Virgin Islands, Alaska, and Guam.

Distillers' Dried Grains.—Production of distillers' dried grains at registered and fruit distilleries during 1958 consisted of 198,400 tons of dark grains, 44,100 tons of light

[1] As used herein, a tax or proof gallon is a standard United States gallon of 231 cubic inches containing 50% of ethyl alcohol by volume; a wine gallon is a standard United States gallon regardless of proof.

grains, and 50,700 tons of dried solubles, or a total of 293,200 tons.

HOWARD T. JONES,
Executive Secretary,
Distilled Spirits Institute, Inc.

DISTRICT OF COLUMBIA. This Federal District of the United States, comprising an entirely urban area of 61 square miles, is coextensive with the city of Washington, the national capital. Population of District: (1950) 802,178; (est., July 1, 1958) 828,000; of metropolitan area: (1950) 1,464,089; (est., April 1, 1956) 1,884,000.

Government.—Administration is handled by a Board of Commissioners, two of whose three members are civilians appointed by the president of the United States, with the consent of the Senate, and the third, a member selected from the Corps of Engineers of the U.S. Army. Commissioners in 1958 were: Robert E. McLaughlin, president, David B. Karrick, and Brig. Gen. A. C. Welling. The secretary of the board was G. M. Thornett; finance officer, Kenneth Back; corporation counsel, Chester H. Gray; and superintendent of schools, Dr. Carl F. Hansen.

Legislative power is vested in the U.S. Congress, which generally seeks advice from the Board of Commissioners regarding proposed legislation. District residents do not vote in elections. A federal Court of Appeals, a federal District Court, a Municipal Court of Appeals, and a Municipal Court serve the District.

Finance.—In the 1958–59 fiscal year, District revenue comprised $152,677,127 from District tax sources, $48,757,405 from the federal government, and $31,215,360 from all other sources. Tax revenue consisted of $21,133,577 from a 2% general sales tax and a 1% food tax, $22,836,616 from individual income taxes, $7,583,307 from corporate income taxes, $11,309,184 from motor fuel taxes, $10,531,755 from licensing, and $79,282,688 from all other District sources. Expenditures of $255,795,472 comprised $58,967,715 for education, $93,459,014 for health, welfare, and safety, $30,238,873 for highways and streets, and $73,129,870 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $33,787,689.

Banking.—As of June 10, 1959, the District's 5 national banks had assets of $933,110,000, demand deposits of $642,950,000, and time deposits of $200,269,000. The 7 District banks had $692,229,000 in assets, $448,161,000 in demand deposits, and $182,675,000 in time deposits.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. The National Education Association estimates that District operating expenditures for public elementary and secondary education in the 1958–59 school year totaled $44,330,000 ($434.43 per pupil), and that revenue comprised $7 million from the federal government and $46,250,000 from the District. Outlays for construction and interest payments amounted to $8,920,000. Teachers' salaries (1958–59) averaged $6,093 (senior high, $6,719; junior high, $6,075; vocational high, $6,247; elementary, $5,843).

EDUCATIONAL STATISTICS FOR THE DISTRICT OF COLUMBIA, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k-6)	128	2,353	75,382
Public junior high (7–9)	23	945	20,430
Public senior high (10–12)	10	628	13,555
Public vocational high	5	165	2,389
Private and parochial elementary and secondary	78	...	17,593
Veterans high school centers	1	25	605
Capitol page schools	1	6	29
District teachers colleges	1	58	1,189

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and District funds (excluding institutional costs) totaled $13,029,802, including $2,447,996 for the aged, $6,707,021 for dependent children, and $2,243,796 for the permanently and totally disabled. A monthly average of 23,347 persons received public assistance. District expenditures for all mental health activities in the same year totaled $15,072,000; for correctional and penal programs, $6,017,000.

Labor Force.—As of June 30, 1959, there were 234,000 civilian employees of the federal government in the Washington metropolitan area. Nongovernmental employees covered by the District Unemployment Act averaged 223,419 in 1958 and received $971,128,904 in wages, up 4.5% over 1957 totals; and District government employees covered by the same act numbered 22,657 and received $117,838,330 in wages, an increase of 9.9% over 1957. Average covered employment and wages paid in major nongovernment categories were as follows: wholesale and retail trade, 82,318 employees ($329,458,511); service industries, 53,942 ($221,148,165); transportation, communications, and other public utilities, 22,406 ($117,390,845); contract construction, 19,177 ($97,114,159); and finance, insurance, and real estate, 25,407 ($94,880,169).

Manufacturing.—Manufacturing activities in 1958, chiefly printing and publishing and food processing, employed 20,040 covered employees who received $110,480,637 in wages from 617 employers. Production workers averaged $95.04 for an average workweek of 39.6 hours in August 1959.

Transportation and Communications.—District and federal funds disbursed for roads and streets in the District proper in the 1959–60 fiscal year totaled $22,029,325, and 49 miles of new construction were completed.

Highways and roads totaled 1,253 miles (1,080 surfaced) on June 30, 1959. Registered *motor vehicles* numbered 206,184 on Aug. 31, 1959, including 157,751 passenger cars. There were (1959) 7 *railroads* operating 44 line miles; 13 regularly scheduled *airlines;* and 4 *airports and airfields* (3 military and 1 commercial and municipal).

Communications media (1959) included 7 AM and 9 FM *radio stations;* 4 VHF and 1 UHF *television stations;* 3 daily *newspapers* (circulation, 823,000) and 5 other newspapers (55,000); and (January 1) 283,700 business and 316,400 residential *telephones.*

Principal Events, 1959.—Ground was broken on February 24 by House Speaker Sam Rayburn for the alteration of the Capitol's east-central front. The new $10 million marble portico, expected to be completed in early 1961, will duplicate the original structure in all details, except that it will extend 32½ feet beyond the center section of the Capitol. President Eisenhower laid the cornerstone on July 4 with implements used by George Washington for laying the initial cornerstone 166 years earlier.

On April 14 the president dedicated a monument to the late Sen. Robert A. Taft. The 100-foot tower of Tennessee marble, containing a 27-bell carillon, stands on Capitol Hill.

The National Shrine of the Immaculate Conception, in northeast Washington, was dedicated by the Roman Catholic hierarchy of the United States on November 20. Seventh-largest church in the world and largest Roman Catholic edifice in the United States, the vast Romanesque-Byzantine basilica, originally planned in 1914 as a shrine to the Virgin Mary, patroness of American Catholics, has been under construction since 1922. Measuring 459 feet in outside length and 240 feet in outside width, the cathedral, when completed, will have numerous subsidiary chapels radiating from the central edifice and will contain 20 altars. Eventual cost is expected to reach $30 million, of which $18 million has been spent. A unique feature of its construction is the omission of structural steel and its utilization, as in medieval cathedrals, of enormously thick walls and stone and masonry supports. (See also RELIGION.)

Late in the year, architect Edward Stone unveiled plans for a $61 million national cultural center on the banks of the Potomac River near the Lincoln Memorial. To consist of a series of white

buildings set in a terraced landscape, the center will include a grand salon for official functions, an opera house with a seating capacity of 3,000–4,000, two small auditoriums, a 3,000-seat concert hall, a playhouse of 1,000–1,800 seating capacity, and an underground garage.

DIVIDENDS. See BUSINESS DATA, U.S.
DIVORCE. See MARRIAGE AND DIVORCE.

DODECANESE ISLANDS. A group of 14 inhabited islands and some 40 islets in the Aegean Sea, forming a government general of Greece. Area, 1,035 square miles (of which the island of Rhodes comprises 537); pop. (1951), 121,480. The city of Rhodes (23,599) is the capital. Crops include olives, grapes, tobacco, and oranges. Handicrafts, sponge fishing, and sheep and goat raising are important.

DOG SHOWS. See SPORTS, GAMES, AND SHOWS.
DOMINICA. See WEST INDIES FEDERATION.

DOMINICAN REPUBLIC. This Caribbean republic comprises the eastern two thirds of the island of Hispaniola, and borders Haiti on the west. Area, 18,816 square miles; pop. (est. July 1, 1958), 2,791,000, mostly of mixed European, Indian, and Negro descent. The predominant language is Spanish. About three fourths of the population live in rural areas. Chief cities (with estimated 1957 populations) are Ciudad Trujillo, the capital (272,759); Santiago de los Caballeros (66,804); San Francisco de Macorís (22,223); and San Pedro de Macorís, a sugar center (21,350).

Government.—Generalissimo Rafael Leonidas Trujillo Molina has ruled as military dictator of the republic since 1930, and heads the only political organization, the Dominican Party. He was succeeded as president of the country in 1952 by his brother, Gen. Hector Bienvenido Trujillo Molina, who was re-elected without opposition to a second 5-year term in 1957. The legislature consists of a 23-member Senate and a 52-member Chamber of Deputies chosen by popular vote for 5-year terms.

Education and Religion.—Illiteracy is high (56.8% of the population aged 10 years and over in 1950). Primary education is free and compulsory for children aged 7–14 years. At the end of 1957 there were 4,536 public schools with a total enrollment of 487,195 pupils. The University of Santo Domingo had 3,828 students in 1957. The state religion is Roman Catholicism.

Finance.—Actual government expenditure in 1957 was 153.2 million pesos (up 11.6% over 1956); revenue, 154.7 million pesos (up 13.0%). The peso is equal to the United States dollar.

Transportation and Communications.—The highway system, which totaled 2,682 miles in 1957, is being expanded; contracts amounting to 35 million pesos were granted in early 1959 for the construction of 200 miles of new roads. In 1957, 1,641 ships with a net tonnage of 2,805,887 cleared Ciudad Trujillo and other ports. Five international airlines and one domestic airline serve the Dominican Republic. Passenger cars numbered 8,600 in 1957; commercial vehicles, 6,000; telephones, 14,675; and television sets, 7,000.

Production.—The sugar industry accounts for nearly half of Dominican export value and employs over half of the labor force. Production of sugar was adversely affected by a reduction of 7.5% in the republic's basic export quota of 655,000 tons annually which was made in February 1959 under the International Sugar Agreement, and by continuing low prices on the world market. Estimated sugar exports in 1958 totaled 737,000 short tons (a decline of 13% from 1957). Other chief cash crops and estimated outputs for export in 1958 are: coffee, 300,000 bags of 132.3 pounds each (down 43% from 1957); cocoa beans, 78 million pounds (1958–59 est.); and leaf tobacco, 25.4 million pounds. Subsistence crops include corn, rice, dry beans, bananas, and peanuts, production of which in 1959 was unofficially estimated at a record 71,500 short tons (unshelled).

Manufacturing is on a small scale. In 1957 there were 2,993 industrial establishments with 87,290 workers and a gross sales value of 219,050,217 pesos. Chief manufactures are tobacco products, chocolate, textiles, furniture, cement, tiles, bricks, straw hats, soap, hides, shoes, and fertilizer. Minerals include gold, copper, iron, silver, platinum, rock salt, bauxite, and petroleum. Output of electricity in 1957 was 258.1 million kw.-hr. (up 11.2% over 1956). Tourism continued to decline due to unsettled political conditions in the Caribbean; in 1958 there were 38,286 tourists, or about 2,000 fewer than in 1957, and income from tourism totaled 4.1 million pesos, a decline of 14% from the previous year. National income in 1957 increased 13% to 645.3 million pesos, but as the cost-of-living index rose about 5% in the same year, the rise in national income was in part merely a price rise.

Foreign Trade.—In 1958, Dominican exports were valued at 136.6 million pesos; imports, at 130.6 million. Leading exports and 1958 values are: sugar, 60.7 million pesos; cacao, 28.6 million; coffee, 23.8 million; and tobacco, 4.8 million. Principal imports are cotton goods, machinery and vehicles, foodstuffs, and fuels. The republic's chief trading partner is the United States, which in 1958 took about 50% of Dominican exports and supplied 60% of imports.

Principal Events, 1959.—Attempted small-scale invasions of the Dominican Republic by armed rebels reportedly operating out of Cuba were crushed by Dominican armed forces during June. About 60 rebels landing by plane in the central mountain region on June 14 were allegedly annihilated, and another 140 insurgents attempting to land from two motor launches at two points on the northern coast were largely wiped out on June 19. The invasions failed in their apparent intent to ignite a general revolt against the Trujillo regime. The rebel force, consisting of Dominicans, Cubans, and Puerto Ricans, was reportedly dispatched by the Dominican Liberation Movement, which is based at Havana, Cuba. As a result of the attempted invasions, the government bolstered its defense forces by expending $50 million for the purchase of armaments from other nations in 1959, and this expenditure was viewed as a serious threat to the country's economic stability.

The Dominican government charged that Cuba and Venezuela were planning to invade the republic, but then withdrew the charges from discussion by the Organization of American States on July 10. Increasingly strained relations between the Dominican Republic and its two neighbors resulted in the breaking off of diplomatic ties with the Trujillo government by Venezuela on June 12, and by Cuba on June 26. (See also CUBA; ORGANIZATION OF AMERICAN STATES.)

W. R. F.

DONATIONS AND BEQUESTS. See PHILANTHROPY.

DONOVAN, William Joseph (76), American soldier and public official: b. Buffalo, N.Y., Jan. 1, 1883; d. Washington, D.C., Feb. 8, 1959. A man of remarkably varied abilities who achieved prominence as a lawyer, soldier, political candidate, public official, and diplomat, William J. ("Wild Bill") Donovan was probably best known as the director of the Office of Strategic Services, the United States intelligence network during World War II. Awarded the National Security Medal in 1957 for his wartime intelligence services, he thus became the first person to receive the nation's four highest decorations, having previously received the

Congressional Medal of Honor, the Distinguished Service Cross, and the Distinguished Service Medal for his military exploits in World War I.

He was graduated from Columbia College in 1905 and from the Columbia School of Law in 1907, the year he became an attorney in Buffalo, N.Y. In 1912 he joined the New York National Guard, and in 1916 saw service on the Mexican border. He served in 1917–18 with the U.S. Army in France as a battalion commander of the 77th Division's 165th Infantry Regiment (formerly, the "Fighting 69th" New York Infantry Regiment). The story is that the men under his command nicknamed him "Wild Bill" because of his insistence on an arduous training program.

After the war he resumed his law practice and was active in New York politics as the unsuccessful Republican candidate for lieutenant governor in 1922 and governor in 1932. He was federal district attorney for western New York (1922–24), assistant attorney general of the United States (1924–25), and assistant to the attorney general (1925–29). In 1929 he returned to private law practice.

Donovan visited England in 1940 as an unofficial observer for Secretary of the Navy Frank Knox. He also undertook a secret government mission to Yugoslavia, Greece, and the Middle East in 1940 and early 1941. He was appointed coordinator of information in July 1941, and then (as brigadier general, 1943; major general, 1944) headed the Office of Strategic Services (OSS) from its inception on June 13, 1942. The OSS directed espionage and sabotage in all war theaters, except the Pacific command of Gen. Douglas MacArthur, until its termination on Oct. 1, 1945. (The military agency's basic techniques and many of its personnel were later absorbed by the civilian Central Intelligence Agency.) After the war, Donovan served as ambassador to Thailand from 1953 to 1954.

DOWLING, Walter C., American diplomat: b. Atkinson, Ga., Aug. 4, 1905. On Nov. 7, 1959, President Eisenhower announced the recess appointment of Dowling as U.S. ambassador to the Federal Republic of Germany, to succeed David Bruce.

Appointed a foreign service officer in 1931, six years after graduating from Mercer University, he served in Oslo, Lisbon, Rome, and Rio de Janeiro. He was then assigned to the Division of Southern European Affairs in the Department of State (1945–49). Deputy high commissioner for Austria (1950–52) and Germany (1953), he became minister of the American embassy at Bonn, Germany, in 1955. He served as ambassador to South Korea from 1956 until a few weeks before the recess appointment, when he returned to Washington to assume the position of assistant secretary of state for European affairs.

DRAMA. See THEATER.
DRESS. See FASHIONS.
DRUG TRAFFIC. See NARCOTICS.

DRUGS. Production of acetylsalicylic acid (aspirin) in the United States totaled 21 million pounds in 1958, up 3 million pounds over 1957, according to the U.S. Tariff Commission. Penicillin production was down from 543.2 trillion international units in 1957 to 493.3 in 1958, probably because of increased use of other antibiotics. Production of streptomycin increased by 5%, and that of dihydrostreptomycin by 10% over 1957. Total production of synthetic medicinal chemicals was 101.3 million pounds in 1958, compared with 98.5 million pounds in 1957.

Sales of pharmaceuticals at the manufacturer's level in 1958 were valued at $2.3 billion. Ethical, or prescription, products accounted for $1.8 billion of this total, while $500 million was in proprietary products. Sixty-eight per cent of total pharmaceutical sales were accounted for by 20 of the largest manufacturers.

The number of employees in the United States pharmaceutical industry totaled 104,100 in March 1959, including 57,600 production or nonsupervisory workers. Weekly gross earnings for production workers increased from an average of $82.82 for the year 1957 to $88.73 in March 1959, according to the U.S. Bureau of Labor Statistics, while weekly hours for these employees averaged 40.8 in both the year 1957 and March 1959.

According to the Pharmaceutical Manufacturers Association, $170 million was spent in 1958 by the pharmaceutical industry for research and development. This represents 9.5% of the sales dollar, as compared with an average of 2.9% of the sales dollar expended for research by industry in general. Over $190 million was budgeted for research and development in 1959.

There were 584 million prescriptions filled by pharmacists in the United States in 1958 at an average price of $3.08. Some 50% of all pharmaceutical production is sold through drugstores; 22% is distributed by hospitals, and nearly 17% of total production is exported.

According to *F-D-C Reports,* antibiotics continued to lead in drug sales in 1958, remaining at about the $350 million level. The cortical steroid market increased from less than $90 million to about $94 million in 1958. Public apathy during 1958 and early 1959 was responsible for the destruction of some 12 million doses of outdated Salk polio vaccine, which has a 6-months' life.

Altogether the industry in 1958 began to experience a lessening of profit margins due to rising costs and expenses, and to intense competition, accompanied by a leveling in volume.

There were 370 new specialty products introduced to the market during 1958; 44 represented new single chemical entities, compared with the ten-year peak of 51 in 1957. Dermatologicals led the field with 34 new products introduced. Five new antibiotics were developed to combat resistant staphylococcic infections, a subject of increasing medical concern during 1958.

Drug Topics estimated total sales for some 54,000 drugstores at $6.7 billion in 1958, up 3.7% over the previous peak of $6.4 billion in 1957. Drugstore prescription volume was $1.8 billion, compared with $1.6 billion in 1957. Sales of packaged medications increased 2.3% over 1957, to a new high of $1.2 billion.

(See also FOOD AND DRUG ADMINISTRATION; NARCOTICS; and the Index entry, *Drugs.*)

MARC WOODWARD,
Health News Institute, New York.

DRUNKENNESS. See ALCOHOLISM.

DULLES, John Foster (71), American statesman: b. Washington, D.C., Feb. 25, 1888; d. Washington, May 24, 1959. Distinguished first as a skillful lawyer who achieved renown in the field of international law, then as State Department adviser under a Democratic administration and as foreign policy spokesman for the Republican Party, Dulles reached the climax of his career as one of the nation's most active, dedicated, and powerful secretaries of state.

He was the son of the Rev. Allen Macy Dulles (1854–1930), a Presbyterian minister and professor of theism and apologetic; the grandson of John Watson Foster (1836–1917), secretary of state in 1892–93; and the maternal

nephew of Robert Lansing (1864–1928), secretary of state from 1915 to 1920. Young Dulles attended Princeton University, graduating in 1908 as valedictorian of his class. He then lived in Paris for a year, as a scholarship student at the Sorbonne, after which he studied law for two years (1909–11) at George Washington University.

While at Princeton, he accompanied his grandfather, Secretary of State Foster, to the Second Hague Conference (1907), where Foster served as representative for China and Dulles was secretary to the Chinese delegation. In 1911 he was admitted to the New York State bar and joined the law firm of Sullivan & Cromwell, specialists in international law. (He became a partner in 1920 and a senior partner in 1944.) In addition to his private practice, which usually included assignments in the international field, he was frequently called upon to serve the federal government. His uncle, Secretary of State Lansing, appointed him to represent the United States at the Second Pan-American Scientific Congress in 1917. He was also a special agent of the State Department in Central America.

During World War I, although rejected for active military duty because of poor eyesight, he was commissioned a captain (later, major) in the U.S. Army, where he was assigned to the economic section of the General Staff's military intelligence division and, subsequently, to the War Trade Board as General Staff representative and assistant to the chairman. In 1918–19 he served as reparations counsel to the American Commission to Negotiate Peace; and in 1919, as a member of the Reparations Commission and the Supreme Economic Council, he attended the Versailles Peace Conference. Between the two world wars his assignments included that of legal adviser at the 1927 Polish financial stabilization plan negotiations and that of representative for American banking interests at the German debt conferences of 1933–34.

During and after World War II, Dulles, a lifelong Republican, rose to become his party's foreign policy spokesman. In 1945, following his participation in the 1944 presidential campaign as foreign affairs consultant to the Republican candidate, Gov. Thomas E. Dewey of New York, he attended the United Nations Conference in San Francisco as an adviser to the United States delegation. In September and October 1945 he accompanied Secretary of State James F. Byrnes to the Big Four Council of Foreign Ministers in London.[1] By now a symbol of bipartisanship in foreign affairs, Dulles was appointed by President Truman to act as an alternate delegate to the first U.N. General Assembly, which convened in London in January 1946. He subsequently served as a delegate to the General Assembly in New York in 1946, 1947, and 1950, and in Paris in 1948. During the latter session he was named acting head of the United States delegation, temporarily replacing the ailing Warren R. Austin.

In 1948, making his second unsuccessful bid for the presidency, Governor Dewey again chose Dulles to be his foreign affairs adviser. On July 7 of the following year, after Robert F. Wagner, Sr., resigned as senator from New York because of illness, Dewey appointed Dulles to fill the unexpired term. That November, in his only attempt to win elective office, the Republican foreign affairs expert lost his Senate seat to the Democratic nominee, Herbert H. Lehman. In 1950, shortly after his appointment on April 6 as adviser to Secretary of State Dean Acheson, Dulles was given the rank of ambassador at large and assigned to negotiate a peace treaty with Japan. This mission, regarded as a masterpiece of diplomacy, culminated in the signing of the treaty on Sept. 8, 1951, at San Francisco.

Dulles continued in the State Department until March 1952, when he resigned so that he would be free to criticize the administration's conduct of foreign affairs and write the foreign policy plank for the Republican Party's 1952 national convention platform. During the presidential campaign that followed, he served again as Republican foreign policy adviser and began his long and close association with the party's nominee, Dwight D. Eisenhower, who, after his election in November 1952, appointed Dulles secretary of state.

During his more than six years in the Eisenhower administration, from Jan. 21, 1953, until his resignation on April 15, 1959, Dulles was faced with some of the most perplexing international problems ever to confront a secretary of state. These included the Korean armistice of 1953; the cease-fire agreement in Indochina in 1954; the establishment of the Southeast Asia Treaty Organization (SEATO) in 1914; the prolonged Chinese Communist action against Taiwan, beginning in 1955; Egyptian nationalization of the Suez Canal in 1956, and the subsequent Israeli-British-French action against Egypt; the Hungarian revolt in 1956; the continuing attempt to reach disarmament and atomic control agreements with the Soviet Union; the Middle East crisis of 1958 in Iraq and Lebanon; and, beginning in 1958, the Soviet threat against the Western position in Berlin. His work took him to many parts of the world; by the time he left the cabinet he had traveled more than 500,000 miles.

On Nov. 3, 1956, Dulles underwent an operation for cancer of the abdomen. On Feb. 13, 1959, during an operation for hernia, further cancerous growth was noted; and on April 16, after the failure of radiation therapy to check the spread of the disease, President Eisenhower regretfully accepted his secretary of state's resignation. On May 20, four days before his death, Dulles was awarded the Medal of Freedom. He was given an official funeral on May 27, and was buried with military honors at Arlington National Cemetery.

Dulles was the author of two books: *War, Peace, and Change* (1939) and *War or Peace* (1950). He was married to Janet Pomeroy Avery on June 26, 1912. Their children are John Watson Foster Dulles, an engineer; Lillias Pomeroy Dulles (Mrs. Robert Hinshaw); and (Charles) Avery Dulles, a Roman Catholic priest.

* * * *

A short-range assessment of John Foster Dulles' policies and career suggests that his page in history will be large and that he may well prove to be a more controversial secretary of state than any of his 50 predecessors.

The key elements of Dulles' policies were: no appeasement of potential aggressors; the maintenance of deterrent military power; the settlement of international disputes through international law and justice; international change by peaceful means; a recognition of the interdependence of nations; economic development and technical assistance to underdeveloped countries; and a belief in the power of moral conduct, along with a tendency to define political power in moral terms.

An overriding element of Dulles' foreign policy was his unshakable conviction that the United States should stand ready at all times to put the full force of its power behind any free country menaced by aggression. Acting on his belief that there could be no compromise if aggression threatened, he supported the dispatch of American troops to the Middle East in July 1958, when Communist internal subversion was menacing the government of Lebanon. Furthermore, he recommended firm support of the Nationalist Chinese in their defense of Quemoy and Matsu during the intensive shelling of these islands by the Chinese Communists in 1958.

Under the doctrine of deterrent power, first announced by Dulles on Jan. 12, 1954, before the Council of Foreign Relations, the United States must maintain "a great capacity to retaliate, instantly, by means and at places of our own choosing," with atomic weapons constituting the mainstay of the West's defense against attack. Although this policy required a strong military establishment capable of "massive retaliation" if challenged, it did not, in the Dulles view, arise out of a competitive desire to be superior in armaments at every point, nor should it be construed to mean that military or negative considerations should dominate our foreign policy. It was Dulles' belief that, behind this shield of massive deterrent, the United States would remain secure until Communist power, doomed by its inherent immorality, had crumbled.

Secretary Dulles stood stoutly for an adequate body of international law. In his last major address, delivered before the New York State Bar Association on Jan. 31, 1959, he gave his formula for preserving the peace: ". . . a system of order based upon the replacement of force by community justice, reflecting moral law." He went on to say that the United States was examining its relationship to the International Court of Justice ". . . with the view of seeing whether ways and means can be found to assure a greater use of that court by ourselves and, through our example, by others."

In his New York State Bar Association address, Dulles elaborated also on his doctrine of peaceful change. "What is vital . . . is to recognize that the renunciation of force . . . implies not the maintenance of the *status quo* but peaceful change. World order cannot be insured merely by the elimination of violence. There must be processes of

[1] This was the first of four such meetings that Dulles attended as Republican adviser to secretaries of state in President Truman's Democratic administration. He was also present at Big Four foreign ministers conferences in Moscow, 1947; London, 1947, and Paris, 1949.

WIDE WORLD

Various stages in the life of the late John Foster Dulles are represented in these portraits. From left to right he is shown as: a boy of three in 1891; a student at Princeton University in the early 1900's; a delegate to the Versailles Peace Conference, at age 31; a senator from New York in 1949; secretary of state in December 1958, on the eve of a Western foreign ministers meeting in Paris. Disabled by cancer, he resigned his cabinet post on April 16, 1959. He died in Washington on May 24.

peaceful change whereby justice manifests itself." To implement these processes, Dulles believed firmly in the United Nations and the principles of its Charter—a document to which his draftsmanship materially contributed.

Dulles' recognition of the interdependence of nations led him to advocate the sharing of markets and trade by friendly nations and an easing of the impediments to the free flow of trade.

In the belief that two thirds of the world's people who resist communism exist in a serious state of impoverishment, Dulles continually advocated that it was the responsibility of the United States and other wealthy free nations to assist these underdeveloped countries to higher standards of living. This help was to take the form of technical assistance, loans, and investment capital, all of which were to be offered as an assurance that the free world might become a hopeful and vigorous community of nations—a world in which each nation could eventually find it possible to earn its own way and pay its own keep.

The final and all-pervasive facet of Dulles' policies was his faith in the power of rectitude and his tendency to characterize political power in moral terms. "Communism is stubborn for the wrong," he declared in November 1958, before the World Order Study Conference of the National Council of the Churches of Christ in America; "let us be steadfast for the right. . . . So it is that, while we seek to adapt our policies to the inevitability of change, we resist aspects of change which counter the enduring principles of moral law."

During his first four years in office, Dulles was given to making offhand comments, whose popularization and misrepresentation often served as oversimplified texts for American policy. (Later, the Dulles language showed more forethought, but his convictions and policies remained unbending.) Such a statement caused one of the principal controversies during his tenure as secretary of state. In an article published in *Life* magazine on Jan. 16, 1956, Dulles was quoted as saying that three times —in Korea, Indochina, and Taiwan—the United States had "walked to the brink" of war to convince aggressors of the seriousness of its intentions. In the same article he was represented as saying that "the ability to get to the verge without getting into the war is the necessary art" of diplomacy. This attitude, said his critics, made him sound like a reckless adventurer and could easily plunge the nation into war. However, Dulles defended "brinkmanship" (so named by his critics) by noting that looking grave danger in the face may avert it and lesser perils.

Apart from Dulles' importance as an architect of foreign policy, there is broad general agreement that he excelled in diplomacy as a draftsman of treaty language and as one of the finest negotiators of his time. Also not unimportant among his contributions was the role he played in leading many members of his own party from isolationism to the support of specific internationalist policies.

Throughout a turbulent decade of diplomacy, Dulles resolutely stood by two tenets. First, he held that great risks had to be taken to defeat the "dynamism of communism." The greatest of all risks, he said, was to do nothing, "for the dynamic always prevails against the static." He added, however, that taking risks was not an apology for recklessness. Second, he sternly believed that the immorality inherent in communism would cause the governments of Communist nations to topple. For him, communism was evil, and, therefore, compromise with it was wrong. He remained firmly optimistic to the end that communism would surely crack beneath the surge of freedom and that the forces of right would inevitably triumph.

(See also FOREIGN POLICY OF THE U.S.)

MALCOLM C. MOOS,
Administrative Assistant to the President of the United States; Professor of Political Science (on leave), The Johns Hopkins University.

DUTCH EAST INDIES. See INDONESIA.

DUTCH GUIANA. See SURINAM.

DUTCH NEW GUINEA. See NETHERLANDS NEW GUINEA.

EAR, Diseases of the. See DEAFNESS.

EARNINGS. See BUSINESS DATA, U.S.; INCOME; STANDARDS OF LIVING.

EARTH SATELLITES. See INTERNATIONAL GEOPHYSICAL YEAR; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; SPACE FLIGHT; and the Index entry, *Satellites, Earth.*

EARTH SCIENCES. See INTERNATIONAL GEOPHYSICAL YEAR and articles on the specific sciences, such as GEOLOGY; METEOROLOGY AND CLIMATOLOGY; MINERALOGY; OCEANOGRAPHY; SEISMOLOGY.

EARTHQUAKES. See SEISMOLOGY.

EAST AFRICA, British. See BRITISH EAST AFRICA.

EAST INDIES, Dutch. See INDONESIA.

ECLIPSES. See ASTRONOMY.

ECONOMIC AND SOCIAL COUNCIL (U.N.). See UNITED NATIONS.

ECONOMIC COMMUNITY, European. See EUROPEAN ECONOMIC COMMUNITY.

ECONOMIC REVIEW. See Index entry, *Financial and Economic Review.*

ECUADOR. With an estimated total area of 105,000 square miles in northwest South America, the "Republic of the Equator" has a rich tropical and subtropical coastal belt (50–100 miles wide, including fertile foothill valleys), a series of lofty inter-Andean basins (the Sierra, 40–80 miles wide) and the vast Oriente jungle to the east (60–200 miles wide), as well as the bleak *Archipiélago de Colón* (Galápagos Islands) 580 miles off the coast.

The population of 4,127,000 (mid-1959 est.) has been increasing at an annual rate of 3% (1956 death rate: 15.5 per 1,000 pop.; birth rate: 46.4). The 1,600,000 Indians live for the most part outside the national society economically and politically; over 200,000 speak only Quechua or another Indian tongue. Persons of mixed race make up 41% of the population, including the prominent *montuvio* (fusion of Indian, white and Negro) of the coastal and foothill regions. Negroes and mulattoes make up 5% of the population, and whites account for less than 10%. The major port and industrial center is Guayaquil (1958 pop., 420,000); the capital is Quito (1955 pop., 237,000).

Government.—Under the 1946 constitution the president is elected directly for a 4-year term (Camilo Ponce Enríquez, inaugurated Sept. 1, 1956); 33 of the 45 senators (4-year terms) are popularly elected, while 12 represent the following "functions": public education, private education, learned academies and journalism, and the armed forces; Sierra agriculture, commerce, labor, and industry; and coastal agriculture, commerce, labor, and industry. The Chamber of Deputies has 71 members elected for 2-year terms (1 for every 50,000 persons; minimum, 2 per province). All literate citizens over 18 have the franchise, voting being compulsory only for men.

Education and Religion.—During 1956–57, 558,889 students (105,063 in private schools) were enrolled, including 5,859 in higher education (state universities are at Quito, Guayaquil, Loja, Cuenca and Portoviejo). Because of inadequate facilities, fully one third of the children between 6 and 12 do not receive "free and compulsory" elementary education. Literacy is less than 50%.

Roman Catholicism is the dominant religion, but there is separation of church and state and freedom of worship. When the Catholic bishops in April 1959 prohibited the "purchase, reading, distribution or possession" of *La Calle*, a left-of-center weekly, on pain of mortal sin, deep anticlerical feelings were aroused; prominent Catholics, among others, deliberately defied the ban.

Finance.—The sucre, since December 1950 officially 15 to the dollar, was exchanged on the free market in August 1959 at 18.05, weakening from 16.66 in December 1958. Gold and foreign exchange reserves, up to $39.1 million in 1957, held at $35.3 million as of July 1959. The cost-of-living index (1953 = 100) went only to 104 by June 1959 (December 1958, 103). More than 600 public agencies have varying degrees of independence in budgetary matters, often collecting taxes or spending earnings without normal controls. In 1955 service on public debt and remittances on private investment used over 17% of total foreign exchange earnings.

Transportation and Communications.—The State Railway Company operates 5 lines of 2 different gauges (30 inches and 42 inches); routes total 696 miles. There were 6,200 miles of roads (all-weather, 3,400 miles) in 1956, mostly unpaved and single lane. Vehicle registrations totaled 22,422 (trucks 72%, buses 13%), of which 43% were five or more years old. A $4.7 million loan from the U.S. Development Loan Fund in December 1958 should enable Ecuador to complete the final 125-mile link from Loja to Macará in the Pan American Highway and provide the first land communication between Ecuador and Peru. A $5.3 million loan is being made by the same fund for the construction of a 148-mile road between Quito and Quevedo. The World Bank will lend an additional $11 million for this project, aimed at linking the capital and Guayaquil by means of a first-class road. Oceangoing ships must use lighters, since there are no berths at any of Ecuador's 10 ports; but the construction contract for a modern port for Guayaquil was let in July 1959. Numerous local aviation concerns (the largest of which is Aerovias Ecuatorianas) and Panagra provide service within the country. Panagra and other international lines connect with the outside world. The airports both at Guayaquil and at Quito accommodate DC-7 type aircraft as a result of recent modernization. Telephones in Ecuador numbered 22,000 in 1958. There are 90 radio stations in 20 centers, mostly small and privately operated except for 10 owned by various levels of the government. World Radio Mission Fellowship (Protestant) operates a powerful transmitter of 50,000 watts.

Agriculture and Industry.—Over 60% of the economically active population (1,182,000 in 1950) works in mining, agriculture, or forestry; 20% is engaged in manufacturing, utilities, construction, and transport. Most of the population is seriously underemployed. Only 4.5% of the land is under cultivation; 4% is in pasture. Absentee landlordism is a major problem; 1% of all rural proprietors hold 39% of the land, by value.

The cacao crop for 1958–59 was estimated at 29,000 metric tons (4,000 tons above 1957–58). Exportable coffee totaled 500,000 bags in 1958–59 (465,000 in 1957–58). Prices for both products declined, however. Banana shipments for 1959 promised to surpass the 38 million stems of 1958. Other important crops are corn, potatoes, wheat, barley, and beans. There is a growing dairy industry. Rice, citrus fruit, sugarcane, and cotton are grown on the wet lowland; grapes, avocados, and mangoes grow in the intermediate valleys. Ecuador produces 90% of her own food.

The gross national product rose to 11,651 million sucres in 1957 (1956, 10,897 million) but real per capita annual income has not improved since 1954, when it was $133, because of the population increase and price rises. Business recovered slowly from the 1958 recession, partly because of tight credit. Crude petroleum output fell in 1958 to 405,600 metric tons (1957, 421,200); cement production in 1958 was 159,600 tons (1957, 154,800). The textile industry employs 5,300 workers in 25 mills; fabric quality is not high and imports fill 40% of the domestic market. The Koppers Company of Pittsburgh agreed in May 1959 to build a $10 million steel mill near Guayaquil, utilizing iron-ore-bearing sands and the new Strategic-Udy process; by 1961, 33,000 tons of finished steel are scheduled (about 50% of domestic requirements).

Foreign Trade.—Exports expanded again to $137 million in 1958 ($132.6 million in 1957). Bananas, with 9% greater production volume, earned a share even larger than usual ($76.7 million, compared with $69.1 million in 1957); coffee, in spite of a 5% increase in volume, earned but $26.2 million ($29.9 million in 1957); cacao, with a 16% decrease, brought $20.7 million ($19 million in 1957); and rice, off 24% in volume, was valued at $3.4 million ($4.9 million in 1957). Other exports are Panama hats, tagua nuts, castor beans, and balsa. Imports were restricted in 1958 to $87.2 million ($88.8 million in 1957), consisting chiefly of textiles, vehicles, machinery, high-grade cotton, and chemicals. Exports to West Germany rose

from $25.8 million in 1957 to $35.8 million in 1958; in the same period exports to the United States declined from $58.1 million to $56 million. Total exports in the first half of 1959 amounted to $64 million, compared with $56.7 million for the same period in 1958. Trade agreements were signed in 1959 with Yugoslavia and France, and Czechoslovakia and Japan sent trade missions.

Principal Events, 1959.—Preliminaries for the 1960 presidential campaign (elections are scheduled for June) were in full swing. In March 1959, former president José M. Velasco Ibarra became the first to enter the race. To block Velasco Ibarra, liberal and leftist elements, including the Communists, appeared anxious to combine their efforts; President Ponce, a conservative, had been able to win in 1956 only because the left was badly split. In June another former chief executive, Galo Plaza Lasso, made known his willingness to head a slate against Velasco Ibarra. The president asked suspension of all campaigning during February 1960, when Quito will be host to the 11th Inter-American Conference.

Argentine, Chilean, Brazilian, and United States representatives met in Rio de Janeiro, Brazil, in February to discuss the boundary dispute between Peru and Ecuador, once again a sensitive issue. The portion in dispute is some 50 miles long but involves the determination of a *divortium aquarum* (line between watersheds) which Ecuador insists does not exist. On the promise of bringing the matter before the Inter-American Conference, Julio Moreano Espinosa won the mayoralty election in Quito on November 1.

On March 8, 23 Italian settlers initiated a major colonization effort to bring 300 families in 5 years to the newly opened region around San Lorenzo, in Esmeraldas Province.

Ecuador and Colombia took steps in August to deal with the burgeoning contraband trade across their common frontier by signing agreements for freer trade, balance of payments, and general economic cooperation.

ROBERT D. HAYTON,
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EDUCATION. Integration.—In 1959 Virginia's program of "massive resistance" to public school integration was broken, a development which some observers considered to be a turning point so far as the future course of opposition in the South was concerned.

Court orders to admit Negro students in the fall of 1958 had resulted in the closing, by state law, of a total of nine schools in Charlottesville, Norfolk, and Warren County that previously enrolled some 12,700 white students. When appeals to state and federal courts for further delay were to no avail, seven Virginia public schools—six in Norfolk and one in Arlington County—began the second semester on an integrated basis. Thus, on Feb. 2, 1959, segregation ended in some public schools of Virginia. Twenty-one Negro pupils—17 in Norfolk and 4 in Arlington—entered their respective schools without incident. In Arlington an effort to get white pupils to boycott the school failed completely.

In January 1959, Gov. J. Lindsey Almond, Jr., told a special session of the state legislature that all efforts to maintain segregation had been exhausted and that some integration was inevitable. He proposed a program designed to lessen the impact of desegregation. After considerable opposition from die-hard segregationists, the governor's program was adopted. The state compulsory school attendance law was repealed. A $3 million fund was earmarked for tuition grants—not to exceed $250 per child—to be paid on request of the parents to permit their children to attend private schools.

Warren County High School, the first school in Virginia to be closed, reopened on February 18 with an enrollment of 21 Negro students. Not a single white student enrolled, although over 1,000 pupils had been attending when the school was closed. Segregationists hailed the action as evidence of all-out resistance to integration. Others ascribed it to an unwillingness to interrupt in midyear the education of the 780 pupils attending the segregated classes conducted privately by the Warren County Educational Foundation.

With the opening of schools in September 1959, integration began, without incident, for the first full session. In Charlottesville, 12 Negro students enrolled in Lane High School and Venable Elementary School. In Arlington County there were 23 Negro pupils in three schools; in Norfolk, 22 in seven schools; in Alexandria, 9 in three schools; and at Warren County High School, 20. In all, by October a total of 86 Negro pupils and 20,327 white children were jointly attending 16 of Virginia's 2,600 public schools.

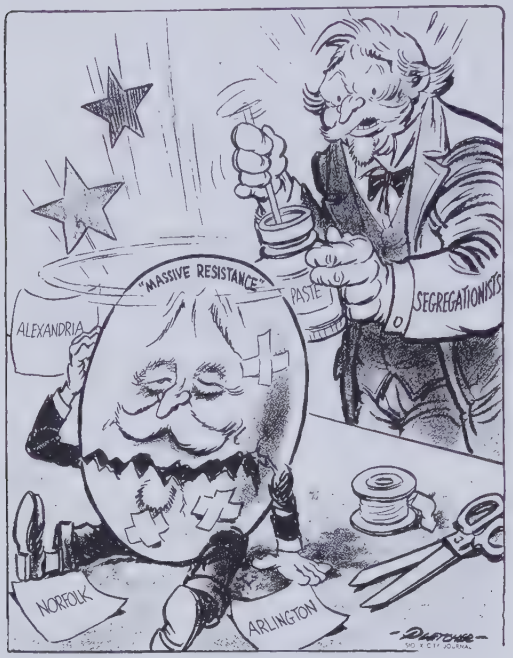
In Warren County the community was divided over whether white children should attend the Warren County High School on an integrated basis or continue in the segregated private school operated by the Warren County Educational Foundation, for which a tuition charge of $220 per pupil was made. When classes began in September 1959, 433 pupils were enrolled in the private school. In Warren County High School the enrollment was 415, including 20 Negroes.

In Prince Edward County, where over 50% of the school population is Negro, drastic steps were taken to prevent integration. Under a federal court order to desegregate with the opening of schools in September 1959, the county Board of Supervisors refused to appropriate funds for the operation of public schools. With this abandonment of public schools in the county, approximately 1,700 Negro children were left without educational facilities. Negro leaders agreed that there was not enough money among their people to operate private classes. Only a few children were attending school elsewhere. The 1,500 white children were attending private segregated classes operated by the Prince Edward School Foundation in 16 buildings, most of them churches. All but two of the foundation's 66 teachers had taught in the county's public schools the preceding year, and were being paid the same salaries. The closing of the public schools left the county's 70 Negro teachers without jobs. Some moved; others commuted to teach elsewhere; and still others took other types of positions.

In Arkansas nine of the state school districts were integrated as the 1959–60 school year started. In Little Rock the four previously closed public high schools reopened at the early date of August 12, with the two integrated schools given local police protection. After three dynamite blasts were set off on the night of Labor Day, one of them damaging the School Board office, police patrolled the streets. Within three days five men were arrested. The integrated schools continued to operate.

Desegregation came to Florida in the fall of 1959 when 25 Negro students in Dade County started to school with approximately 750 white children at two schools—Orchard Villa Elementary School in Miami and the Air Base Elementary School at Naranja, near Homestead Air Force Base.

In Delaware the first statewide "stairstep" desegregation plan to win federal court approval be-



PLETCHER IN THE SIOUX CITY JOURNAL

"SPEAK TO ME!"

gan operation in September 1959 with the desegregation of the first grade. The process will take 12 years.

In North Carolina seven districts were operating with desegregated schools; in Tennessee, four. Only in Alabama, Georgia, Louisiana, Mississippi, and South Carolina were there no desegregated school districts. In Georgia, private school enrollments were booming in the Atlanta area. The Atlanta Board of Education was under court order to present an integration plan by Dec. 1, 1959. Under state law, integrated schools must be closed.

In 1959 there were 7,781 school districts in the 17 states and the District of Columbia which had maintained segregated schools prior to the U.S. Supreme Court's segregation decision of 1954. Of the total number of districts, 2,880 were biracial, and in 762 of these there was some degree of integration by October 1959.

At the college level, desegregation continued to expand in 1959, although slowly. Negroes in larger numbers were being accepted in formerly all-white colleges and universities in the South. Several formerly all-Negro institutions were enrolling white students, as, for example, in West Virginia.

Impassive as white students shout gibes at him, a Negro youth awaits transportation after attending a session at Central High School in Little Rock, Ark. Two of the city's high schools reopened on an integrated basis on August 12.

UPI

School Enrollments.—For the 15th consecutive year, school and college enrollments in the continental United States, excluding Alaska, showed an increase, according to the U.S. Office of Education. The 1959–60 estimated full-time enrollment reached an all-time high of 46,480,000, a rise of 1,940,000 over the 44,540,000 enrollment for the session of 1958–59, and was distributed as follows:

	Kindergarten through grade 8	Grades 9 through 12	Total
Public schools	27,890,000	8,100,000	35,990,000
Nonpublic schools	5,400,000	1,050,000	6,450,000
Other schools	170,000	90,000	260,000
Higher institutions, degree-credit	...	...	3,780,000
Total	33,460,000	9,240,000	46,480,000

Enrollments in kindergarten through grade 8 increased 4.5% over that of the previous session; in grades 9 through 12, 3.5%; and in institutions of higher learning, 5.3%. For nonpublic schools alone, the percentage increase in full-time students was 6.7 for kindergarten through grade 8, and 4.0 for grades 9 through 12.

The increase in the nation's school and college enrollments in a generation is impressive. Between 1929 and 1959, elementary school enrollments increased from 23,740,000 to 33,460,000, a climb of over 40%; secondary school enrollments, from 4,812,000 to 9,240,000, a rise of 92%; and college and university enrollments, from 1,101,000 to 3,780,000, a leap of nearly 250%.

School enrollments will continue to rise. The Research Division of the National Education Association (NEA) estimates that between 1950 and 1965 the number of pupils attending elementary school will have increased 63%, while the number attending high school will have increased 92%. In 1900, 11.4% of the youth of high school age (14–17) were enrolled; in 1930, the percentage was 51.4; and in 1958, it had risen to 82.2.

The percentage of youth of college age (18–21) attending college has risen just as strikingly. In 1900, 4.0% were enrolled; in 1930, 12.2%; and in 1958, 38.6%. Enrollments in higher education by 1975 may comprise 6 million students if the present ratio of youth attending college persists. Enrollment may reach 7,250,000 by 1970 if the proportion attending college increases as it has for the past ten years.

Supply of Teachers.—In 1959–60 an estimated 1,563,000 teachers were needed for the public and nonpublic elementary and secondary schools of the continental United States, of whom 70,000 were required to meet enrollment increases alone. Qualified teachers of the preceding year (1958–59) returning to classrooms totaled 1,248,000; newly trained teachers entering the profession approximated 97,000; and teachers with substandard preparation becoming fully certificated numbered 23,000. Thus a total of 1,368,000 qualified teachers were available for 1,563,000 positions.

The shortage of 195,000 teachers for 1959–60 had to be met by employment of teachers with substandard credentials (there were 92,300 such personnel in 1958–59), the re-entrance of former teachers into the profession, further overcrowding of classes, or curtailment of the curriculum.

The shortage of qualified teachers is intensified by the number who leave the profession each year (currently estimated at 10.9%) and by the inadequate number of qualified new teachers entering the profession as replacements.

Certification Requirements for School Personnel.—As of July 1, 1959, 40 states required a college degree for regular certification of beginning elementary teachers, according to a report by the National Commission on Teacher Education and Professional Standards, NEA. Kansas, West Virginia, and Wyoming are the most recent additions to the list. Arkansas and Iowa have announced that the degree requirement will become effective in 1960.

In 1937 only six states required a degree for elementary teachers; by 1946, there were 14; in the 13-year period that followed, 26 states set up the degree requirement.

All states but one (Arkansas, which will begin doing so in 1960) now require a degree for all high school teachers. Arizona, California, and the District of Columbia require five years of preparation for beginning high school teachers. New York dropped the five-year preservice requirement on Sept. 1, 1958, but requires the completion of the fifth year within five years after initial teaching has begun. Four other states (Connecticut, Indiana, Oregon, and Washington) require a fifth college year of preparation for elementary and/or secondary teachers after a specified number of years of teaching.

Standards for administrative certificates have also been stiffened. Three states (California, Indiana, and Washington) now require six years of college preparation for superintendents' certificates; four require in excess of five years; 35 require the master's degree or five years; five require in excess of the bachelor's degree; three require the bachelor's degree; and two (Florida and Michigan) do not issue such certificates.

For elementary principals, 28 states require five or more years of college preparation, while 13 others require more than a bachelor's degree; for secondary principals, 35 states require five or more years, while 11 others require in excess of the bachelor's degree.

As an effect of recent criticism of teacher education and certification requirements, 33 states reported intensive restudy of certification under way in 1959.

Adult Education.—The expansion of adult education programs in the United States is a striking phenomenon of the mid-20th century. It is estimated that 35 million adults are attending classes, 4 million of whom are in public schools.

Adult education is difficult to define because of its breadth and variety. The U.S. Office of Education lists the following criteria for classifying persons as engaged in such a program: (a) they are beyond the compulsory school age; (b) they are engaged in an organized educational activity conducted by a responsible educational agency; (c) they are continuing their education on a part-time basis; and (d) they are attending classes voluntarily.

In October 1957 the Bureau of the Census obtained statistical data on participation in adult education as a part of its current population survey. The results, published in *Participation in Adult Education* (Washington 1959), Circular No. 539 of the U.S. Office of Education, are believed to be highly conservative because of the limitations of a sampling technique, the difficulty of recalling data for each member of the family, the time span involved, and other factors. This sampling indicated that at least 8,270,000 persons, or 7.8% of the adults in the United States, had participated in adult education classes during the preceding year. An additional 942,000 persons were attending school or college part-time, or otherwise participating in adult education programs, so that a total of 9,212,000 participants was indicated. Persons engaged in correspondence courses or on-the-job training were not included in the count.

WIDE WORLD

Scene on opening day (August 12) at Central High School, Little Rock. Police escort one of several persons taken into custody when disturbance broke out at school grounds.

By type of activity, these adults were enrolled as follows: elementary and high school classes, 183,000; part-time college or university programs, 710,000; civic and public affairs classes, 1,043,000; general education, 1,178,000; home and family living, 991,000; Americanization, 107,000; trade, business, and technical, 2,611,000; agricultural courses, 352,000; recreational skills, 921,000; and other, 1,116,000.

By sponsoring agency, the public elementary and high schools and the colleges and universities offered classes that respectively enrolled 21.6% and 16.8% of the persons participating in adult education programs. Community colleges enrolled 4.9%; private trade or business schools, 10.9%; agriculture extension services, 4.1%; libraries, 0.3%; employers or unions, 9.1%; group-work agencies (YWCA, YMCA, Red Cross, and others), 12.3%; and others not classified, 20.0%.

The median age of the participants was 37.6 years, and the median years of school completed was 12.6 years. The West had the highest rate of adult education participation (1 out of 7). Two thirds of the persons participating lived in urban areas, reflecting the urban-rural distribution of the population, 64% of whom were classified in 1950 as living in urban areas. Forty-seven per cent of the participants were men, and nearly 75% of the women participating were married.

Additional data on the extent of adult education and its growth are obtainable in an Office of

These five Negro pupils were among 17 who entered previously all-white schools in Norfolk, Va., February 2. By October, 86 Negroes had enrolled in integrated schools in the state, as Virginia's "massive resistance" plan collapsed.

UPI

Education survey entitled *Adult Education Services of State Departments of Education* (Washington 1959).

Vocational Education.—The vocational educational program is designed to fit persons for useful employment. It serves both those who have begun work and those who are preparing for certain occupations. In 1958 there were 3,629,339 persons enrolled in vocational classes, distributed as follows: agriculture, 775,892; home economics, 1,559,822; trades and industry, 983,644; distributive occupations, 282,558; and practical nursing (authorized in 1956 under the George-Barden Act), 27,423. This enrollment was the largest since the passage in 1917 of the Smith-Hughes Act providing funds for the improvement and promotion of vocational education.

By type of program, there were 1,577,178 persons enrolled in evening classes, 387,752 in part-time classes, and 1,664,409 in day classes. The teaching staff in 1958 numbered 37,647 for evening classes, 13,342 for part-time classes, and 36,832 for day classes.

Expenditures for vocational education in 1958 totaled $209,748,084.15, of which $38,733,173.68 came from federal funds, $72,305,243.08 from state funds, and $98,709,667.39 from local funds.

Expenditures for Education.—According to statistics compiled by the Research Division of the NEA, the instructional staff in the nation's public schools in 1958–59 numbered 1,395,940, an increase of 50% in ten years, during which time the school enrollment increased an average of one million pupils a year.

The average salary of all instructional staff members in 1958–59 was $4,935, an increase of 4.6% over the previous year's average. Salaries ranged from an average of $5,992 in the Far West to $3,882 in the Southeast. The average salary of elementary classroom teachers was $4,575; of high school teachers, $5,110.

Total expenditures for current expense, capital outlay, and interest were estimated at $14,373,638,000 in 1958–59, an increase of 9.6% over the previous year. More than $10 billion of this total was for current expense, which has increased an average of 9.8% a year since 1948–49 for a total increase of 152.6%. The expenditure per pupil in average daily attendance was $340 in 1958–59, an increase of 72% since 1948–49.

For the first time the NEA included Alaska in its statistical report. In the 49th state 40,000 pupils were enrolled in public schools in 1958–59. The 1,775 instructional staff members were paid an average salary of $6,500, which was about $1,500 more than the average for the other 48 states included in the report.

In Alaska, current expense per pupil in average daily attendance was $520. Of the $20,500,000 in revenue receipts, 50% was contributed by the state, 15% by the federal government, and 35% by the local school district.

National Defense Education Act.—The passage of the National Defense Education Act of 1958 has been acclaimed as a recognition of the vital role played by education in the strength and security of the American people.

As of July 1959, the Office of Education had distributed $30,617,337 in federal funds to 1,192 colleges and universities for student loan purposes under Title II of the act. This total included $117,337 in special interest-bearing loans to institutions unable to provide their $1 share for every $9 in federal funds.

In 1959–60 the number of participating colleges and universities increased to 1,370. It was estimated that nearly 121,000 students (approximately 5.5% of the enrollment in the participating institutions) would apply for loans at an average of $500 each.

Institutional allocations were made on the basis of approximately $20 per full-time student enrolled. On Sept. 15, 1959, the Office of Education announced a distribution of an additional $30 million to 1,184 institutions for student loan purposes in 1959–60. The other 186 colleges will use funds from previous allocations. The participating institutions had on hand some $15 million from amounts already allocated to them late in the 1958–59 session.

Thus, as of September 1959, approximately $60,500,000 in federal funds, plus $6,700,000 contributed by the participating institutions, had been made available for student loan purposes since February 1959. Institutions enrolling nearly 88% of the full-time college students in the country were participating.

Title III of the act provides financial assistance, on a 50–50 matching basis, for strengthening instruction in science, mathematics, and modern foreign languages, especially in terms of equipment and supervision.

As of July 1959, $32,617,341.26 for equipment and minor remodeling and $1,130,756.40 for supervision and administration had been made available, under approved plans, to 44 states and 4 territories. In addition, loans totaling $1,104,919 had been approved for 88 private nonprofit elementary and secondary schools.

Under Title IV, designed to increase the number of college and university teachers, $5,300,000 was expended in the fiscal year 1959 to provide 1,000 graduate fellowships. For 1959–60 the Office of Education had approved 272 new or expanded graduate programs in 123 institutions of higher learning selected from a total of 1,038 programs proposed by 168 institutions. On Aug. 12, 1959, the Office of Education announced the names of the recipients of 997 graduate fellowships for 1959–60.

Under the provisions for guidance, counseling, and testing, plans for programs in 50 states and territories have been approved. Moreover, 50 counseling and guidance training institutes were in operation in college or university summer sessions in 1959, with a total enrollment of 2,118 persons. Seven institutes were operating in the 1959–60 academic year.

The summer institute program, operated at a cost of $2,225,000, concentrated largely on training secondary school personnel already engaged in counseling and guidance. The regular session institutes, for which approximately $1 million had been authorized, were giving more emphasis to the training of persons with little or no experience in guidance.

Present plans are to have 93 additional institutes in operation during the 1960 fiscal year, 67 of which would be held during the 1960 summer session and 26 during the 1960–61 academic year.

Title VI of the act authorized appropriations for foreign language centers, fellowships, and research. By July 1959, 19 centers had been established for teaching languages not commonly taught in the United States (including Bengali, Marathi, Swahili, Thai, and others). Fellowships were awarded to 171 graduate students for advanced study in critical languages. Twelve summer modern language institutes were operated in 1959 with an enrollment of 1,050 teachers of foreign languages. Twenty research projects, including a three-year survey of all aspects of language instruction in the United States, were contracted for, with an initial appropriation of $2,500,000.

Under Title VII the Office of Education has approved 68 research grants and 14 contracts related to research and experimentation in the use of new educational media.

The Area Vocational Training Program, authorized under Title VIII, involves the expenditure of approximately $3,750,000 in 1959 and $7 million in 1960 for programs to provide training of less than college grade in highly technical skills essential to the national defense effort.

College Teachers.—In June 1959 the Research Division of the NEA published a comprehensive survey of teacher supply and demand in 1,350 colleges, universities, and junior colleges. Only 23.8% of the new college teachers employed in 1958–59 had earned a doctor's degree, as compared with 31.4% in 1953–54. In 1953–54, 40.5% of the total faculty held the highest earned degree. Some 20.8% of the new college teachers in 1958–59 had less than a master's degree, although only 10.4% of the total faculty had such preparation in 1953–54.

While vacancies are widespread among the teaching fields, the most critical shortages are in the sciences and mathematics. A total of 253 unfilled positions in the physical sciences were reported by 198 institutions, and 162 in mathematics by 118 institutions.

While higher institutions, especially the public universities, indicate a willingness to employ more women, particularly in mathematics and the physical sciences, the number of available candidates is limited. Approximately a fourth of the college teaching load is carried by women.

In 1958, 365,748 bachelor's degrees were conferred, of which 33.6% went to women. At the master's level 32.6% of the 65,614 degrees were received by women. Only 10.8% of the 8,942 doctor's degrees were earned by women. Two thirds of the 964 doctor's degrees awarded women were in four fields: education (341), biological sciences (138), social sciences (96), and psychology (84). There were only 9 doctor's degrees in physics and 15 in mathematics.

College Salaries and Fees.—In 1958–59 the average salary paid faculty members in four-year colleges and universities was $6,630, an increase of 7.6% over the previous year. By ranks, the average salary and percentage increase were as follows: professors, $8,840 (10.4); associate professors, $6,920 (7.5); assistant professors, $5,860 (6.2); and instructors, $4,840 (5.0).

By type of control, the average salary in 1958–59 for all ranks combined was $6,780 in public four-year institutions, an increase of 4.8% over the previous year, and $6,350 in private institutions, an 11.4% rise.

Tuition fees increased an average of 5.8% in public institutions and 9.5% in private institutions between 1957–58 and 1958–59, according to Office of Education reports.

Science and Mathematics Majors.—There was an increase of 31% in the number of college juniors enrolled as majors in mathematics in 1958–59, as compared with 1957–58, according to an Office of Education survey. This compared with an overall 3.8% rise in junior-class enrollment. Smaller but significant percentage increases were reported in the biological and physical sciences. It is estimated that over 45,000 bachelor's degrees in mathematics or science will be awarded in 1959–60, as compared with 37,315 in 1957–58.

In engineering courses, total enrollment dropped by 2.4%, from 297,077 to 289,927, between 1957–58 and 1958–59. Freshman engineering enrollment dropped sharply, by 11%, but enrollment in graduate courses rose 16.3%.

College Housing.—On Sept. 23, 1959, President Eisenhower signed the Housing Act of 1959, which included a provision authorizing loans to colleges totaling $250 million, comprising $200 million for dormitories, $25 million for dining halls and related facilities, and $25 million for housing for nurses and internes. (See also HOUSING.)

Teacher Exchange Program.—In 1959–60, 564 teachers from the United States and 39 other countries participated in the exchange program administered by the U.S. Office of Education. Nearly 5,000 teachers from a total of 65 countries have shared in the program since its inauguration in 1945. The largest single group of American teachers (100) exchanged positions with teachers in the United Kingdom.

Students from Abroad.—In 1959 there were 47,245 students from 131 countries registered in American colleges and universities, an increase of 9% over the previous year. The number has increased 38% in the last five years, according to the Institute of International Education.

In 1959 there were 1,937 foreign faculty members teaching in American universities, as compared with 1,842 American faculty abroad. Forty-five per cent (907) of the foreign professors taught the physical sciences.

The largest number of foreign students were from the Far East (15,823); Latin America, with 10,249, was second. The rapidly developing Middle East sent 6,619 students, thus for the first time outranking Europe, which sent 6,601.

Engineering, with 23% of the students, continued to be the most popular field of study. The humanities again was second, with 20% enrolled.

The University of California had the largest number of foreign students. The Massachusetts Institute of Technology recorded the highest percentage of foreign students (12% of its total enrollment), and the largest number of foreign faculty members (198).

(See also CIVIL LIBERTIES; NEGROES, AMERICAN; OFFICE OF EDUCATION, U.S.; VETERANS ADMINISTRATION; *Education* section of articles on the individual states, Canadian provinces, and countries; and the Index entry, *Education.*)

EDWARD ALVEY, JR.,
Dean, Mary Washington College
of the University of Virginia.

EGGS. See Index entry.

EGYPT. See UNITED ARAB REPUBLIC.

EIRE. See IRELAND, REPUBLIC OF.

EISENHOWER, Dwight David, 34th president of the United States: b. Denison, Texas, Oct. 14, 1890. The seventh year of President Eisenhower's administration may be recorded as one in which he assumed unmistakable control of the chief executive's office. It may be remembered also as the year when he fulfilled as never before the role of champion and spokesman of the free world. His international prestige at an all-time high, his health again robust, his spirits buoyant, and his attitude self-assured, the president largely confounded his political opposition while at the same time confronting the Communist world with firmness and resolution. Above all, in 1959, Eisenhower emerged in the eyes of the world as the man of peace, climaxing an eventful year of vigorous, personal diplomacy with a 22,370-mile, 11-nation tour that won him tumultuous acclaim on three continents. If, as some critics claimed, he had not provided genuine leadership, he did in 1959 provide a new image of leadership both at home and abroad; and if he offered no bold, new, imaginative approaches to global problems, his declara-

tions did command new respect and response throughout the world.

Reared in Abilene, Kans., Eisenhower entered West Point in 1911 and was graduated and commissioned a second lieutenant in 1915. During World War I he served as an instructor in various Army camps and as commander of Camp Colt, Gettysburg, Pa. Subsequently, he was graduated from the Infantry Tank School (1921), the Command and General Staff School (1926), the Army War College (1928), and the Army Industrial College (1933). Between 1929 and 1935 he was assigned to the offices of the assistant secretary of war and of the chief of staff, and from then until 1939 he served as assistant to Gen. Douglas MacArthur in the Philippines.

On Sept. 29, 1941, Eisenhower was appointed to the temporary rank of brigadier general. In February 1942 he became head of the War Plans Division and, in March, of the new Operations Division of the War Department General Staff. After becoming commanding general of the European Theater of Operations in June 1942, he directed the Anglo-American assault on French North Africa in November, and on Feb. 11, 1943, was named commander in chief of all Allied forces in North Africa. Later in 1943 he led his forces into Sicily and southern Italy; and on December 24, he was named supreme commander of the Allied Expeditionary Force and went to London to direct preparations for the invasion of France on June 6, 1944. He was promoted to the rank of general of the army in December, and on May 7, 1945, accepted the unconditional surrender of Germany.

He served briefly as military governor of United States occupation forces in Germany; was named army chief of staff in November 1945; and, after taking leave from the Army in February 1948, was installed as president of Columbia University in October. From February to August 1949, on leave from Columbia, he served as temporary chairman of the Joint Chiefs of Staff, and in December 1950 became supreme commander of North Atlantic Treaty Organization (NATO) forces in Europe. Retiring from the Army in June 1952, he received the Republican nomination for the presidency in July, was elected, and took office on Jan. 20, 1953. He was re-elected by a large majority on Nov. 6, 1956, and was inaugurated for a second term on Jan. 20, 1957.

Rivaling his personal triumphs on the international scene in 1959 was the extraordinary mastery which President Eisenhower displayed over the Democratic-controlled 86th Congress. In his State of the Union message of January 9, Eisenhower laid down the principles on which his legislative program would be based: the exercise of "wisdom and prudence" to insure a strong and expanding economy, and an end to deficit government financing. This was the theme of his budget message on January 19, when he presented a budget of $77,030,000,000 in expenditures and $77,100,000,000 in revenue. In his economic message the next day, and in numerous subsequent statements, the president reiterated the importance of achieving a balanced budget, of maintaining a sound economy (which he equated with national security), and of staving off the threat of inflation.

As the session began, however, Congress appeared not at all receptive to pleas for fiscal restraint. Senate Majority Leader Lyndon B. Johnson (confident that the Democratic majority of 64–34 in the Senate and 283–153 in the House could write its own program) issued his own "state of the union" message. But Eisenhower accepted the challenge and plunged into the legislative battle with enthusiasm.

Rallying public opinion with frequent, outspoken comments, marshaling an efficient corps of Republican leaders in both houses, and wielding the veto power with telling effect, Eisenhower brought his influence to bear to such an extent that the final record of the first session reflected in many important ways the president's governmental philosophy. He did not get everything he wanted, but in the area of public spending, to which he attached foremost importance, his views largely prevailed.

Eisenhower could claim, as he did on September 19, a victory over the "big spenders" in Congress. He could claim other major victories, notably the passage of a strong labor reform bill (signed September 14) after protracted and heated controversy; and of other measures close to his original requests, such as a $1 billion housing bill (signed September 23 after two costlier bills were vetoed); a 1-cent rise in the federal tax on gasoline to help finance the national highway program (signed September 21); and an increase from 3.26% to 4.25% in the interest rate limit on Series E and H savings bonds (signed September 22).

But the president's program suffered some reversals, too. Congress trimmed his requested $3.9 billion for mutual security (foreign aid) by more than $700 million; refused to lift the interest rate ceiling on long-term government borrowing (other than two types of savings bonds); passed no major civil rights or farm legislation; refused to confirm (June 19) the nomination of Lewis L. Strauss as secretary of commerce; and forced through a $1.185 billion public works bill by breaking the president's second veto.[1]

Eisenhower was plagued in 1959 by two major problems whose solutions eluded him. The longest steel strike in history (beginning July 15) continued for more than three months before the president formally invoked the Taft-Hartley Act; although the plants reopened there was no settlement of the issues involved (see also LABOR). And he came under mounting criticism as the nation's space exploration and missile program seemed to falter. New Soviet successes and additional United States failures prompted widespread demands that the chief executive mobilize an all-out national effort in this field.

Dominating the president's year in international affairs were new efforts to achieve a "thaw" in the cold war. Most observers agreed that the resignation of the late Secretary of State John Foster Dulles (q.v.) in April and the appointment of Christian A. Herter (q.v.) resulted in more direct presidential control over foreign policy than had existed during the six-year service of the secretary on whom Eisenhower had relied so strongly. The Berlin issue (see GERMANY) remained paramount during the early months of 1959, and in this regard the president cautioned the Soviet Union on January 1 that the United States would negotiate the question only "in an atmosphere devoid of any kind of coercion and threat."

After the announcement that Soviet Premier Nikita S. Khrushchev (q.v.) would visit the United States in September (an announcement which dramatically stirred world hopes for an end to the East-West impasse), President Eisenhower left for Europe on August 26, on the first of his two major journeys of 1959. The primary purpose of the trip was to placate those western European nations which were concerned that the Eisenhower-Khrushchev talks might result in bilateral agreement on matters affecting them. In Bonn, Eisenhower assured West Germany that the United States would insist on the preservation of Allied rights in West Berlin. Full accord among Western leaders was reported following talks with West German Chancellor Konrad Adenauer (August 26–27), British Prime Minister Harold Macmillan (August 29–September 1), and French President Charles de Gaulle (September 2–3). On the 20th anniversary of the start of World War II, and at the scene of his former military command,

[1] A public works or "pork barrel" bill for $1.2 billion was first vetoed in August. Congress sent back essentially the same measure, which the president promptly vetoed on September 9; but the next day Democrats succeeded in overriding this 9th veto of the session, the first of Eisenhower's 146 vetoes to be overridden since he took office (leaving only nine presidents with perfect veto records).

Eisenhower's visit proved to be a triumphal procession through cheering throngs in Bonn, London, and Paris.

Supported by this demonstration of Allied unity, the chief executive returned to prepare for the meeting with Khrushchev. For three days beginning September 25, world attention was focused on Camp David, the president's Maryland retreat, as Eisenhower and Khrushchev explored means of ending international tensions. Reporting optimistically on the private discussions, Eisenhower called them the "beginning" of an easing in East-West relations and disclosed that the Soviet premier had precluded any threat of force on the Berlin dispute, thus removing many Western reservations toward a summit conference.

As the long-delayed Big Four summit meeting became almost a certainty for 1960, Eisenhower left on December 3 on his unprecedented 19-day journey to Asia, Europe, and Africa.[2] This trip, he said, was intended to remove any doubts concerning the peaceful aims of the United States. At a news conference on December 2, he stated:

> I want to prove that we are not aggressive, that we seek nobody else's territories or possessions; we do not seek to violate anybody else's rights. We are simply trying to be a good partner in this business of searching for peace.

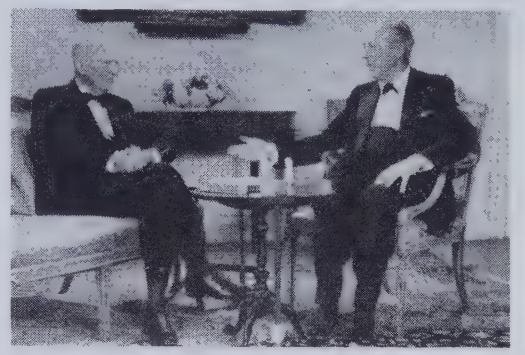
After three days of talks in Rome, including a private audience with Pope John XXIII (December 6), the chief executive flew to Ankara, Turkey (December 6); Karachi, Pakistan (December 7); Kabul, Afghanistan, and New Delhi, India (December 9); and Teheran, Iran, and Athens, Greece (December 14). He then boarded the cruiser U.S.S. *Des Moines* for a voyage to Tunisia (arriving December 17) and then to Toulon, France (arriving December 18). In Paris he met with de Gaulle, Macmillan, and Adenauer (December 19–21) in the so-called Western summit conference, aimed at formulating policies for the forthcoming Big Four summit meeting. Afterward he flew to Madrid, Spain (December 21), and to Casablanca, Morocco (December 22), before leaving for home that day. The president met with great warmth and enthusiasm on his goodwill mission, especially from the multitudes who greeted him in Ankara, Karachi, and New Delhi. His five-day stay in India, set against the background of Communist Chinese pressure against the northern frontier, was considered particularly significant. Addressing the Indian Parliament on December 10, he declared that the United States was ready to defend its friends and allies against aggression. On December 11, at the opening of the World Agriculture Fair in New Delhi, he called for a "worldwide war against hunger," and emphasized the theme of the United States pavilion: "Food—Family—Friendship—Freedom."

President Eisenhower's four trips outside the United States in 1959 included talks with President López Mateos in Mexico, February 19–20, and the dedication, with Queen Elizabeth II, of the St. Lawrence Seaway (q.v.) at St. Lambert, Quebec, June 26. In addition, at the White House or at Camp David, he met with many world leaders, including Soviet first deputy premiers Anastas I. Mikoyan, in January, and Frol R. Kozlov, in July; President Arturo Frondizi of Argentina, in January; Prime Minister Macmillan and Premier Hans C. Hansen of Denmark, in March; Sir Winston Churchill, King Baudouin I of Belgium, Chancellor Adenauer, and Prime Minister Robert G. Menzies of Australia, in May; Premier Antonio Segni of Italy, in September; and President Sékou

[2] He became the first president to visit, while in office, Greece, Turkey, Pakistan, India, Afghanistan, Spain, and Tunisia.

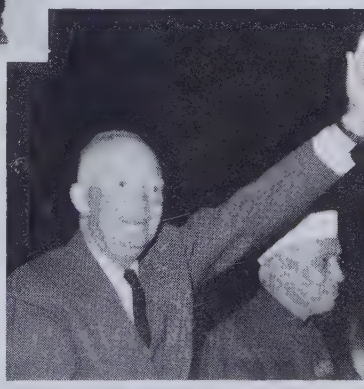
(*Right*) President Eisenhower (l.), accompanied by Chancellor Adenauer, is cheered by spectators as he arrives in Bonn, Germany, August 26, at start of his visit to West European capitals.

WIDE WORLD



(*Above*) President Eisenhower appears on British television with Prime Minister Macmillan (r.) on August 31. (*Left*) French President de Gaulle and Eisenhower, after talks in Paris on September 2.

EUROPEAN



Eisenhower responds to cheering throngs in New Delhi (*right*), with Indian Prime Minister Nehru, December 9, and in Karachi, Pakistan (*below*), with President Ayub, on December 7.

WIDE WORLD; UPI

Touré of Guinea, in October.

(See also FOREIGN POLICY OF THE UNITED STATES; REPUBLICAN PARTY; SUMMIT CONFERENCE; UNITED STATES—*The United States in 1959.*)

S. J. F.

ELECTIONS, U.S. Scattered elections in 1959, politically an off year, gave no conclusive evidence of long-range voter preferences on a national scale. Although a majority of voters were at least nominally Democratic, many observers saw an independent, ticket-splitting trend affected by local issues and popular estimates of candidates.

State Elections.—On June 27, voters in Hawaii, including citizens of 20 years of age and over, endorsed statehood by a margin of 17 to 1. In the first state election, on July 28, Hawaii elected as governor Republican William F. Quinn, the incumbent presidential appointee. Hiram L. Fong, Republican, and Oren E. Long, Democrat, were elected to the U.S. Senate, and Democrat Daniel K. Inouye, to the House. In three special elections to fill vacancies, voters in the 4th Missouri Congressional District, on March 3, in the 43d New York District, on May 26, and in the 4th Iowa District, on December 15, chose respectively a Democrat and two Republicans, resulting in a gain of one Republican seat.

In Kentucky, on November 3, Bert T. Combs, Democrat, who had defeated the candidate of retiring Gov. A. B. (Happy) Chandler in a hard-fought primary on May 26, was elected governor over former Republican Congressman John M. Robsion, Jr. On the same day Ross R. Barnett, Democrat, was elected governor of Mississippi. In New Jersey the prestige of Democratic Gov. Robert B. Meyner as a national figure was dimmed to some extent by failure to win control of the state Senate, despite a gain of two seats, and also by a reduced majority in the lower house and by defeat of his referendum to relieve commuter railroads through turnpike profits. Mayor Robert F. Wagner, Democrat of New York City, suffered a political setback by the defeat of a state constitutional amendment to permit the city to issue $500 million in bonds for school construction.

Oklahoma voters, on April 7, removed from the state constitution a prohibition of sale of alcoholic beverages by a margin of more than 80,000. On April 23 the California legislature abolished cross-filing, a device by which candidates in primary elections had often sought nomination from both major parties.

Municipal Elections.—Democrats won all but one of the mayoralty elections on November 3 in the 25 largest cities of Indiana, most of them already under Democratic leadership; Republicans carried only 36 of 107 cities. Republicans made modest gains in mayoralties of upstate New York cities. Democratic Mayor Richardson Dilworth of Philadelphia defeated, almost 2–1, Republican Harold E. Stassen, but in Columbus, Ohio, the Republican candidate unseated Democratic Mayor M. E. Sensenbrenner. Former Utah Republican Gov. J. Bracken Lee, an independent conservative, was elected mayor of Salt Lake City. In Boston's nonpartisan election for mayor, Democrat John F. Collins defeated Senate president John E. Powers, candidate of the party organization.

Earlier in the year, Chicago voters re-elected Democratic Mayor Richard J. Daley by a large margin on April 7. Mayor Thomas D'Alesandro of Baltimore, Md., was defeated in the Democratic primary (March 3) by J. Harold Grady, who easily defeated former Republican Gov. Theodore R. McKeldin in the city election on May 5. On May 25 three segregationist members of the Little Rock (Ark.) School Board were voted out of office in a special recall election after they had attempted to dismiss 44 teachers.

Mayors elected in leading cities in 1959 (on November 3, unless otherwise shown) included the following (D, Democrat; I, independent; NP, nonpartisan; R, Republican):

Baltimore, Md.—J. Harold Grady (D), May 5
Boston, Mass.—John F. Collins (NP, D)
Bridgeport, Conn.—Samuel J. Tedesco (D), re-elected over former Socialist Mayor Jasper McLevy
Camden, N.J.—Alfred R. Pierce (R), May 19
Canton, Ohio—Charles L. Babcock (D), re-elected
Chicago, Ill.—Richard J. Daley (D), re-elected April 7
Cleveland, Ohio—Anthony J. Celebrezze (D), re-elected for 4th term
Columbus, Ohio—Ralston Westlake (R)
Denver, Colo.—Richard Y. Batterton (NP, R), June 16
Evansville, Ind.—Frank F. McDonald (D)
Fort Wayne, Ind.—Paul Burns (D)
Gary, Ind.—George Chacharis (D)
Hartford, Conn.—James H. Kinsella (NP), re-elected
Indianapolis, Ind.—Charles Boswell (D)
Ithaca, N.Y.—Ralph C. Smith (R)
Kansas City, Mo.—H. Roe Bartle (D), re-elected March 31
Minneapolis, Minn.—P. Kenneth Peterson (NP, R), re-elected June 9
Nashville, Tenn.—Ben West (D), re-elected May 14
New Haven, Conn.—Richard C. Lee (D), re-elected for 4th term
Philadelphia, Pa.—Richardson Dilworth (D), re-elected
Pittsburgh, Pa.—Joseph Barr (D)
Salt Lake City, Utah—J. Bracken Lee (I)
San Diego, Calif.—Charles C. Dail (NP), re-elected April 21
San Francisco, Calif.—George Christopher (NP, R), re-elected
Schenectady, N.Y.—Malcolm E. Ellis (R)
South Bend, Ind.—Edward Voorde (D), re-elected
Terre Haute, Ind.—Ralph Tucker (D)
Trenton, N.J.—Arthur J. Holland (D), May 12
Utica, N.Y.—Frank M. Dulan (R)
Waterbury, Conn.—Edward D. Bergin (D)
Yonkers, N.Y.—Kristen Kristensen (R), re-elected
Youngstown, Ohio—Frank N. Franko (D)

(See also DEMOCRATIC PARTY; REPUBLICAN PARTY.)

FRANKLIN L. BURDETTE,
Professor and Director, Bureau of Governmental Research, University of Maryland.

ELECTRICAL DEVELOPMENTS. Research.—An image-converter tube, the Ultrascope, announced in 1959, is the "eye" of a simple attachment for a microscope which allows direct visual inspection of objects illuminated by invisible ultraviolet light. The ultraviolet image of the specimen is projected by the microscope's objective lens onto a photosensitive coating on the inner surface of the tube's faceplate. As the ultraviolet rays impinge on the photosensitive material, they stimulate it to emit beams of electrons in a pattern corresponding to the ultraviolet image, and the beams of electrons are in turn focused on a fluorescent viewing screen at the opposite end of the tube, where a visible image is formed.

Ultrasonic waves having a frequency of 10,000 megacycles per second have been produced by applying microwave electromagnetic radiation to a quartz crystal cooled to approximately −456°F., not quite 4 degrees above absolute zero. It is planned to use the extremely high frequency sound waves thus produced for investigating energy levels of atoms and interactions of electron spins in a crystal lattice.

The first successful direct conversion of nuclear reactor heat into electricity was announced at Los Alamos Scientific Laboratory in April 1959. The conversion was accomplished by a device known as a plasma thermocouple which is inserted into the core of a reactor, where it is activated by the flux of neutrons produced by the reactor. Although the experimental model demonstrated at Los Alamos produced only enough current to light an ordinary household electric bulb, it holds great promise for the commercial generation of electricity without the cumbersome and expensive turbines and electromechanical machinery of con-

ventional atomic power plants. (See also ATOMIC ENERGY.)

Construction of a 12.5 billion-electron-volt accelerator to probe the structure of matter was started at the Argonne National Laboratory in Lemont, Ill. Known as the Zero Gradient Synchrotron (ZGS), it will be housed in a building 200 feet in diameter. The ZGS will use protons as "bullets," accelerating them to an energy of 12.5 bev before shooting them into target atoms.

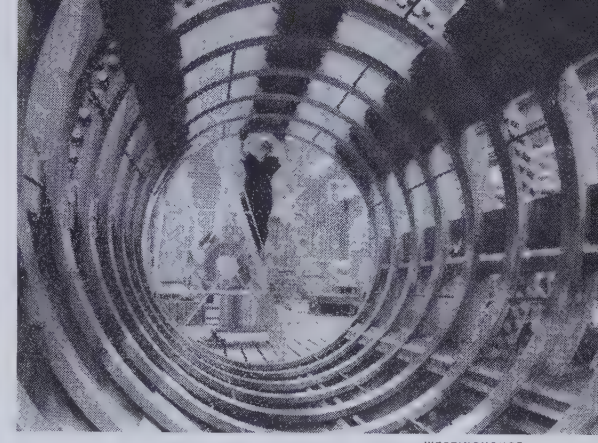
Power Generation.—The first of four nuclear reactors under construction at Chapel Cross, Scotland, began producing power in May 1959. By the end of the year, when all four units were to be in operation, they were to have a power capacity of 140,000 kilowatts, but production of power from the Chapel Cross reactors is secondary to the production of plutonium. The new plant is similar to the station at Calder Hall, England, which has been operating since October 1956.

Significant advances were made during 1959 in the development of fuel cells for converting the energy of chemical fuels directly into usable electrical energy. Similar in principle to the familiar dry-cell battery, fuel cells presently under development consume gaseous fuels, have high operating efficiencies, and are relatively light in proportion to their electrical output. The hydrox cell developed in England by Francis T. Bacon uses pure hydrogen and oxygen as fuels, and has an efficiency of 50 to 60%. In a public demonstration in August, a battery of 40 hydrox cells with an output of 5 kilowatts (6.7 hp.) powered a fork-lift truck. In October, at the Allis-Chalmers Research Laboratory in Milwaukee, a battery of 1,008 cells consuming a mixture of gases (largely propane, and including oxygen) provided the power for a field demonstration of an electrical farm tractor. The Allis-Chalmers battery produced 15 kilowatts (20 hp.) with an efficiency of 60%. Ultimate efficiencies on the order of 80% are theoretically attainable in both the hydrox and the Allis-Chalmers fuel cells.

Two companies in the United States reported progress in 1959 in developing magnetohydrodynamic (MHD) generators. The MHD generator, like the conventional electromechanical generator, operates on the principle of induction, which states that an electrical current will be generated when a conductor is moved across a magnetic field. Like the conventional generator, the MHD generator has a field coil, but the armature of conventional equipment is replaced by a stream of intensely hot, ionized gas (plasma). As the jet of electrically conductive plasma is blasted through the nozzle, it cuts the magnetic field set up by the field coil. The current generated in the plasma by this action is tapped by two electrodes in the nozzle, the equivalent of the brushes in a generator. High operating efficiencies are obtainable from the MHD generator, but the extremely high temperature of the plasma (on the order of 5,000°F.) quickly destroys most structural materials.

The General Electric Co. has designed a gas turbine-powered package power plant for installation as a complete generating unit. The turbine, rated at 20,500 kilowatts, will drive a 25,600-kilovolt-ampere air-cooled generator. Designed for intermittent operation, the relatively inexpensive new unit will enable electric utility companies to handle peak power loads without installing the costly, heavy-duty equipment needed for continuous operation.

Industrial Equipment and Applications.—A new mobile robot with television eyes can "see" and handle dangerous radioactive materials. Operated electrically by a cable or radio link from a position outside the dangerous area, the versatile machine (called the Mobot) can perform a variety of lifting, inverting, and placing operations. While observing the radioactive area through Mobot's four closed-circuit television cameras, the unit's operator can move it about on its wheels to perform various manual tasks with hand tools in the robot's "fingers."



WESTINGHOUSE

A view of the mammoth 3,600-rpm. turbine-generator under construction in 1959 for an Arkansas power station. The completed generator will weigh about 500 tons and will be 42 feet long. It is rated at 384,000 kilovolt-amperes.

Approximately 2 million pounds of aluminum were used in the construction of a new 375,000-kw. power plant near Evansville, Ind. Almost 40% of the aluminum in the station is used in its boilers, turbines, condensers, feedwater heaters, and their auxiliary and structural components. Other important applications include conduits, switchyard structures, and switchgear.

A teletypewriter announced by the U.S. Army prints electrostatically 4 full lines of text per second—50 times faster than a news-service teletypewriter. Its theoretical top speed is 500,000 words per minute. A bank of electron guns "shoots" letters electronically onto a special paper with a high-resistivity coating, forming small letter-shape charged areas on the paper's surface. The electrostatic image thus formed is made visible by powdered ink which is attracted to the charged areas and fixed permanently by application of heat.

An automatic electric frame-wrapper machine for packing books has been put in operation at the Macmillan Company's storage house in New Jersey. The machine, which can handle up to 600

British inventor Francis T. Bacon stands beside his revolutionary fuel cell which converts chemical energy directly into electricity. Using oxygen and hydrogen as fuels, it is relatively light and has a high operating efficiency.

WIDE WORLD

books per hour, automatically forms, packs, and seals book cartons.

Transportation.—"Hurricane Road," an accelerated-test facility developed by the General Electric Co., is now employed by the Ford Motor Co. to test cars in a wide range of simulated weather conditions. Temperatures can be varied from 0 to 160°F., winds from 0 to 125 mph., and driving rains can be produced in the new testing unit. The facility's instruments provide continuous readings of engine power output, oil temperatures and pressures in the transmission and differential, and other factors affecting performance.

The Curtiss-Wright Corp. has developed a flight simulator, called the Visualator, for training pilots in take-off and landing maneuvers. The simulator incorporates a closed-circuit television system whose panoramic-screen receiver is viewed through the cockpit's windshield. As the trainee manipulates the flight controls in a simulated landing or take-off, the terrain, runways, and buildings are depicted on the screen as they would appear in actual flight.

The General Motors Firebird III, shown at the 1959 Motorama in New York City, is the first automobile controlled entirely by electronic means. A single finger-tip control governs steering, throttling, and braking through analogue computers and electrohydraulic servomechanisms. It has electrically controlled heating and air conditioning, ultrasonically operated doors, an electronic horn, and a two-way radio.

Communications.—A new Bell System dial telephone, named the "Call Director," provides interoffice communication, conference hookups, or adds extensions to incoming calls—all at the touch of a button. Other new features for handsets include illuminated dials, hands-free conversational arrangements, automatic answering and recording devices, and push-button dialing.

Radar contact with the planet Venus was established in February 1959 by the Lincoln Laboratory of the Massachusetts Institute of Technology. This was the longest-range radar contact ever made, the round-trip distance being about 56 million miles. A special type of solid-state maser used in the amplifier of the radar receiver increased the range of the equipment as much as would a fourfold increase in transmitter power. (See also PHYSICS.)

The complex distribution problems of many large companies may be simplified by Western Electric Company's newly developed Dataphone system, which automatically transmits orders over telephone lines from widely scattered local offices to a company's central warehouse, where the system records the order, routes the merchandise, makes out the bills, and writes checks. (See also RADIO AND TELEVISION; TELEGRAPH; TELEPHONE.)

Synthetic quartz has been produced by the Western Electric Co. for the Bell System's filters, oscillators, and frequency standards. Crystals up to 3 inches in cross section and 6 inches in length have been grown by a hydrothermal process.

Illumination.—An electronic flash unit capable of delivering 90 million lumens in $\frac{1}{1000}$ second has been developed for reconnaissance aircraft. The unit consists of a xenon-charged quartz flash tube (about $1\frac{1}{3}$ inches long, with the diameter of a pencil), an aluminum reflector, and an 850-volt power pack. Intervals between flashes may be as short as one-half second.

A lamp about the size of a dime, which produces an intensely bright light for a short period, has been designed for use with an infrared device for tracking the early flight of missiles. It burns brilliantly for about 15 seconds, until its glass envelope melts and collapses. In another development, an extremely reliable lamp for illuminating airplane instruments has been developed. It is capable of burning continuously for a period estimated at several million years.

A trace of iodine gas in the mixture filling a new tungsten-filament lamp catches the tiny particles of tungsten that evaporate from the incandescent filament and returns them to the filament. This process prevents the particles from blackening the inner surface of the lamp's glass envelope.

Electromedical.—The world's first nuclear reactor designed for medical use, with a nominal operating power of 1,000 kw., was dedicated early in 1959 at Brookhaven National Laboratory in Upton, N.Y. Two ports in the concrete shielding walls permit beams of neutrons to pass from the reactor into the treatment rooms, one for humans and one for animals. The beams can be shut off in 3 seconds by thick 21-ton shutters. The medical research center includes a 48-bed hospital.

A 20-pound package of medical instruments to measure and record the physiological condition of man in space has been developed by Gulton Industries. Six physiological parameters can be measured to reveal blood pressure, heart sounds and rate, respiration rate and depth, skin temperature, and galvanic skin resistance.

Electronics.—A new radar set has been developed to pinpoint the location of enemy mortar shells in flight and then compute electronically the point from which the shell was fired. Its range is accurate up to about 6 miles.

A completely automatic electronic reservations system has been developed by International Business Machines for American Airlines. The new equipment will handle all clerical procedures in the sale, confirmation, and control of air travel tickets. The computer for the New York City area will be connected by telephone lines to more than 1,100 ticket agents, who will be able to obtain reservation data on any flight within three seconds.

A complex electronic circuit, consisting of two transistors, two capacitors, and eight resistors, has been miniaturized to the size of the head of a paper match. It is believed that about 500,000 of these tiny circuits (called micromodules) could be interconnected within a one-cubic-foot space.

An outstanding astronomical and electronic event of 1959 was the series of Stratoscope I balloon flights, sponsored by the National Science Foundation and the Office of Naval Research. A 12-inch solar telescope was sent up to 80,000 feet by means of an unmanned balloon about one million cubic feet in capacity. The telescope was linked optically to a motion picture camera to obtain a continuous record of the sun's image as seen by the telescope. A closed-circuit television link, together with remote control equipment, enabled the operators on the ground to focus the telescope on any point on the sun's surface. (See also ASTRONOMY; ELECTRONICS.)

ELECTRIC LIGHT AND POWER INDUSTRY

Power Plant Generating Capacity.—As of Dec. 31, 1958, the total generating capacity of the United States was 160.2 million kw., of which 108.8 million kw. was in privately owned utilities, 33.5 in publicly owned utilities, and 17.8 in industrial, mine, railway, and other plants. Gross additions of 13.25 million kw. in electric utility capacity in 1958 were the largest in the industry's history. Additions scheduled for the next four years total 42 million kw. in capacity, of which about three fourths are to be constructed by private companies, and the rest by government agencies. At the end of 1959, the United States had two opera-

ble full-scale civilian nuclear power reactors: the 60,000-kw. plant at Shippingport, Pa., and the 180,000-kw. Dresden Nuclear Power Station (to be in regular operation in 1960) at Morris, Ill. In addition, 14 other civilian power reactor projects with ratings of 10,000 kw. or more were under way.

U.S. ELECTRIC ENERGY SALES AND REVENUES, 1958

Classification	Customers (number)	Revenue (millions of dollars)	Distribution (millions of kw.-hr.)
Commercial, industrial	6,596,486	5,043	376,236
Domestic	47,788,587	4,024	159,047
Rural	1,634,348	251	11,084
Highway illumination	47,253	169	5,505
Railroads, railways	81	47.9	3,841
Other	140,127	190	12,829

(Source: Edison Electric Institute.)

U.S. Power and Light Production.—In 1958, 724 billion kw.-hr. were generated in the United States, including 79.3 billion kw.-hr. produced by sources other than electric utilities. This total is about 1% greater than that of 1957, despite reduced industrial activity during a great part of 1958. Of the total 1958 production, 77.6% was generated by steam plants and 21.7% by hydroelectric installations. (See also FEDERAL POWER COMMISSION; PUBLIC UTILITIES; RURAL ELECTRIFICATION ADMINISTRATION.)

World Electric Energy Production.—Production of electric energy in 1958 by major countries (excluding the United States) is shown in the accompanying table.

ELECTRIC ENERGY PRODUCTION, BY MAJOR COUNTRIES, 1958

Country	Millions of kw.-hr.	Country	Millions of kw.-hr.
Austria	13,559	Italy	45,155
Belgium	12,518	Luxembourg	1,229
Bulgaria	2,797	Netherlands	13,116
Czechoslovakia	16,451[1]	Norway	25,570
Denmark	3,824	Poland	21,912
Finland	7,890	Rumania	5,421[1]
France	61,892	Spain	14,587[1]
Germany, East	30,421[1]	Sweden	30,415
Germany, West	89,551[2]	Switzerland	16,878
Greece	1,802	Turkey	2,300
Hungary	5,870	United Kingdom	107,016
Iceland	469	USSR	233,018
Ireland	1,570[1]	Yugoslavia	7,119

[1] Data for 1957. [2] Excluding the Saar, 2,747 million kw.-hr. (Source: U.N. Economic Commission for Europe, *Bulletin annuel de statistiques de l'energie electrique pour l'Europe.*)

(For additional references, see Index entry, *Electrical Developments.*)

G. C. BAXTER ROWE,
Associate Editor, "Electrical Engineering."

ELECTRIFICATION, Rural. See RURAL ELECTRIFICATION ADMINISTRATION.

ELECTRONICS. Electron Tubes.—One of the necessary evils of the vacuum tube has always been the amount of electrical power required simply to heat the cathode that emits the electrons. This power is otherwise wasted, since it contributes nothing to the electronic function of the tube or to the output of the tube circuit. In addition, the heat that the tube's metal or glass envelope has to dissipate can be a problem in the proper operation of the complete equipment or its environment.

A major breakthrough in electron tube design was made in 1959 with the development of a "cold" cathode electron tube that does not contain the usual filament. The cathode consists of a sprayed-on coating of porous magnesium oxide, used in the manufacture of milk of magnesia. It has been found that electron emission in the magnesium oxide cathode can be started by light, by a small quantity of a radioactive substance, or by a tiny filament that requires electrical power for only a fraction of a second. Once emission is initiated, the tube operates much like those in a conventional home receiver. Tubes resembling the conventional ones have been made and demonstrated in a phonograph amplifier by Tung-Sol Electric, Inc., developers of the tube in conjunction with the Army Signal Corps. While the tube is operating, the cathode glows with a blue light; although some heat is produced, it is only a very small percentage of the heat of a thermionic electron tube.

Another novel electron tube, called the Nuvistor, has been developed by the Radio Corporation of America. This tube is particularly useful at higher frequencies and is more rugged and efficient than ordinary tubes. It benefits from a new design approach to mechanical and electrical factors, known as the "new vista." The tube is about the size of a thimble, and its component elements are assembled very precisely by using new techniques. As a result, it continues to function normally when it is heated to 660°F. or when placed in liquid nitrogen at −320°F. Torture and endurance tests have included one of dropping the glass tube from a height of several feet to a metal block, demonstrating its ruggedness.

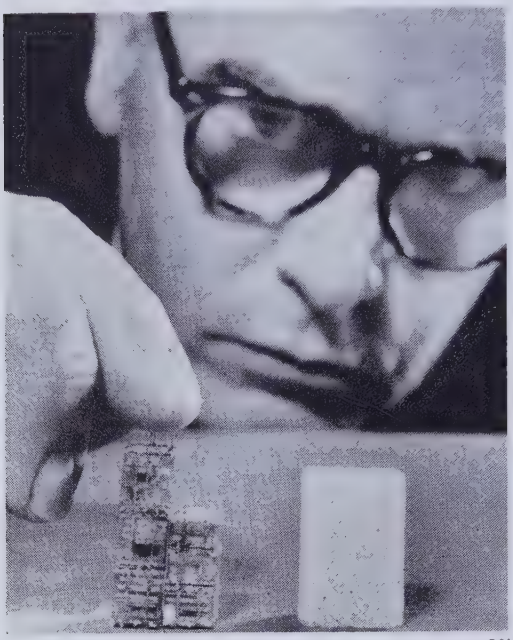
Blood Pressure Monitor.—Instead of the normal method of measuring blood pressure by using an arm cuff and a stethoscope to listen to sounds in the artery below the cuff, a new instrument invented by an English doctor requires only that a small digital cuff containing a crystal microphone be fitted over the patient's finger. The main disadvantage of the arm cuff is that it causes discomfort to the patient if left on for any length of time; also the stethoscope can be used only in quiet surroundings and provides only spot readings. Another method, in which a hollow tube is inserted into an artery, also causes discomfort and carries with it the danger of clot formation in the artery.

The new method is painless and can be used while the patient is asleep. The necessary information is relayed automatically to a remote point, such as a nurses' room. Any abnormal change in pressure immediately alerts the alarm system of the equipment. An electromagnetic valve opens and closes with the pulsations. A fixed leak deflates the cuff when arterial pulsations stop, since the pressure in the cuff exceeds systolic arterial pressure; the electromagnetic valve then opens automatically, more air is pumped into the cuff, and the cycle is repeated for any required period. The cuff pressure in this way follows changes in systolic blood pressure, and all such changes are revealed on instruments.

It is now possible to preset the apparatus to achieve a desired blood pressure level for as long as required. A solenoid device automatically controls the intake of drugs by injection, so that blood pressure constantly remains at the required level. Any variation from the predetermined maximum and minimum sets off an alarm, at the same time cutting off the supply of the drug.

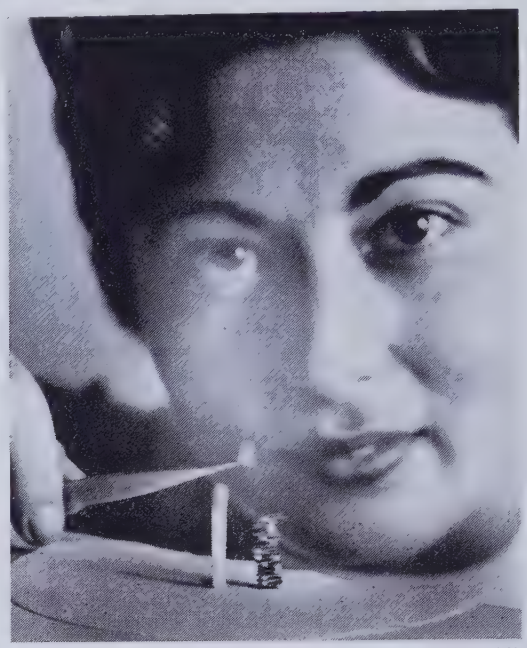
Aircraft Landing System.—Newly developed by Bell Aircraft Corporation, an automatic, electronic, all-weather landing system may end aircraft stackups which cause traffic congestions at all airports. In addition, the system will allow flights which are normally canceled because of weather conditions, and promises revolutionary improvement for landing aircraft under Instrument Flight Rule (IFR) conditions. Holding time is cut to a minimum because the system enables the landing of 120 aircraft an hour.

Basically, the system employs a radar tracking beam which automatically tracks the approaching



RCA

The "works" of a military radio developed by the Signal Corps and RCA is compared with a lump of sugar. It is part of a miniaturization program which uses tiny micromodules, circuit "building blocks" measuring one third of an inch, which do the work of transistors and other components.



RCA

A new electronic device, known as a tunnel diode, is held in tweezers next to the head of a match (beside a stack of 15 units). Designed for space age equipment, the tunnel diode has such extremely small power requirements that hundreds can be operated from a single 1½-volt flashlight cell.

aircraft and supplies accurate position information to an electronic computer. The actual flight path of the aircraft being landed is measured and compared with the desired flight path, and any difference between the two results in correction signals which are sent by radio to the plane's autopilot. The autopilot controls any type of aircraft for as long as the pilot desires—until visual reference is established or to actual touchdown. The pressing of a switch on the autopilot instantly restores control of the aircraft to the pilot. A control monitor sitting at a console in the trailer follows the entire automatic operation. To aid him, a radarscope is provided, in addition to a plotting board on which is shown the actual glide path as compared with the desired glide path. A recorder is available to record desired information pertaining to aircraft position, position error, speed, and acceleration. The actual commands transmitted to the aircraft also can be recorded, thus providing a permanent record of each landing.

In case of airborne equipment malfunction, these facilities and voice communications supply data equivalent to that provided by present approach systems. Automatic wave-off goes into action whenever there is equipment malfunction or excessively large errors. The information transmitted to the airplane is displayed on conventional cockpit instruments and will permit manual landing by the pilot instead of the autopilot if desired.

Music Synthesizer.—An electronic system constructed to generate any imaginable musical tone has been installed at Columbia University for use in a program of composition and research in electronic music. The project is being conducted jointly by Columbia and Princeton universities, under a grant of the Rockefeller Foundation.

Radio Sextant.—For the first time, the moon has been tracked continuously by radio through the use of a new precision radio sextant designed and constructed by the Collins Radio Company. It has been installed aboard the Navy's experimental navigation ship, the U.S.S. *Compass Island*, to be used in navigation research. The sextant also tracks the sun with high precision. The moon is more difficult to track, however, since its radiation is about 50 times weaker than the sun's. The total lunar power available to the sextant must be multiplied by 500,000 billion to equal that used by a small Christmas tree light. To track accurately, the receiver must distinguish power changes which are a minute fraction of the total power received.

The radio sextant is capable of tracking both the moon and sun under all weather conditions from moonrise to moonset and from sunrise to sunset. It also functions as a precise compass, with more than ten times the accuracy of present marine compasses. In the radio sextant, the antenna scans a circle around the sun or moon's rim; if the antenna is pointed directly at the sun or moon, the received signal will show no modulation at the scanning frequency, but if the antenna is displaced slightly, the signal will be modulated. Phase-sensitive detectors derive error voltages which are used to keep the antenna on course. The sextant contains the most sensitive radio receiver ever built for the measurement of thermal radiation in the short microwave region. This receiver, which operates at a wave length of 1.8 centimeters, allows the determination of the antenna position with the necessary precision.

(See also ELECTRICAL DEVELOPMENTS.)

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ELIZABETH II (ELIZABETH ALEXANDRA MARY), queen of Great Britain and Northern Ireland; head of the Commonwealth of Nations; b. London, England, April 21, 1926.[1] Great Britain's first

[1] In 1959 the queen's birthday was officially celebrated on June 13.

reigning queen since Victoria (1819–1901), Elizabeth II ascended the throne on Feb. 6, 1952, and was crowned on June 2, 1953.

Spending her childhood at Buckingham Palace and other royal residences, the then Princess Elizabeth was educated by tutors under the surveillance of her mother, the Duchess of York and later queen, and her grandmother, Queen Mother Mary, who supervised her kindergarten training. At the age of 10, on the accession of her father, George VI, the princess became heiress-presumptive to the throne.

Commencing in 1944, Princess Elizabeth served as a member of the Council of State, which deputized for her father during his absences from the country. In July 1944 she first exercised her responsibility as a councilor of state by signing a series of parliamentary acts.

On Nov. 20, 1947, Princess Elizabeth was married to Lt. Philip Mountbatten, a third cousin and a member of the ruling family of Greece. To the couple were born (Nov. 14, 1948) a son, Prince Charles Philip Arthur George, who became heir-apparent and Duke of Cornwall on the death of King George VI, and (Aug. 15, 1950) a daughter, Princess Anne Elizabeth Alice Louise. On July 26, 1959, the queen announced that her son would become Prince of Wales, with the investiture likely to take place when the boy reached 16 or 17. A third child was expected in February 1960.

Prince Philip, who was born on Corfu Island, Greece, on June 10, 1921, was sixth in line for the throne of Greece until he became a British subject on March 18, 1947. He attended the royal naval academy at Dartmouth, entered World War II service as a midshipman in 1939, and served as a lieutenant throughout most of the war. He was created Duke of Edinburgh on Nov. 20, 1947. On Feb. 21, 1957, he was given the title of Prince of the United Kingdom by Queen Elizabeth. His official title was designated as His Royal Highness the Prince Philip, Duke of Edinburgh.

Following her convening of the Atlantic Congress (an unofficial meeting of citizens of NATO countries) on June 5 in London, Queen Elizabeth and Prince Philip arrived by air in St. John's, Newfoundland, on June 18 for a six-week tour of Canada. The primary purpose of her trip was to participate with President Dwight D. Eisenhower in the official opening of the St. Lawrence Seaway (q.v.) on June 26 at St. Lambert, Quebec. Following the ceremony, the president and his party were guests of the queen aboard the royal yacht *Britannia* as it sailed through the St. Lambert Lock and cruised the seaway for five hours. With Vice President Richard M. Nixon, the queen on June 27 dedicated the St. Lawrence hydroelectric power project at Massena, N.Y. On July 6, aboard the *Britannia*, she sailed to Chicago (q.v.) for her first visit to that city.

During part of the remainder of the queen's tour, which carried her as far north as the Yukon Territory and as far west as British Columbia, she appeared tired and ill. The reason for her indisposition was not known until after her return to England on August 2. On August 7 it was officially announced that she was expecting her third child.

The announcement of the queen's pregnancy was accompanied by the news that she would be unable to undertake a planned tour of West Africa in the fall. Consequently, Prime Minister Kwame Nkrumah of Ghana, one of the commonwealth nations, visited the queen at Balmoral Castle in mid-August. Later, on August 28, President Eisenhower was also a guest at Balmoral.

One of the queen's last official acts during 1959 was the dissolving of Parliament on September 18 in preparation for the general elections of October 8. On October 14, Prime Minister Harold Macmillan (q.v.) announced that the queen had approved his new Conservative cabinet.

ELLICE ISLANDS. See WESTERN PACIFIC ISLANDS, BRITISH.

EL SALVADOR. The smallest and most densely populated of the Central American republics, El Salvador is bordered by Guatemala on the north, Honduras on the east, and the Pacific Ocean on the south and west. Area, 8,259 square miles; population (July 1959 est.), 2.5 million, of which over 60% is rural. The largest cities are San Salvador, the capital, 212,542 (1957 est.); Santa Ana, 109,711 (1953 est.); and San Miguel, 63,429 (1953 est.). Over 90% of the population is of mixed Indian-European descent. Spanish is the official language.

Government.—The constitution of 1950 vests executive power in a president (Lt. Col. José María Lemus, inaugurated Sept. 14, 1956) who is elected by popular vote for a 6-year term, and is not eligible for an immediate second term. Legislative power rests with a Legislative Assembly of 54 deputies elected by direct vote for 2-year terms. The governors of the 14 departments into which the country is divided are presidential appointees.

Religion and Education.—Roman Catholicism is the predominant faith. The constitution guarantees freedom of worship. Primary education is free and compulsory, but facilities are not sufficient for all school-age children. According to the 1950 census, some 57% of the population 10 years of age and older is illiterate. Recent governments have tried to improve the school system. School enrollment in 1957 was 242,263, only 35% of which was in the rural areas where the bulk of the population lives. The National University in the capital had 1,525 students in 1956.

Finance.—The unit of currency is the colón, equal to U.S.$0.40. The government's fiscal position is highly dependent on export-import revenues, with customs receipts the largest item of government revenue and the export tax on coffee the second largest. The government has for some years adhered to conservative fiscal practices, avoiding deficit financing, and even accumulating a surplus in the treasury. Coffee export difficulties in 1958–59, however, led to depletion of the surplus. The budget for 1959 was set initially at $72.4 million, the same as that originally announced for 1958 (later increased to $76.4 million). This was the first time in years that the budget total was not set higher than that of the previous year. The total direct foreign debt was $16.7 million as of July 31, 1958. Gold and foreign exchange holdings of the Central Reserve Bank and private banks totaled $56.7 million in June 1959, compared with $52.24 million in June 1958.

Transportation and Communications.—Two railway companies, both foreign-owned, operate a total of 469 miles of track in El Salvador, and connect with Guatemalan lines. The highway system consists of 2,068 miles of national roads, over half of which are paved. The 197-mile section of the Inter-American Highway crossing El Salvador is entirely paved. Construction of the 190-mile Littoral Highway continued in 1959. In January 1959 the World Bank and United States private banks lent El Salvador $5 million for additional work on the Littoral Highway and construction of 21 feeder roads. As of Jan. 1, 1957, 18,009 motor vehicles were registered. There are three seaports and one international airport.

Production.—The gross national product increased at an annual average of 6.8% in 1945–57, more than enough to keep ahead of the large annual population increase of about 3.3%, but it remained relatively stable in 1958. Nearly all the tillable land is in use, and the country has few other natural resources. In recent years El Salvador has been virtually self-sufficient in the chief food crops—corn, beans, rice, sorghum, and sugar—but it may be difficult to avoid a rise in imports. An increase in nonagricultural activity is indicated by the fact that in 1945–57 the agricultural share of the gross national product decreased from 48.2% to 36.2%, and the share of industry rose from 10.1% to 14.2%; construction, from 3.2% to 8.9%; and commerce, from 19.36% to 21.0%. The manufacturing production index (1956 = 100) was 121.3 in February 1958 and 126.10 in February 1959.

Nearly all the coffee produced is exported. Coffee exports for the 1957–58 crop year totaled 1,112,035 bags (of 69 kilograms, or about 152 pounds, each), second only to the record 1,235,000 bags exported in 1956–57. By the end of June 1959, 1,171,436 bags of the 1958–59 crop had been exported. The 1958–59 cotton crop was about 175,000 bales, the largest in history, compared with 158,000 in 1957–58. Most of the cotton crop is exported; local mills use about 15,000 bales annually. Corn production in the 1958–59 crop year

was 3,017,502 quintals (of 101.4 pounds each), compared with 3,228,958 in 1957–58. Sugar production in 1957–58 was 921,755 quintals, slightly less than that of the previous year.

Foreign Trade.—After a long rise in the value of both exports and imports in the years 1943–57, in 1958 the value of exports (289.9 million colónes) was down about 16% from 1957, and that of imports (269.0 million) was down about 6%. This development both reduced foreign exchange and the traditional favorable balance of trade. Prices for the 1958–59 coffee crop were about 12% less than those of the previous year, and this drop accounted for most of the decline in foreign trade value. Of the 1,171,436 bags of coffee exported in October 1958–June 1959, the United States took 48% and West Germany 40%, continuing the export pattern of recent years. Foreign exchange earnings from cotton increased from $1.56 million for the 1947–48 crop to $19.8 million for 1957–58. Although the 1958–59 crop was the largest in history, lower prices kept the export value about to that of the previous year. El Salvador's imports from the United States, which doubled in value during 1948–57, declined 10% in 1958, to about $45 million, apparently because of the high price of United States goods.

Principal Events, 1959.—The economy bore up well under the decline of export prices, largely because large coffee and cotton crops compensated for lower prices. Although the sense of an economic crisis thus was less acute than in 1957–58, both business and government circles nevertheless continued to be much concerned about world overproduction of coffee.

The year saw continued evidence of Salvadoran and Central American nationalism. In February, President Lemus asked Salvadorans to buy Central American goods. A new Salvadoran tariff law was adopted to promote purchase of Central American wares. Numerous meetings with representatives of other Central American states advanced the cause of regional economic integration. In April, El Salvador allowed its commercial treaty with Great Britain to lapse, partly as an effort to induce larger British purchases from El Salvador.

The political scene was stirred early in the year when Arturo Romero, a well-known political leader of antimilitary views, living in Costa Rica, was elected president of the National University of El Salvador by its faculty, students, and graduates. However, Romero declined the appointment. There were political overtones also to the annual student parade in May which was denounced by President Lemus as offensive to public morality and was condemned by the local Roman Catholic hierarchy. By July, preparations clearly were under way for the May 1960 elections of deputies to the National Legislative Assembly, now monopolized by the official Revolutionary Party of Democratic Unification. Two opposition parties were being formed, both apparently ready to make an issue of alleged military domination of national politics.

During his official visit to the United States on March 9–21, President Lemus discussed with President Eisenhower the economic problems facing Central American countries, particularly the difficulties created by the recent decline in world coffee prices.

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EMIGRATION. See IMMIGRATION.

EMPLOYMENT. See BUREAU OF EMPLOYMENT SECURITY; LABOR; and the Index entry, *Employment.*

ENDERBURY. See PACIFIC ISLANDS.

ENDOCRINOLOGY. Thyroid-Adrenal Interrelationships and the Serum Cholesterol.—Research workers at the Sloan-Kettering Institute for Cancer Research, New York City, have made a fundamental observation regarding the endocrine control of the serum cholesterol which may well represent a major breakthrough in the fight against atherosclerosis, the No. 1 killer of humans. When this observation was made, Drs. L. D. Hellman, H. L. Bradlow, B. Zumoff, D. K. Fukushima and T. F. Gallagher were studying the interrelationships of tri-iodothyronine, a metabolite of the thyroid hormone, and androsterone, a metabolite of adrenal androgens, in myxedema, a disorder of the thyroid with which hypercholesterolemia (excess of cholesterol in the blood) is often associated.

In order to more fully understand the significance of their rather complex observations, some background information will be helpful. Since the turn of the century, it has been well known that cholesterol is involved in the pathogenesis of atherosclerosis. In fact, cholesterol, when deposited in the walls of the arteries, is one of the substances that make the vessels "hard." Since cholesterol is found in many foods, such as fats and eggs, it has been common practice to try to lower the blood cholesterol through diet and thus prevent strokes and heart attacks. At least one reason why this approach has been notably unsuccessful is that the human body is capable of synthesizing cholesterol from almost any foodstuff.

Myxedema (severe hypothyroidism) usually causes marked elevation of the serum cholesterol, and often premature atherosclerosis. Treatment of the myxedema will bring the cholesterol back to a normal level. In fact, it is only in myxedema that elevated serum cholesterols can be dramatically and consistently lowered. Thyroid hormone has often been employed also in euthyroid patients with hypercholesterolemia, but without success.

Hypothyroidism results in a diminution of almost all of the body's metabolic functions, including a decrease in adrenal cortical secretions. The latter can be demonstrated by a reduction of the excretion of urinary 17-ketosteroids. This reduction is mainly at the expense of androsterone, an alpha 17-ketosteroid which is an excretion metabolite of adrenal and testicular androgens (male hormone-like substances). When myxedematous patients were given tri-iodothyronine, the serum cholesterols fell to normal and the excretion of androsterone increased, as might be expected. The startling observation made by the Sloan-Kettering investigators was that when androsterone was given to the myxedematous patients, their cholesterol levels also fell to normal. In other words, an adrenal steroid metabolite was found to have an action heretofore attributed to the thyroid hormone. Next, androsterone was given to euthyroid subjects with normal and elevated serum cholesterols, and the levels were also found to be lowered in these individuals.

Androsterone may be the prototype of a new class of substances with potential advantage in the treatment of hypercholesterolemia. Since androsterone production normally declines with age, and in view of the influence of this metabolite on the cholesterol level, it seems reasonable to suggest that these events may be causally related. Androsterone is not the sole factor concerned with the serum cholesterol, and the serum cholesterol probably is not the sole factor in the etiology of atherosclerosis. Nevertheless, a deficiency of androsterone may be one of the mechanisms involved in the pathogenesis of atherosclerosis.[1]

[1] *Journal of Clinical Endocrinology and Metabolism,* 19:936, August 1959.

Transcortin.—Drs. A. A. Sandberg and W. R. Slaunwhite, Jr., of the Roswell Park Memorial Institute, Buffalo, N.Y., report their investigations of transcortin, a corticosteroid-binding protein of the plasma. Cortisol (hydrocortisone) is bound to transcortin 6,000 times more strongly than it is to albumin. It appears that transcortin-bound cortisol is biologically inactive and not available for metabolism. When the cortisol concentration exceeds the binding capacity of transcortin, physiological effects appear. Transcortin capacity has been shown to be very low in new-born infants, and slightly increased in children and in patients with rheumatoid arthritis. The study of transcortin opens a new approach to the understanding of the physiology of the vital adrenal steroid hormones.

Female Sexuality after Adrenalectomy.—Drs. S. E. Waxenberg, M. G. Drellich, and A. M. Sutherland of the Memorial Hospital, New York City, studied women who had undergone total bilateral oöphorectomy and adrenalectomy for metastatic breast cancer. Neither breast cancer itself nor any previous surgery had as profound an impact on sexual behavior as did adrenalectomy. Ovarian ablation by itself does not radically alter sexual behavior once the reproductive organs have matured. It was concluded that the adrenal glands, more specifically the androgens (male hormone-like substances) of adrenal origin, play a critical part in maintaining the patterns of sexual behavior in the human female.

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ENGLAND. See GREAT BRITAIN.

ENGLISH LITERATURE. Much of the year's literary news was made by writers of a former generation, or by books written earlier in this century. On New Year's Day, 1959, E. M. Forster reached his 80th birthday, on which occasion he was widely hailed as England's greatest living novelist despite the fact that it has been 35 years since his last novel, *A Passage to India,* was published. W. Somerset Maugham, who was 85 on January 25, brought out what he insisted was his last book, a collection of essays, *Points of View* (London, 1958; New York, 1959), and embarked on a tour of the Far East. From the pen of the 87-year-old veteran writer, John Cowper Powys, came *Homer and the Aether,* a remarkable study of the *Iliad.* At the age of 81, the poet laureate, John Masefield, read portions of an unpublished narrative, *The Story of Ossian,* for the British Broadcasting Corporation.

Aldous Huxley's *Brave New World Revisited* (New York, 1958; London, 1959) showed that many of the "fantastic" prophecies Huxley had made in *Brave New World* (1932) had come true; furthermore, it predicted a future society quite as grim as that forecast in the earlier work. Devotees of Frederick Rolfe ("Baron Corvo") were gratified by the appearance of *Letters to C. H. C. Pirie-Gordon,* the first of ten sumptuously printed volumes of the correspondence of the eccentric author of *Hadrian the Seventh* (1904). In *Lost in the Dark Wood,* the first volume of a planned series entitled *Journey to the End of Time,* Sacheverell Sitwell, now in his 60's, began an investigation of the cultural significance of death. The book was richer in esoteric learning than in spiritual insight.

Certainly the year's most spectacular news event relative to English literature was the publication in the United States of the unexpurgated edition of D. H. Lawrence's *Lady Chatterley's Lover.* For 30 years, following its original publication in Florence in 1928, this edition was banned from importation into the United States because of its alleged obscenity. In 1959, after an unexpurgated American edition had been brought out, it was also excluded from the mails—an action which a federal court subsequently ruled to be in violation of constitutional guarantees of freedom of speech and press (see CENSORSHIP).

Fiction.—Toward the end of 1958, four novels appeared that were probably as distinguished as any published in 1959. Lawrence Durrell's *Mountolive,* the third volume of a proposed tetralogy, continued to unfold the complex and baffling events already introduced in *Justine* (1957) and *Balthazar* (1958). Unlike its lush and ornamental predecessors, *Mountolive* is written in a straightforward narrative style. Although Angus Wilson's *The Middle Age of Mrs. Eliot* disappointed some of his admirers because it lacks the venomous satirical tone of his earlier writing, it proved to be a subtly and solidly constructed study of a young widow's painful discovery that self-fulfillment cannot be attained by manipulating the lives of others. Iris Murdoch's fourth novel, *The Bell,* brilliantly and tragicomically depicts the disintegration of a lay religious community under the impact of uncontrolled erotic urges. *The Rack,* a remarkable first novel by A. E. Ellis, describes with clinical exactitude life in a tuberculosis sanatorium and a patient's losing fight against the disease.

From the practiced hand of Ivy Compton-Burnett came *A Heritage and Its History,* in which the author's familiar mixture of secret sin, family hostilities, and overpowering greed is made tolerable by her unfailing wit and by her wisdom about the seamier sides of human nature. David Garnett's novelette, *A Net for Venus,* modernizes the ironical legend of the love of Venus and Mars and the ultimate triumph of Venus' crippled husband, Vulcan. Walter Allen's *All in a Lifetime* (American title, *Threescore and Ten*) is a novel in which the narrator reconstructs the eventful decades of his life as a worker, a husband, and a father of three sons, one of whom, his favorite, is a ne'er-do-well. Muriel Spark's *Memento Mori* is a *tour de force* in that there are no major characters under 70. Miss Spark made macabre tragicomedy out of the idiosyncrasies and the enfeebled but persistent urges of senescence.

In *A Guest and His Going,* P. H. Newby drew on his personal knowledge of Middle-Eastern types to tell a hilarious, if farcical, tale of Anglo-Egyptian relations. With sympathetic insight, Pamela Hansford Johnson's *The Unspeakable Skipton* recounts the latter days of an expatriate Englishman resembling Frederick Rolfe, the devious devices by which he attempts to keep himself afloat, and his ultimate defeat by persons too strong for him to manipulate. *The Ruined Boys* (American title, *That Distant Afternoon*) by the poet Roy Fuller knowingly recounts the spiritual liberation of a sensitive boy as he becomes disillusioned with the masters of a second-rate public school headed for dissolution.

In his third novel, *A Travelling Woman,* John Wain renounces the social urgency of his earlier fiction to tell a complex but adroit tale of the unsuccessful attempts of middle-class males to brighten their lives by extramarital dalliance. In *Providence Island: An Archaeological Tale* Jacquetta Hawkes divertingly describes a group of English scientists who discover on an uncharted Pacific island a physically ideal race of survivors from the Paleolithic Age. The two cultures unite to frustrate atomic experiment plans of the U.S. Air Force.

Two second novels, John Bowen's *The Centre of the Green* and John Rosenberg's *A Company of Strangers,* using settings that shift from the English countryside to London, reveal the unwholesome complications that arise when there are destructive

hostilities within families. Alan Sillitoe's *Saturday Night and Sunday Morning,* which won the Authors' Club Prize in 1958, and his second book, *The Loneliness of the Long-distance Runner,* are regarded as authentic working-class novels.

Drama.—Despite the fact that revivals of Shakespeare and such successful American importations as Eugene O'Neill's *The Iceman Cometh* and *Long Day's Journey into Night,* as well as the musicals *My Fair Lady* and *West Side Story,* were among the most vital productions on the English stage, there was abundant evidence of a desire on the part of British playwrights to break away from the restrictions of the "well-made" play and the drawing-room drama so dear to the hearts of fashionable theatergoers. In the traditional vein, *Look After Lulu,* Noel Coward's characteristically brittle adaptation of French playwright Georges Feydeau's 1908 farce, *Occupe-toi d'Amélie,* met with a less than enthusiastic reception from the critics, although it was brilliantly acted by Vivien Leigh, Anthony Quayle, and George Devine. Closest to the upper-class drama popular with London's West End audiences was Hugh and Margaret Wilson's *The Grass is Greener,* a triangle comedy in which the lover is an American oil millionaire, and the husband, an English nobleman. Graham Greene's *The Complaisant Lover* also used the triangle theme; however, in this case the protagonists are definitely not upper class—a departure from the popular formula. Fresher in plot and more distinguished in execution was Michael Redgrave's dramatization of Henry James' *The Aspern Papers* —an adaptation which succeeded in projecting most of the subtle values of James' famous novel.

But there were also bold attempts to vitalize the English drama through the use of unfamiliar subject matter or novel infractions of the conventions of the "well-made" play." An example of this new type of drama is *A Taste of Honey,* a first play by Shelagh Delaney ("Britain's Françoise Sagan"), written when she was 18 years old. *A Taste of Honey* tells of a young girl who, in her struggle to run away from the sordid world in which she has been reared, is cynically betrayed by a Negro sailor. Faced with the prospect of giving birth to a Negro child, she is strengthened in her ordeal by the concern and tenderness of a sensitive, protective art student.

Arnold Wesker's play, *Roots,* first produced in Coventry, dealt unsentimentally but sympathetically with the unsuccessful effort of a young woman to escape from the cultural poverty of life among inarticulate Norfolk farm laborers. Another play by Wesker, *The Kitchen,* using as its setting the behind-the-scenes milieu of a great restaurant, presented a mode of life and work unfamiliar to most theatergoers. Brendan Behan's *The Hostage* did not quite succeed in its telling of the plight of a kidnaped British soldier who is to be hanged if his opposite number, an Irish Republican Army soldier held by the British, is not released.

Frank Norman, writing from a personal knowledge of the world of petty criminals and their lights-o'-love, offered *Fings Ain't Wot They Used T'Be,* which had its moments of truth and vitality but was too scattered in its effect to capture the drive of its American model, *Guys and Dolls.* Perhaps the season's boldest experiment was the musical, *The World of Paul Slickey,* by John Osborne, the most spectacular of England's Angry Young Men. The author-director's satirical whip flailed so wildly at everything he hates that the production failed sensationally.

Poetry.—No volume of poetry published in 1959 approached in popularity that of John Betjeman's *Collected Poems,* which sold more than 30,000 copies within four months of its publication in November 1958. Betjeman, who may be described as contemporary England's most distinguished minor poet, proclaimed with remarkable verbal and metrical dexterity his enthusiasm for quaint holdovers from Victorianism, and his detestation of the neon-lit vulgarities of the current scene.

Betjeman's great popularity, however did not completely overshadow two additional important publications: Ralph Hodgson's *The Skylark, and Other Poems* (1958) and I. A. Richards' *Goodbye Earth, and Other Poems* (New York, 1958; London, 1959). The Hodgson volume offers both early and later poems from the pen of this fastidious writer. Comparison of the early and more recent poems shows that the poet has sloughed off some of his romantic heritage and is increasing in subtlety and depth. I. A. Richards' first volume of poetry is so stylistically complex and intellectually subtle that it demands the sort of intensive critical analysis that formed the basis of Richards' reputation as the most influential critical theorist in English letters in the 20th century.

The contents of Robert Graves' *Collected Poems, 1959* belie its title, since the poet has ruthlessly eliminated poems from earlier collections that no longer measure up to his stern critical judgment. In *Eighty-Five Poems,* Louis MacNeice assembles examples of his own work that effectively illustrate the diverse categories in which his poems belong.

Among volumes by younger poets, Ann Ridler's *A Matter of Life and Death* struck no notes unfamiliar to her admirers, but continued with assured skill to exhibit delight in human love and tenderness. Christopher Logue's *Songs* ranged widely, and sometimes wildly, in mood. *The Cocks of Hades* by C. A. Trypanis (Kōnstantinos A. Trypanēs) gave modern interpretations of Greek myths.

Criticism.—Helen Gardner's *The Business of Criticism* was a lively attack on the excessive professionalism of much contemporary criticism, and a defense of the traditional proposition that "the critic's function is to assist his readers to find the values which he believes the work to have." Miss Gardner might well deem Christine Brooke-Rose's *A Grammar of Metaphor* (1958) to be an example of the professionalism she was attacking, since, in analyzing the relation between grammar and metaphor in the works of poets from Chaucer to Eliot and Pound, Miss Brooke-Rose seemed unnecessarily subtle. Less wide-ranging but equally preoccupied with fundamentals was Vincent Buckley's *Poetry and Morality,* a close analysis of the relationship between poetic and moral greatness in regard to the theories of Matthew Arnold, T. S. Eliot, and F. R. Leavis. *Epoch and Artist,* edited by Harman Grisewood, sets forth a theory of art by compiling the occasional critical pronouncements of the artist and poet, David Jones. On a more superficial level, *Vision and Rhetoric: Studies in Modern Poetry* assembled G. S. Fraser's lively but discriminating journalistic criticism of contemporary poets great and small.

An offering in the field of applied criticism, Martin Turnell's *The Art of French Fiction: Prevost, Stendhal, Zola, Maupassant, Gide, Mauriac, Proust* did not live up to the grandiose promise of its title. Because Turnell had already given lengthy consideration to his favorites, Stendhal and Proust, in an earlier volume (*The Novel in France,* 1950), here he combined only short studies of these authors' minor works with longer essays on the other writers listed in the title.

Of the works devoted to single writers, J. B. Beer's *Coleridge the Visionary* attempted with great learning and care to demonstrate the integral contribution Coleridge's philosophy made to his poetry. Herbert J. Hunt's earlier book about Balzac (*Honoré de Balzac: A Biography,* 1957) proved to be a valuable preliminary to his study of this year, *Balzac's Comédie Humaine,* in which he discusses the development of Balzac's art as it unfolds in his great series of novels. Barbara Hardy's *The Novels of George Eliot: A Study in Form* achieved surprising results by analyzing the style and symbolism of certain of Eliot's works that some critics felt would hardly sustain such treatment. Edward Stokes, in *The Novels of Henry Green,* examines the remarkable stylistic subtlety that contributes to the great distinction of Green's works.

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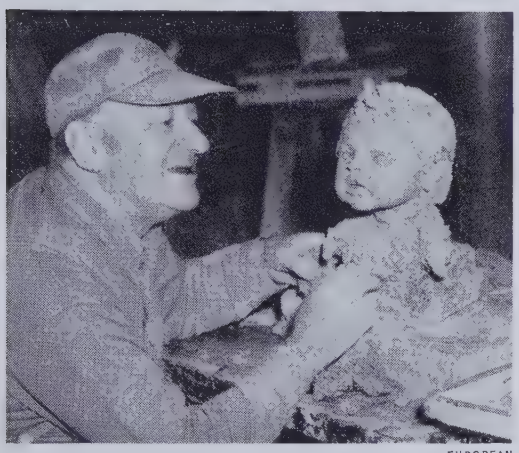
ENTOMOLOGY. See the Index entry, *Insects.*

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

EPSTEIN, SIR Jacob (78), British sculptor: b. New York, N.Y., Nov. 10, 1880; d. London, England, Aug. 19, 1959. At his death, Sir Jacob was still a storm center in the art world, but those who criticized as well as those who admired him recognized his eminence among contemporary sculptors. The late John Middleton Murry, famous English editor and critic, had said as long ago as

1920: "Epstein has succeeded to the position of Rodin, in the sense that to the contemporary mind, he is Sculpture."

Born on New York City's colorful lower East Side, Epstein started sketching as a boy and turned to sculpture when he was troubled by eye strain. In 1902 he went to Paris and the École des Beaux-Arts, but by 1905 had moved on to London, where he settled permanently. (He became a British citizen in 1910.) In 1907 Epstein was commissioned to do a frieze of 18 large figures for the new British Medical Association Building in London. Their unveiling in 1908 set off the first outburst of the public and artistic controversy that marked his career. Vehemently attacked by some newspapers



EUROPEAN

Sir Jacob Epstein, world-renowned British sculptor, shown here at work in his London studio, died on August 19.

and religious groups, the work was defended by the London *Times* and by artists who recognized the emergence of a gifted new vision in the plastic arts. In a succession of works, many on Biblical themes, he pursued his own intensely personal search for a true expression of his subject's reality, rejecting conventional, naturalistic forms whenever they seemed to him to detract from this reality. His statues and monuments were often of huge proportions and always of immense—and sometimes startling—vitality and power. Epstein called himself simply "an imaginative realist."

Among the better known of his large works are the marble Oscar Wilde memorial (1909) in the Père Lachaise Cemetery in Paris; a marble *Venus* (1917); *Christ* (bronze, 1920); the W. H. Hudson memorial in London's Hyde Park (Portland stone, 1925); *Genesis* (marble, 1931); *Ecce Homo* (Subiaco stone, 1933); *Adam* (alabaster, 1939); *Jacob and the Angel* (alabaster, 1942); and *Social Consciousness*, a bronze group in Philadelphia's Fairmont Park (1955).

Sir Jacob also produced a great deal of brilliant portrait sculpture—heads and busts done mostly in roughly textured bronze and all characterized by the same vigor and expressiveness. Among the many notables who sat for him were Joseph Conrad, George Bernard Shaw (an early and faithful friend), Sir Winston Churchill, Jawaharlal Nehru, Bertrand Russell, and T. S. Eliot. At his death he was at work on a half-length sculptured portrait of Princess Margaret.

In 1931 a "series of conversations on art" between Epstein and his friend, critic Andrew L. Haskell, was published as *The Sculptor Speaks*. Epstein's autobiography, *Let There Be Sculpture*, published in 1940, was revised and extended in 1955 in *Epstein: An Autobiography*. The artist was made a Knight of the British Empire in 1954.

ERITREA. An autonomous unit of Ethiopia, on the Red Sea coast of Africa. Estimated area, 48,000 square miles; pop. (est. 1950), 1,104,000. Asmara (est. pop., 120,000) is the capital. The population is mainly Coptic Christian and Moslem, and includes numerous nomadic tribes. An Italian colony before World War II, Eritrea was federated with Ethiopia in 1952, in accordance with a decision of the United Nations. Eritrea exercises home rule through an elected 68-member Representative Assembly and a chief executive chosen by the assembly. Cereals, coffee, tobacco, fruits, and dates are grown, and livestock is raised. There is also some light industrial and handicrafts production. Railroads total 191 miles. Middle East Airlines operate out of Asmara.

ESPIONAGE. See Index entry, *Subversive Activities*.

ESTONIA. An independent republic since 1918, Estonia was forcibly annexed by the USSR in 1940, and reannexed by force at the end of World War II as the Estonian Soviet Socialist Republic. The United States government does not recognize this annexation.

Area and Population.—Estonia's area is 17,370 square miles; its population (1959), 1,196,000. About 56% of the population is urban. The principal cities are Tallinn (Reval), the capital, 280,000 (1959); Tartu (Dorpat), 74,000 (1959); Pärnu, 36,300 (1956); Narva, 21,300; and Kohtla-Järve, 30,000 (1950). About 80% of the people are Estonians, a highly Europeanized ethnic group of Finno-Ugrian origin. Russians constitute the largest racial minority. The predominant religion is Lutheran.

Government.—The Estonian legislature consists of a single-chamber Soviet of 125 deputies elected for four-year terms. It rarely meets, and in the interim delegates its authority to an 8-man Presidium headed by Johann G. Eichfeld. There is also a Council of Ministers (cabinet) headed by Premier A. A. Müürisepp. The Estonian government has no political autonomy, however, and its chief function is to execute orders from the Kremlin. All key government posts are held by members of the Estonian Communist Party, which is headed by First Secretary Johannes G. Kabin.

Finance.—The 1959 governmental budget provided for the expenditure of 2,612,267,000 rubles ($653,066,750), an increase of 238,267,000 rubles ($59,566,750) over 1958.

Education.—School enrollment in 1959 totaled about 161,000, including 12,000 college students.

Transportation.—There are 905 miles of main railways and 433 miles of secondary lines. Although Estonia has 20 ports, Tallinn handles about 80% of all ocean-going traffic. Airlines link Tallinn with Moscow, Leningrad, and Riga.

Economy.—In 1959, Estonia's agriculture was largely collectivized. Of the 1,830,000 acres under cultivation, 68% was in 807 collective farms, 20% in state farms, and 12% in the gardens of factories and rural residents. The total acreage was smaller than before World War II and before Joseph Stalin's death. The chief crops are grain, potatoes, and flax. The Seven-Year Plan (1959–65) calls for Estonian agriculture to concentrate on livestock raising. The output of farm produce in 1965 is planned to increase over 1958 by the following percentages: grain, 60–80; potatoes, 90; other vegetables, 70; fiber flax, 80; meat, 60; milk, 80–90; and butter, 80.

The 1959 output of oil-bearing shale, Estonia's largest industry, was about 9 million metric tons, most of which was converted into gas and piped into Leningrad and Tallinn. The output of electricity was 1.4 billion kw.-hr., and the fish catch was 59,000 tons. The Seven-Year Plan calls for the production in 1965 of 16.5 million tons of oil shale, 6.4 billion kw.-hr. of electricity, and 130,000 tons of fish. The following percentage increases in 1965 output over 1958 also are planned: all industry, 80;

machinebuilding, 130; and cement, 500. The plan concentrates mainly on the expansion of the oil-shale, chemical, electric power, machinebuilding, textile, and fishing industries. In addition, 1,650,000 square meters of new government housing will be built.

Principal Events, 1959.—During 1959 the Estonian Communist press and government leaders constantly accused the public of bourgeois prejudices, chauvinism, bourgeois nationalism, worship of the capitalist past, and ideas of revising Marxism. This campaign reflected the prevailing unrest of the Estonian people against Russian rule, Communist persecution of the Lutheran religion, and the very low Soviet standard of living.

Refugees constantly escaping from Estonia report that the islands of Hiiumaa (Dagö), Saaremaa (Ösel), Ruhnu (Runö), Naissaar (Nargo, Nargen), and Muhu (Moon) have been converted into bases for long-range rockets. The Soviet Baltic Navy has transferred its main base from Kronstadt in Leningrad Harbor to the Estonian port of Tallinn.

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ETHIOPIA. An empire in eastern Africa. Estimated area, 457,300 square miles; pop. (est. 1957), 20 million (estimates vary widely). Chief cities: Addis Ababa, the capital (est. 400,000); Asmara, capital of Eritrea (120,000); and Diredawa, 40,000. The Amhara, the ruling minority, live chiefly in the central highlands. The Galla, forming somewhat less than half the population, are of Hamitic descent. Pastoral Danakil, Somali, and other Hamitic groups inhabit the east, and Nilotic tribes the southwest. Amharic is the official language, but many different languages and dialects are spoken by the various groups.

Government.—Emperor Haile Selassie I (b. 1891; crowned king 1928, emperor 1930) exercises virtually absolute power, although some steps have been taken recently toward democratic government. Under the 1955 constitution, the ministry was made partially responsible to Parliament, and the Chamber of Deputies was given a role in fiscal affairs. The emperor retains the power of veto over legislation. The Chamber of Deputies consists of 220 members elected by the people. The Senate is appointed by the emperor and may not exceed half the number of deputies. Eritrea (q.v.), federated with Ethiopia in 1952, has considerable autonomy in domestic affairs.

The Ethiopian Army obtains equipment from the United States and is trained by a United States military mission. United States advisers direct the state bank and aid in education, agricultural development, and other spheres. British nationals assist in the judiciary, customs, police, and schools. Italians, Yugoslavs, West Germans, and other nationals provide technical assistance in industry, construction, transport, and other fields.

Education and Religion.—Well over 90% of the population is illiterate and less than 5% of the school-age population attends school. In 1956 there were 610 public schools on all levels; primary pupils numbered 135,642; secondary, 2,628; technical, 1,435; teacher-training, 800. There are also many Coptic Church schools and other private schools. University College at Addis Ababa had 350 students in 1958–59. The Ethiopian Coptic Church is the state church, but other faiths are tolerated. Moslems are numerous in the south and east.

Finance.—The estimated budget (ordinary and extraordinary) for the fiscal year 1955–56 was: revenue, Eth. $115,010,000; expenditure, Eth.$130,410,000. Revenue derives largely from customs duties. The Ethiopian dollar equals U.S.$0.40.

Transportation and Communications.—Ethiopia has about 2,900 miles of all-weather roads and 6,000 miles of roads passable in the dry season. A road construction program is under way, aided by loans from the International Bank for Reconstruction and Development. The 487-mile Addis Ababa–Djibouti (French Somaliland) railroad runs for 421 miles in Ethiopian territory. The Massawa-Agordat railroad in Eritrea totals 191 miles. Domestic air service is provided by the government-owned Ethiopian Airlines, Inc. (operated by Trans World Airlines). Passenger cars in 1958 numbered 11,397; telephones, 8,422; daily newspapers, 5 (1956; total circulation: 10,000).

In full military regalia, Emperor Haile Selassie (right) and President Tito of Yugoslavia salute troops in Addis Ababa during Tito's visit to Ethiopia on February 3–12.

UPI

Production.—Over 90% of the population is engaged in subsistence farming or livestock raising. Despite an abundance of good land, the primitiveness of technique and inadequacy of transport make for low output levels. Chief food staples are teff, barley (est. 1957 output: 510,000 metric tons), wheat, corn, and durra. Pulses and oilseeds are also raised (est. annual linseed output: 50,000 metric tons). The large herds of cattle, sheep, and goats yield hides, skins, and other animal products. Coffee is the major commercial crop and the principal source of cash income; exportable output in 1958–59 totaled 700,000 bags (132.3 pounds each). Manufacturing is mainly confined to items for local consumption, such as cement, bricks, flour, beer, cheap cotton textiles, shoes, soap, and tobacco products. Manufacturing establishments with 10 or more workers numbered 144 in 1956; employees totaled 18,600; gross value of output was Eth.$72.6 million.

Foreign Trade.—Exports in 1958 totaled Eth. $143.4 million (down 25% from 1957); imports, Eth.$197.1 million (up 10%). Chief exports and values in 1958 were: coffee, Eth.$84.1 million; hides and skins, Eth.$15.4 million; oilseeds, Eth. $11.7 million; and cereals, Eth.$6.9 million. Imports are mainly cotton piece goods and cotton manufactures, motor vehicles, foodstuffs, and other manufactures. Ethiopia's principal trading partners are India, the United States, Japan, and Italy.

Principal Events, 1959.—Ethiopia's business depression, caused by the slump in world coffee prices, continued in 1959, and foreign aid played a greater role than in many previous years. On March 18, Addis Ababa announced that West Germany had agreed to extend credits of 30 million Deutsche marks for the purchase of machinery and agricultural equipment. The U.S. Development Loan Fund on August 6 granted a $500,000 loan for the construction of a textiles plant at Asmara, and United States gift shipments of 9,500 tons of wheat and 17,000 tons of sorghum helped alleviate famine in areas hit by locusts and drought.

Emperor Haile Selassie began a two-month international tour with a visit to the United Arab Republic on June 24–28. The emperor discussed division of the Nile waters with UAR President Nasser in Cairo, and negotiated a settlement with Coptic Church Patriarch Kyrillos VI of a dispute between the Egyptian and Ethiopian branches of the church. During his visit to the Soviet Union, June 29–July 13, the emperor obtained a low-interest Soviet loan of 400 million rubles for Ethiopian agricultural and industrial development. The emperor also visited Czechoslovakia, Belgium, France, and Portugal. He concluded his tour with

a visit to Yugoslavia, returning President Tito's visit to Ethiopia in early February.

In early December, clashes took place in the Ogaden area, adjoining British Somaliland, between nomadic Somali tribesmen from Ethiopia and British Somaliland. Twenty-six persons were reported killed in the border area, which is in dispute and has been the site of several intermittent clashes in recent years.

M. J. G.

ETHNOLOGY. See ANTHROPOLOGY.

EURATOM. See EUROPEAN ATOMIC ENERGY COMMUNITY.

EUROMARKET. See EUROPEAN ECONOMIC COMMUNITY.

EUROPE. A continent of the Eastern Hemisphere. Estimated area (exclusive of USSR and European Turkey), 1,903,000 square miles; pop. (est. 1958), 418 million (exclusive of USSR). (See articles on individual European countries, and the Index entry, *Europe.*)

EUROPE, Council of. See COUNCIL OF EUROPE.

EUROPEAN ATOMIC ENERGY COMMUNITY. This agency, authorized, like the European Economic Community (q.v.) by the Rome treaties of March 25, 1957, forms along with it and the older European Coal and Steel Community (q.v.) a complex of organizations linking France, West Germany, Italy, Belgium, the Netherlands, and Luxembourg ("the Six"). The three communities have separate executives, but they also have joint organs in the 142-member European Parliamentary Assembly, the Council of Ministers, and the Court of Justice.[1] (See EUROPEAN ORGANIZATIONS.)

Euratom (as it is often called) came formally into being on Jan. 1, 1958, but 1959 was its first real approach to a normal working year. And even this was a year of plans and beginnings, rather than of concrete achievements. Conditions were certainly unfavorable. The large surplus of coal available, which was causing such embarrassment to the Coal and Steel Community, offered little encouragement to go ahead with the construction of new and enormously expensive plants for the production of new forms of fuel—especially since these new plants would be subject to speedy obsolescence. The strong arguments on the other side—that Europe's economic growth was such that any fuel surplus was purely temporary, and that the supply of oil from the Middle East was precarious, fell on inattentive ears.

Nevertheless, some substantial progress was made. Steps were taken to implement the 1958 agreement between Euratom and the United States. On Aug. 16, 1959, the Export-Import Bank of Washington announced the signing of agreements under which credits totaling $135 million would be available to Euratom, to assist in financing purchase of United States-type nuclear power reactors to be installed in plants in member countries. After a period of pessimism in the spring and summer, when it seemed that much of the program might fall by the wayside, agreement was achieved in October on the building of atomic power plants in Italy, in Holland, in Germany, on the Meuse River between France and Belgium, and (where the need for a new source of fuel was greatest) in West Berlin. These five stations, however, were a reduction of the original plans for six, and the total capacity envisaged—750 megawatts—was a far cry from the first grandiose plans for a capacity of 15,000 megawatts.

Although Great Britain (like the United States) is not a member of the community, a United Kingdom–Euratom agreement for cooperation on peaceful uses of atomic energy was signed on Feb. 4, 1959, and cooperation on the "Dragon" project in Dorset[2] was going well.

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EUROPEAN COAL AND STEEL COMMUNITY. The ECSC came into being in 1952 to provide its six member nations—France, Italy, West Germany, Belgium, the Netherlands, and Luxembourg—with a common and free market for coal, iron, steel, and steel products. (For the structure of the ECSC, see EUROPEAN ORGANIZATIONS.)

The year 1959 brought the organization face to face with a critical test, whose outcome was deeply disappointing to supporters of the community. The central point was whether the member governments would accept the right of the community's High Authority to infringe sovereignty by imposing, in the interests of the community as a whole, policies which might be unwelcome to particular countries. This has always been the question in the minds of those who contemplated the seemingly formidable supranational powers of the High Authority. Although the existence of the community is not threatened, and the powers of the High Authority remain theoretically the same, it has suffered a severe setback in the refusal of member governments—particularly France and West Germany—to rise above national viewpoints to a "European" one.

The crisis arose out of excessive coal production within the six nations, a situation already serious in 1958. Statistics for the year 1958 showed that although production remained practically unaltered (247 million metric tons), demand was 11% lower than anticipated. Unsold stocks at the mines mounted from 12.3 million metric tons in April 1958 to 28.3 million in April 1959. The difficulties bore most severely upon the Belgian mines, economically the least efficient within the community.

To complicate matters, the term of the High Authority expired on Feb. 10, 1959, but the member governments repeatedly postponed appointing new members and the existing body had to carry on. In March the High Authority put forward a comprehensive four-point emergency program calling for a cut in imports, regulation of production, freezing of mine stocks, and the maintenance of miners' incomes. This program was disapproved by the Consultative Committee (which lacks the power of veto); accepted (April 14–16) by the European Parliamentary Assembly; and finally rejected (May 14) by the Council of Ministers. The Benelux countries voted for it, but France, West Germany, and Italy voted against it; such a decision needed four votes, including that of either Italy or West Germany, for acceptance.

The High Authority thereupon devised a stopgap series of temporary measures to deal with the problem of the Belgium mines. On June 24, Paul Finet of Belgium announced that he would not accept re-election as president. On September 11, the six governments named a new executive body with Piero Malvestiti (Italy) as president. Some continuity of policy was perhaps indicated as likely

[1] Étienne Hirsch (of France) was appointed president of Euratom's Commission on Feb. 2, 1959, succeeding Louis Armand. The Commission moved into a new 11-story headquarters building in Brussels, Belgium, during the year.

[2] The "Dragon" project for construction of a new type of nuclear power plant is under the joint sponsorship of Euratom, the United Kingdom, Austria, Denmark, Norway, Sweden, and Switzerland.

by the continued service of Finet as an ordinary member and the retention as first vice president of Dirk Spierenburg (Netherlands). The general dilemma of the nationalist assault, led by France, on the powers of the High Authority remained unsolved.

The other half of the community's activities, steel production, was booming throughout 1959. Output of crude steel in September (5.5 million metric tons) was the highest for any one month up to that time. Whereas coal production for the first nine months of 1959 was down 6% from 1958, steel output increased by 4.7%. Stocks of coal reached a maximum of 32 million metric tons in August and thereafter leveled off as increased demand and reduced supply began to balance.

(See also IRON AND STEEL.)

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EUROPEAN ECONOMIC COMMUNITY. Authorized by treaties signed at Rome on March 25, 1957, the European Economic Community, sometimes called the Common Market, formally came into existence on Jan. 1, 1958, but had its first actual working year in 1959. Along with the European Atomic Community (Euratom) and the European Coal and Steel Community (qq.v.), the economic community links France, Italy, West Germany, Belgium, the Netherlands, and Luxembourg. Its goal is to stimulate economic advances among the member nations by removing trade barriers. (For an outline of the community's structure, see EUROPEAN ORGANIZATIONS.)

The first modest step in carrying into practice the objectives of the community was taken on Jan. 1, 1959, when a 10% cut in tariffs and an average increase of 20% in import quotas were put into force. No obvious ill effects followed this measure; indeed, the member countries shared in the general economic upswing in the second half of 1959. The real test of member countries' economies, and of their reactions to the community, however, will come with the successive reductions in trade restrictions scheduled for subsequent years.

On May 6 the Council of Ministers (a common organ of the three communities) approved a $29.5 million budget for 1959 for the Common Market and Euratom, of which the Common Market's share was some $20 million. The Council of Ministers also took a step toward enlarging the community by approving the applications of Greece (July 25) and Turkey (September 11) to become associated with the community. It was not immediately clear, however, precisely what status an "associate member" would have.

Among proposals for future development of the Common Market, two are of particular moment. First, it is envisaged as possible that the European Parliamentary Assembly (a joint body of the three communities), at present chosen by and from the national parliaments of the members, might be elected directly by universal suffrage in the member countries. Senator Fernand Dehousse (Belgium), chairman of the committee which deals with the subject, said in May 1959 that direct elections might take place in 1962. Second, an acceleration of the various steps in reducing trade barriers between member countries, so that the elimination of trade barriers within the community would be completed by 1966 instead of 1970 or 1973, was proposed to the Council of Ministers in October by Belgium.

In December 1958 the community rejected (because of French opposition) the British proposal for a free trade area which would embrace, in addition to the six Common Market nations, the 17 member countries of the Organization for European Economic Cooperation (OEEC). Fearing the effect of the Common Market on their own commerce, the so-called Outer Seven countries (Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom) then turned to the creation of the European Free Trade Association among themselves. A preliminary agreement was reached in the Stockholm Plan (July 21, 1959), and a formal agreement among the Outer Seven was initialed on November 20. It was thus all too true, as *The Times* of London said on September 16, that European trade plans were "at Sixes and Sevens."[1] Among those who were most unhappy at the prospective division of western Europe into two trade camps was Dr. Ludwig Erhard, German economics minister, who used the slogan "6 + 7 + 5 = 1" to indicate that Europe's economic health demanded the intimate cooperation of the six Common Market countries, the Outer Seven, and the less-developed peripheral countries (Iceland, Ireland, Greece, Turkey, and Spain).

(See also EUROPEAN FREE TRADE ASSOCIATION.)

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EUROPEAN FREE TRADE ASSOCIATION. The convention establishing the European Free Trade Association (EFTA) was initialed in Stockholm, Sweden, on Nov. 20, 1959, by the so-called Outer Seven countries (Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom). A preamble to the convention stated that formation of the limited free-trade area was designed primarily as "a step toward an agreement" for a larger multilateral association among the 18 countries belonging to the Organization for European Economic Cooperation (OEEC). The convention described the objectives of the EFTA as the maintenance of full employment in the member nations, assurance of fair trade competition among the members, and development of world trade through the reduction of trade barriers. The members agreed to institute progressive mutual reductions in tariffs which would lead to their abolition by 1970 (excepting Portugal, which may extend its reductions to 1980). (For a discussion of the association's tariff policies, see INTERNATIONAL TRADE; TARIFFS.)

EUROPEAN MONETARY AGREEMENT (EMA). An agreement signed on Aug. 5, 1955, by members of the Organization for European Economic Cooperation (OEEC). The EMA came into force on Dec. 27, 1958, on which date most of the countries in the European Payments Union (EPU) made their currencies convertible for nonresidents, and the EPU was liquidated. The purpose of the EMA is to provide a multilateral system of balance-of-payments settlements among member nations and to ensure the effectiveness of intra-European trade liberalization measures. To aid in this purpose, a European Fund came into operation on Jan. 15, 1959, as the successor institution to the EPU, and received the balance of the capital funds of the EPU. The European Fund provides short-term credits (not exceeding two years) to member nations to assist them in temporary balance-of-payments difficulties. Up to Sept. 30, 1959, drawings on credits granted by the fund totaled only $32

[1] However, on November 24 "the Six" agreed to extend to other Western countries the mutual quota (but not tariff) concessions due to come into force on Jan. 1, 1960.

million ($24 million by Spain and $8 million by Turkey). Operation of the EMA is supervised by a 7-member board of management, which is named by the OEEC Council and is guided by the council's decisions.

EUROPEAN ORGANIZATIONS. The following international organizations are designed to achieve collective or cooperative action in political, military, economic, and other fields.[1]

Council of Europe.—Statute signed by 10 states in London, May 5, 1949. Purpose: to promote European unity through recommendation. Membership (1959), 15 states (see accompanying table). Headquarters: Strasbourg, France. Chief organs:
(1) Committee of Ministers (15)
(2) Consultative Assembly (135)
(3) European Court of Human Rights

European Atomic Energy Community (Euratom).—Treaty signed in Rome, March 25, 1957 (came into force Jan. 1, 1958). Purpose: to cooperate in atomic research and development. Membership: 6 states (see accompanying table). Headquarters: Brussels, Belgium. Chief organs:
(1) European Parliamentary Assembly (142)
(2) Court of Justice (7)
(3) Council of Ministers (6)
(4) Commission (5)
(5) Economic and Social Committee (101)
(6) Scientific and Technical Committee (20)

European Coal and Steel Community (ECSC).—Treaty signed in Paris, April 18, 1951 (came into force July 25, 1952). Purpose: to establish a free trade area in coal and steel. Membership, 6 states (see accompanying table). Headquarters: Luxembourg. Chief organs:
(1) European Parliamentary Assembly (same as that of Euratom)
(2) Court of Justice (same as that of Euratom)
(3) Council of Ministers (6)
(4) High Authority (9)
(5) Consultative Committee (51)

European Economic Community (or **European Common Market**).—Treaty signed in Rome, March 25, 1957 (came into force Jan. 1, 1958). Purpose: to eliminate trade barriers and link the economies of member nations. Membership: 6 states (see accompanying table). Greece was approved as an associate member on July 25, 1959; Turkey, on Sept. 11, 1959. Headquarters: Brussels. Chief organs:
(1) European Parliamentary Assembly (same as that of Euratom)
(2) Court of Justice (same as that of Euratom)
(3) Council of Ministers (6)
(4) Commission (9)
(5) Economic and Social Committee (same as that of Euratom)

European Free Trade Association (EFTA) or **Outer Seven.**—Convention initialed in Stockholm, Sweden, Nov. 20, 1959. Purpose: to establish a free trade area among member nations. Membership, 7 states (see accompanying table). Headquarters: Paris.

North Atlantic Treaty Organization (NATO).—Treaty signed by 12 states in Washington, April 4, 1949. Membership (1959), 15 states (see accompanying table). Chief organs:
I. North Atlantic Council (15); headquarters, Paris
II. Military Committee (14)[2]
A. Standing Group (3); headquarters, Washington
1. European Command
2. Atlantic Ocean Command
3. Channel Committee and Channel Command
4. Canada–United States Regional Planning Group
5. Other military agencies:
a. NATO Defense College (Paris)
b. Military Agency for Standardization (MAS)
c. European Military Communications Coordinating Committee (EMCCC) and other communications agencies
d. Advisory Group on Aeronautical Research and Development (AGARD)
III. International Staff/Secretariat; headquarters, Paris

(Note: for a more detailed outline of NATO's structure, see NORTH ATLANTIC TREATY ORGANIZATION.)

Organization for European Economic Cooperation (OEEC).—Convention signed in Paris, April 16, 1948. Membership (1959), 18 states (see accompanying table). On July 20, 1959, Spain became a full member of the OEEC. Headquarters: Paris. Chief organs:
(1) Council (18)
(2) Executive Committee (7)
(3) Secretariat

[1] Articles on Council of Europe, Euratom, European Economic Community, ECSC, NATO, and WEU will be found under their own headings.

[2] Iceland has no military representative, but may be represented by a civilian.

Western European Union (WEU).—Based on the former Brussels Treaty Organization created under the Brussels Treaty, signed on March 17, 1948, by the United Kingdom, France, Belgium, the Netherlands, and Luxembourg. On May 5, 1955, protocols signed in Paris on Oct. 23, 1954, came into force, transforming the Brussels Treaty Organization into WEU, with the Federal Republic of Germany and Italy as additional members. Chief organs:
(1) Council (7)
(2) Assembly (89)
(3) Civilian secretariat; headquarters, London

MEMBERSHIP IN EUROPEAN ORGANIZATIONS
(The letter "x" indicates membership.)

Country	Coun. of Eur.	Euratom	ECSC	Common Market	EFTA	NATO	OEEC	WEU
Austria	x	..	..	..	x	..	x	..
Belgium	x	x	x	x	..	x	x	x
Canada	..	..	..	..	..	x	..	..
Denmark	x	..	..	..	x	x	x	..
France	x	x	x	x	..	x	x	x
Germany, West	x	x	x	x	..	x	x	x
Greece	x	..	..	..*	..	x	x	..
Iceland	x	..	..	..	..	x	x	..
Ireland	x	..	..	..	..	..	x	..
Italy	x	x	x	x	..	x	x	x
Luxembourg	x	x	x	x	..	x	x	x
Netherlands	x	x	x	x	..	x	x	x
Norway	x	..	..	..	x	x	x	..
Portugal	..	..	..	..	x	x	x	..
Spain	..	..	..	..	..	..	x	..
Sweden	x	..	..	..	x	..	x	..
Switzerland	..	..	..	..	x	..	x	..
Turkey	x	..	..	..*	..	x	x	..
United Kingdom	x	..	..	..	x	x	x	x
United States	..	..	..	..	..	x	..	..

* Associate membership approved in 1959.

EUROPEAN UNION. See WESTERN EUROPEAN UNION.

EVENTS OF 1959. See the CHRONOLOGY at the front of this volume.

EXCHANGE RATES. In parallel measures announced on Dec. 29, 1958, most western European nations modified their exchange systems to permit nonresidents to exchange freely their holdings of the currencies of these countries for any other currency, including dollars. The western European move to external (nonresident) convertibility had an immediate impact in early 1959 on foreign exchange systems and markets around the world. Sixteen other countries, most of which were associated in a monetary area with one or the other European countries, promptly made similar adjustments in their exchange regulations. Switzerland, for example, abolished controls on payments for those countries and monetary areas that established external convertibility.

These new arrangements were not extended to all accounts—the principal exceptions being bilateral payment agreements and withdrawals of capital holdings—nor did they grant residents the right to obtain foreign exchange freely. During 1959, however, a number of countries did increase the exchange convertibility permitted to residents and, in the Federal Republic of Germany, the Deutsche mark was convertible for both residents and nonresidents.

The table on page 248 provides data on par values of currencies of various countries.

Important changes in exchange rate systems and practices within certain countries during 1959 are summarized below.[1] The exchange rates given are uniformly expressed in national currency units per U.S. dollar.

Argentina.—A single exchange market for all transactions replaced the previous system of multiple rates. The new system was put in operation on Jan. 12, 1959, and the

[1] For a more detailed account of exchange rate changes and for current information on exchange rate systems in general, consult *International Financial Statistics*, published monthly by the International Monetary Fund.

PAR VALUES OF CURRENCIES OF MEMBER COUNTRIES OF THE INTERNATIONAL MONETARY FUND
(As of Dec. 15, 1959)

Member	Currency unit	Par value (units per U.S. dollar)
Afghanistan	afghani	...[1]
Argentina	peso	...[2]
Australia	pound	.4464
Austria	schilling	26.00
Belgium	franc	50.00
Bolivia	boliviano	...[2]
Brazil	cruzeiro	18.50[3]
Burma	kyat	4.762
Canada	dollar	...[2]
Ceylon	rupee	4.762
Chile	peso	...[2]
China (Taiwan)	yuan	...[1]
Colombia	peso	1.950[3]
Costa Rica	colón	5.615[4]
Cuba	peso	1.000
Denmark	krone	6.907
Dominican Republic	peso	1.000
Ecuador	sucre	15.00[4]
El Salvador	colón	2.500
Ethiopia	dollar	2.484
Finland	markka	320.0
France	franc	493.7
Germany, Federal Republic of	Deutsche mark	4.200
Ghana	pound	.3571
Greece	drachma	...[3]
Guatemala	quetzal	1.000
Haiti	gourde	5.000
Honduras	lempira	2.000
Iceland	króna	16.28[4]
India	rupee	4.762
Indonesia	rupiah	...[1]
Iran	rial	75.75
Iraq	dinar	.3571
Ireland	pound	.3571
Israel	pound	1.800[4]
Italy	lira	...[1]
Japan	yen	360.0
Jordan	dinar	.3571[4]
Korea	hwan	...[1]
Lebanon	pound	2.191[2]
Libya	pound	.3571
Luxembourg	franc	50.00
Malaya	dollar	...[1]
Mexico	peso	12.50
Morocco	dirham	5.060
Netherlands	guilder	3.800
Nicaragua	córdoba	7.000[4]
Norway	krone	7.143
Pakistan	rupee	4.762
Panama	balboa	1.000
Paraguay	guaraní	...[2]
Peru	sol	...[2]
Philippines	peso	2.000
Saudi Arabia	riyal	...[1]
Spain	peseta	60.00
Sudan	pound	.3482
Sweden	krona	5.173
Thailand	baht	...[1]
Tunisia	dinar	...[1]
Turkey	lira	2.800[3]
Union of South Africa	pound	.3571
United Arab Republic:		
Egypt	pound	.3482[4]
Syria	pound	2.191[2]
United Kingdom	pound	.3571
United States	dollar	1.000
Uruguay	peso	...[1]
Venezuela	bolívar	3.350
Vietnam	piastre	...[1]
Yugoslavia	dinar	300.0[3]

[1] Par value not yet established. [2] No transactions in the exchange market take place at rates governed by the par value last agreed with the International Monetary Fund. [3] No substantial transactions in the exchange market take place at rates governed by the par value. [4] Not all transactions in the exchange market take place at rates governed by the par value.

unified exchange rate was quoted at 67 pesos per dollar. The rate depreciated during the year and was at about 83 pesos in November 1959.

Brazil.—During 1959 there was a significant devaluation in the exchange rate for both exports and imports. On Jan. 10 and July 1, 1959, export goods were reclassified into fewer categories, and the effective exchange rates (that is, official rate plus export bonus) for these categories were increased. The coffee export rate, for example, was raised from 37 to 60 cruzeiros per dollar in January and to 76 cruzeiros in July. Cocoa beans and certain derivatives received rate increases from 43 to 70 and then to 76 cruzeiros per dollar. Similarly, all other exports were made subject to a fixed rate of 100 cruzeiros or shifted to the fluctuating free market rate (about 194 cruzeiros in November 1959). Exchange for most imports continued to be made available (sold) in public auctions. This system was simplified following the introduction of nonresident convertibility for the European currencies. On Jan. 21, 1959, auctions of ACL (area of limited convertibility) dollars[2] and U.S. dollars were combined.

Chile.—On Jan. 27, 1959, the two fluctuating exchange markets, which had been established in 1956, were combined into a single market. The new single rate was quoted initially at 1,051 pesos per dollar, which was midway between the former free rates for trade and for financial transactions. During most of 1959 the exchange rate was about 1,053 pesos.

Cuba.—In late September 1959 exchange taxes were imposed on imports of less essential and luxury goods. The taxes ranged from 30% to 100% of the value of the import and applied to about 15% of imports.

Indonesia.—On Aug. 25, 1959, the export certificate system was abolished and a new basic exchange rate of 45 rupiah per dollar was established. Exports and most invisible receipts were subject to a 20% exchange tax, resulting in an effective buying rate of 36 rupiah. Imports considered essential to the economy were made at the basic exchange rate, but all others were subject to surcharges ranging from 25% to 200%.

Philippines.—Beginning July 17, 1959, a 25% margin over the official selling rate of 2.015 pesos per dollar applied to sales of exchange for most payments. About 16% of total imports were exempted from this tax and continued to be made at the official rate.

Spain.—A par value of 60 pesetas per dollar was agreed on with the International Monetary Fund on July 18, 1959. On the same date, a unified exchange system was introduced, replacing the multiple rate system which had been in effect since April 1957.

Turkey.—The system of rates in effect since August 1958 was simplified on Aug. 16, 1959. The special exchange rate for exports of opium, tobacco, and copper was abolished, thus reducing from three to two the number of buying rates. As before, a single selling rate of 9.02 liras per dollar applied to all imports and invisibles.

R. L. PRAETORIUS,
Economist, International Monetary Fund.

EXHIBITIONS. See FAIRS AND EXHIBITIONS; PAINTING AND SCULPTURE; and the Index entry, *Exhibitions*.

EXPLORATION. See ANTARCTICA; ARCTIC EXPLORATION; GEOGRAPHY AND EXPLORATION; INTERNATIONAL GEOPHYSICAL YEAR; SPACE FLIGHT.

EXPLORER SATELLITES. See SPACE FLIGHT.

EXPLOSIONS. See Index entry.

EXPORT-IMPORT BANK OF WASHINGTON. During the fiscal year 1959, in fulfillment of its basic purpose of facilitating and assisting in the financing of the overseas trade of the United States, the bank authorized 123 credits totaling $885.2 million to borrowers in 28 countries. As of June 30, 1959, the bank had 1,072 loans to 56 countries in its portfolio. The loans extended by the bank were both for development projects and for assisting United States suppliers to complete individual sales of United States equipment abroad.

During the fiscal year 1959, 209 credits totaling $131 million were authorized to meet the needs of overseas private enterprise for United States equipment and services. In addition, 27 credits totaling $480 million were made to governments or agencies of governments. These credits were given to finance exports of United States goods and services to 12 American republics, and to six countries in Europe, eight in Asia, and two in Africa.

Loans in local currency to private enterprise in other countries pursuant to Section 104(e) of the Agricultural Trade Development and Assistance Act of 1954, as amended, were made in 11 countries in amounts aggregating the equivalent of $30.8 million.

In the fiscal year 1959 the bank reentered the field of hotel financing and agreed to consider applications for dollar loans to be available only for the purchase of United States materials, equip-

[2] Currencies of the so-called Hague Club, a group of western European countries which have an agreement with Brazil whereby Brazilian earnings from transactions with each country would be pooled and made interchangeable.

ment, and services. Under certain circumstances the bank will also consider local currency loans in those countries where such currency is available.

The capital stock of the bank, amounting to $1 billion, is held by the U.S. Treasury. In addition, the bank is authorized to borrow from the Treasury amounts up to $6 billion, thus placing a ceiling of $7 billion on the loans and guaranties which it may have outstanding at any one time. On June 30, 1959, the bank had in its portfolio loan authorizations and guaranties totaling approximately $4.8 billion, leaving an uncommitted lending authority of approximately $2.2 billion.

For the fiscal year 1959 the bank's net income was $85.4 million, out of which the bank paid a dividend of $22.5 million to the Treasury, adding the balance of net earnings ($62.9 million) to its reserve for contingencies, which at the close of the fiscal year amounted to $549.8 million.

The cumulative total of credit authorizations as of June 30, 1959, was $10.2 billion. Total loans outstanding amounted to $3,462,562,963, and the unutilized portion of established active credits was $1,301,160,874.

EDWARD S. CONGER,
Acting Secretary,
Export-Import Bank of Washington.

EXPORTS. See INTERNATIONAL TRADE and the *Foreign Trade* section of articles on countries.

EXPOSITIONS. See FAIRS AND EXHIBITIONS.

EYE, Diseases of the. See OPHTHALMOLOGY.

FAEROE (or FAROE) ISLANDS. A group of 21 islands (18 inhabited) in the North Atlantic between the Shetland Islands and Iceland. Area, 540 square miles; pop. (1955), 32,380. Thorshavn (4,390) is the capital and chief city. The Faeroe Islands are a Danish possession, but the Faeroese exercise home rule through their own Diet and executive. The chief occupations are sheep raising and fishing (1957 fish catch, 105,600 metric tons). On April 27, 1959, a 3-year Anglo-Danish agreement on fishing limits was signed in Copenhagen, recognizing Faeroese control of waters within 12 miles of the coast. British trawlers were barred from fishing within 6 miles of the coast, but were permitted to operate between the 6- and 12-mile limits, subject to certain restrictions.

FAIRS AND EXHIBITIONS. The following article reviews major fairs and exhibitions in 1959 under two headings: (1) Agricultural Fairs; and (2) International Trade Fairs. For a reference guide to related subjects, see the Index entry, *Shows.*

Agricultural Fairs

During the past year or two some critics have declared that state and county fairs are going in too heavily for entertainment and are neglecting the basic idea of fairs, which is to provide an exhibition that will further the interests of the rural population by encouraging improvements in agriculture, horticulture, and livestock. A check of these charges indicates they are baseless. While entertainment has steadily increased, most fairs have also expanded their farm and home exhibits, adding new features to build interest in rural home life. Better entertainment brings larger audiences for all exhibits, as attested by the fact that sales of farm and home equipment through the country's 2,500 fairs now mount high into the millions.

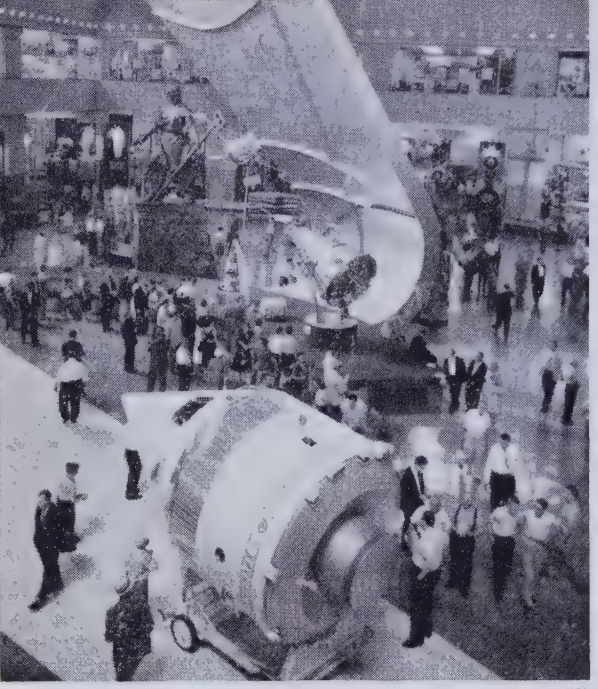
In spite of heat, rain, and polio scares, the 1959 fair season in the United States and Canada was generally satisfactory, and where good weather prevailed, new attendance records were set. The Minnesota State Fair at St. Paul, and the Los Angeles County Fair at Pomona, Calif., were in the million-attendance class, and the California State Fair at Sacramento was also high among the leaders, with 915,000 attendance. The Wisconsin State Fair at Milwaukee, which had as its feature attractions the Ringling Bros.–Barnum & Bailey Circus and Tennessee Ernie Ford, in ten days drew more than 700,000 attendance. The Illinois State Fair at Springfield, which featured Fred Waring and his Pennsylvanians and a "Grand Ole Opry" unit, drew over 320,000 in spite of rain on four days. Other top fairs were the Michigan State Fair (Detroit), with close to 800,000; New York State Fair (Syracuse), over 500,000; Nebraska State Fair (Lincoln), about 300,000; Iowa State Fair (Des Moines), over 400,000; Indiana State Fair (Indianapolis), about 475,000; Colorado State Fair (Pueblo), 290,000; and Missouri State Fair (Sedalia), 525,000.

The Texas State Fair (Dallas), the only United States fair that draws more than two million people, enjoyed record attendance in 1959. Its attractions included Red Foley, Mitch Miller, Herb Shriner, the McGuire Sisters, and a horse show offering $34,000 in premiums in the fair's new $2-million Coliseum seating 7,000.

Canada, with some 600 fairs, had a good year in 1959, but no record-breaker. Although most of its fairs are small, it also has some very large ones, including the largest on the continent, the Canadian National Exhibition, at Toronto, Ont. The exhibition in 1959 fell 50,000 short of its 1958 attendance mark of 2,960,000, largely because of rain and the prevalence of polio. In the West, the Pacific National Exhibition (Vancouver, B.C.) tallied 880,000; Regina Provincial Exhibition (Regina, Sask.), over 200,000; and the Edmonton Exhibition (Edmonton, Alta.), 396,000. In eastern Canada, the Central Canada Exhibition (Ottawa, Ont.) drew 525,000, and the Quebec Provincial Exhibition (Quebec), nearly 450,000.

Many fairs continue to expand their facilities. The Calgary (Alberta) Exhibition and Stampede in 1959 completed improvements valued at $2 million. Tulsa (Okla.) State Fair added a huge new exhibit building, and the Ohio State Fair (Columbus) expanded its facilities with a $450,000 arts and crafts building.

NAT GREEN,
Chicago Representative, "Radio-Television Daily"; Former Manager, Chicago Office, Ringling Bros.–Barnum & Bailey Combined Shows, Inc.



UPI

Vistors to the Soviet Exhibition in New York City (June 30–August 10) inspect examples of space age technology, including models of upper stage of rocket (foreground) and, beyond, cone-shaped Sputnik III and spherical Sputnik I.

International Trade Fairs

Interest in international trade fairs reached a high point in the United States during 1959 with the holding of fairs in Houston, Los Angeles, Portland (Oreg.), New York, and Chicago. Numerous foreign governments participated with collective national displays to keep their products before the American consumer and to increase their share of the American market. The six-nation European Economic Community (q.v.) exhibited at fairs in Chicago, New York, and Portland.

In Europe the international trade fair continued as an important market place among the nations. Although the large "horizontal" type samples fairs, such as those in Paris and Milan, continued to draw large attendance, a trend toward the specialized or "vertical" type show devoted to one industry or one field of endeavor was noted.

The United States government continued its program of active participation in international trade fairs on a partnership basis with private industry by presenting exhibits at 11 trade fairs and two "solo" exhibits. Displays of American products and services were organized by the U.S. Department of Commerce at fairs in Bari, Italy; Barcelona, Spain; Casablanca, Morocco; New Delhi, India; Lima, Peru; Paris, France; Poznań, Poland; Salonika, Greece; Tokyo, Japan; Tunis, Tunisia; and Zagreb, Yugoslavia. The "solo" exhibits were held in Calcutta and Madras, India.

Seeking to demonstrate how the requirements of modern living are served by a free and competitive enterprise, the United States exhibits featured tools for small industries in India; a full-scale American food supermarket in Spain; a "Main Street" of stores, including a typical American pharmacy, in Poland; color TV in Yugoslavia; and solar energy equipment in Tunisia. Since the initiation of the program of government participation in trade fairs abroad in 1954, there have been 73 official exhibits in 27 countries, participated in by 5,000 American contributors from private industry, and seen by more than 50 million persons.

In addition to the official exhibits, the Department of Commerce sent trade missions to 13 countries and organized 15 trade information centers at trade fairs throughout the world. The missions, directed by a government official and including three or four businessmen chosen from the executive and operating levels of private industry, spent from four to eight weeks abroad visiting important commercial centers.

The exchange of national exhibits in the fields of science, technology, and culture by the United States and the Soviet Union in 1959 created international interest and drew large crowds. The Soviet Exhibition of Science, Technology, and Culture was staged in the Coliseum in New York City, June 30–August 10, while the American National Exhibition in Moscow was held in Moscow's Sokolniki Park, July 24–September 4.

Seattle, Wash., proceeded with plans to hold an international science exposition, April 21–Oct. 21, 1962, to be known as Century 21 Exhibition; and a three-member commission appointed by President Eisenhower recommended New York City as the site of the next world's fair in the United States, tentatively set for 1964. Washington, D.C., and Los Angeles had also sought approval as the world's fair site.

On December 11, President Eisenhower opened

(*Left*) View of main building (a gold-anodized aluminum geodesic dome) of American National Exhibition, held in Moscow on July 24–September 4. (*Right*) Model of United States "paddle-wheel satellite," Explorer VI, attracts Russians at the fair.

KAISER ALUMINUM; WIDE WORLD

AMERICANA MAP BY DONALD T. PITCHER

the 5-acre United States exhibit at the World Agriculture Fair in New Delhi, India.

H. P. Van Blarcom,
Director, Trade Development Division, Bureau of Foreign Commerce, U.S. Department of Commerce.

FALKLAND ISLANDS. The Falkland Islands (aggregate area, 4,618 square miles) lie in the South Atlantic Ocean about 480 miles northeast of Cape Horn and form a British crown colony consisting of two principal islands—East Falkland (2,580 square miles with adjacent small islands), on which is Stanley, the capital and only town (est. pop., 1,135); and West Falkland (2,038 square miles with adjacent islands)—and a number of smaller islands and islets. In the Camp, as the countryside other than Stanley is known, the largest settlement (est. 100) is Darwin, East Falkland. There are two dependent island groups: (1) South Georgia (area, 1,450 square miles), the South Orkneys (240 square miles), and South Sandwich (130 square miles); and (2) the South Shetlands (1,800 square miles), and Palmer Peninsula (called Graham Land by the British) and Coats Land, which form part of the Antarctic continent. The all-European population on East and West Falkland, excluding dependencies, was estimated in 1958 at 2,253, exclusive of the whaling settlement on South Georgia, which fluctuates with the whaling season and in 1958 numbered 1,265.

A governor (Sir Edwin P. Arrowsmith, assumed office on April 25, 1957) is assisted by an 8-member Executive Council and an 11-member Legislative Council. Revenue in 1958–59 was estimated at £303,705; expenditure, at £309,453. Under a revised development program calling for the expenditure through 1958 of an estimated £16,886, progress was made on roads, which in Stanley total 12 miles. Education is compulsory. Government schools in Stanley had 147 pupils in 1958, including an all-range school with a continuation class for pupils over 14. At Darwin a boarding school has accommodation for 39 boarders as well as for day children; a smaller boarding school, at Port Howard, West Falkland, was completed in 1957. In 1958 there were also 11 one-room settlement schools and 9 traveling teachers who visit children in their homes. Expenditure on education in 1958–59 was estimated at £34,304. Maternal and infant welfare clinics are held at the hospital in Stanley.

On the principal islands sheep farming is the leading industry (sheep numbered 611,421 in 1958); in the dependencies, whaling and sealing, principally at South Georgia (3 stations in 1958–59). Hides and skins are exported to the United Kingdom, and live sheep (1,033 in 1958) to Chile. Aggregate imports were valued at £2,568,763 in 1958; exports, at £4,773,256. There is an internal government air service, which includes the transport of urgent hospital cases to Stanley and the experimental oversowing of grass seed. A ship of the Falkland Islands Company and a government motor vessel furnish interisland transport, and the former also conveys passengers and mail to South America.

FAMILY DATA. See Index entry, *Families*.

FAR EAST. During most of 1959 the Far Eastern scene was dominated by the activities of Communist China. Far larger than its neighbors in both area and population, China has embarked in recent years on a policy of bringing about revolutionary change in all the areas subject to her influence.

On October 1 the Communist regime in China celebrated the completion of its first decade in power. During this period the country had started upon a drastic program of centralization and industrialization. The construction of railways, steel plants, electric power stations, and housing projects, and many other aspects of economic development have been pushed forward ruthlessly, hand in hand with the extension over the whole country of an administrative system more efficient than any China has ever known. The achievements of the 10-year-old regime have immensely increased China's prestige throughout the Far East. While the process of hauling China by main force into

ALEXANDER IN THE PHILADELPHIA EVENING BULLETIN

"MOUNTAIN VISTA"

the modern age at an ever-increasing tempo has involved immense cruelty and suffering, this consideration is not likely to carry much weight among other Asian peoples, no strangers themselves to cruelty and suffering.

The new China has emerged as an almost equal partner of the Soviet Union in the leadership of the Communist world. The relations between China and the USSR remain enigmatic, but something of their main lines can be discerned. For the present, memories of recent insecurity are strong enough for the "hang together lest we hang separately" mood to prevail, but it is clear that the two countries do not always see eye to eye. During his visit to Peking on the occasion of China's 10th anniversary celebration, Soviet Premier Nikita S. Khrushchev spoke (as he had in the United States) of the desirability of peace and the need for conciliation. The Chinese did not respond in kind, however, nor did a joint declaration of policy emerge from the meeting.

Divergences of attitude between Peking and Moscow showed up most clearly in regard to the border disputes between China and India which flared up in 1959. Premier Khrushchev did not support China against India in these disputes, although such a course would have been automatic only two or three years ago. Instead, he urged moderation upon both sides, and in his closing speech to the Supreme Soviet on October 31, he expressed regret concerning border incidents between "our two friends."

The border disputes had existed in embryo for some years, though carefully disregarded by India. In August 1959 they flared up into a question receiving worldwide attention when Chinese troops occupied an Indian military post at Longju, several miles inside the border of India's North-East Frontier Agency. Only then, in response to public pressure, did the Indian External Affairs Department publish the extent of Chinese claims on Indian territory, as shown for several years on Chinese maps. The startled Indian public discovered that these claims amounted to some 32,000 square miles of territory. The most serious incident of all was the clash on October 21 in the Ladakh area in eastern Kashmir, in which an Indian patrol was driven back with a loss of 9 men killed and 10 captured. This incident served to throw into relief what had been known for some months—that over a period of two years, at first unknown to the Indian government or ignored by it, the Chinese had built a road through Ladakh no less than 40 miles inside India's border. This road connects Khotan, in Sinkiang, with Gartok, in western Tibet, and is by far the best route from China to Tibet.

The series of incidents gravely weakened the position of Indian Prime Minister Jawaharlal Nehru's government, which had based so much of its policy on the much-publicized "five principles of coexistence" with Communist China. Prime Minister Nehru's position was further weakened by what many Indians considered the overly conciliatory and even pedantic way in which he dealt with the issues.

It remained uncertain at the end of the year precisely how much territory China hoped to gain, or what her objective was in a policy that seemed likely to alienate one of her best friends. The most disquieting possibility was that China intended to assert to the uttermost her ancient claims to hegemony throughout southeastern Asia. Another possible explanation was that some of the territorial claims were merely bargaining counters, which China might concede if guaranteed undisputed possession of one useful concrete gain—the Ladakh road. Yet it was by no means certain that such limited concessions were all that China really wanted; and Indians were disturbed about the possibility of China's attempting to gain power in the three mountainous border states of Nepal, Sikkim, and Bhutan, each of which has been linked to the Chinese Empire in the past.

Earlier in 1959, relations between China and other Far Eastern countries (particularly India) had been troubled by the stern Chinese repression of rebellions in Tibet.[1] At the end of March the Dalai Lama, nominal ruler of Tibet, fled to India to escape Communist troops. Both the presence of the ex-ruler and his anti-Chinese statements to the press caused India embarrassment in its dealings with China.

Shelling of the offshore islands under control of the Nationalist government of Taiwan—one of the great threats to international peace in the fall of 1958—was sporadic and unimportant in 1959, and there was no serious attempt to dislodge the Nationalist garrisons. Yet the basic causes of tension in the Taiwan area remained. The Communist government of China continues to regard the island as an integral part of its territory, while the United States continues to oppose this attitude. The Taiwan situation thus has latent in it at all times the threat of world war.

Some straws in the wind indicated that there might be a gradual modification of United States policy—but only in the direction of the "two Chinas" solution, by which the United States would recognize Communist China in exchange for the Peking government's recognition of Taiwan as a separate sovereignty. A special report by Conlon Associates, commissioned by the Senate Foreign Relations Committee and submitted to it on Oct. 31, 1959, urged that United States foreign policy should work toward the "two Chinas" solution. Commenting on the report, Senator William Fulbright, chairman of the committee, stated, "While I do not believe that the United States should

[1] During the 18th century Tibet was a part of the Chinese Empire; but by 1903, Lord Curzon, then viceroy of India, described China's claim to sovereignty over Tibet as a "constitutional fiction." Since 1958, however, when Chinese armies invaded Tibet, the country has again been subject to China.

recognize Communist China at present in view of their continued belligerence, I do not believe it is wise to continue to ignore the 600 million people on the Chinese mainland in the naïve belief that they will somehow go away."

There was no sign, however, of readiness on the part of Communist China to accept the "two Chinas" approach; and the Soviet Union, though conciliatory to the West in regard to other aspects of Chinese foreign policy, remained adamant on this point.

Another troubled area of the Far East in 1959 was Laos, which claimed before the U.N. Security Council on September 7 that she was being attacked by her Communist neighbor, North Vietnam. The situation in the jungle country of northern Laos, where the fighting occurred, was obscure, but the fact-finding committee sent out by the United Nations (over Soviet protests) was unable to accept the Laotian version of the events. The committee established that the fighting was on a much smaller scale than had been indicated by the Laotian government, and that there were no North Vietnamese troops among the Pathet Lao rebels—although the rebels may have received training and supplies from Communist sources. In the face of these discoveries, the possibility of American intervention, never great, evaporated, although American material help and military advice continued to be given. In 1954, Laos had been designated as within the sphere of interest of the Southeast Asia Treaty Organization (SEATO), but in 1959 the SEATO members refused to allow the alliance to become involved in Laotian affairs.

During 1959 the arrogance and aggressiveness of China at length began to arouse the suspicion of many countries of Southeast Asia, and correspondingly to create more understanding among them for the policies of the United States. The most actively anti-Communist of these countries was newly independent Malaya, a Commonwealth member which has had to fight Chinese Communist guerrillas for 12 years. Malaya cosponsored (with Ireland) the resolution in the U.N. General Assembly condemning China's stern repression of the rebellions in Tibet (October 1959). Even in countries which formerly had been rigidly neutral, the same tendencies were seen. Newspaper comment, and to some extent even official policy, became more critical of China. Dr. Sarvepalli Rhadakrishnan, vice president of India, and Sudibjo, Indonesian minister for national mobilization, both refused invitations to visit Peking in the autumn of 1959; and the Indonesian government continued to have differences with China on questions regarding the national status of Chinese residents in Indonesia.

In several respects the developments of the year in the Far East could be regarded with satisfaction by non-Communist countries. The Chinese claims on Indian and Pakistani territory had an almost miraculous effect in improving relations between those two countries. Long-standing disputes regarding demarcation of frontiers and apportionment of the waters of the Indus were dissolved away in a few weeks in the fall, although the more important Kashmir problem remained unsettled. Although the future of parliamentary government was clouded in India by Prime Minister Nehru's lessening grip on the Chinese situation, and in Ceylon by the assassination of Prime Minister S. W. R. D. Bandaranaike (September 26), the parliamentary regimes of Japan, the Philippines, and Malaya and the semimilitary governments of Pakistan and Burma showed a satisfactory stability. In Pakistan, in particular, Gen. Mohammed Ayub Khan, who celebrated his first anniversary in power in October, had great achievements to his credit, having tackled his country's problems with energy and success.

WIDE WORLD

Police stand guard before Communist Chinese embassy in New Delhi, India, on September 6 as demonstrators protest China's violations of Indian border and its seizure of Tibet.

The successful conclusion in 1959 of protracted negotiations between the United States on the one hand and Japan and the Philippines on the other, regarding the future of the United States bases in these countries, showed that moderate concessions by the United States would satisfy nationalist demands in some cases at least, and would permit the United States to maintain many of its foreign bases for some years to come.

(For a discussion of President Eisenhower's visit to Pakistan and India in December 1959, see EISENHOWER and FOREIGN POLICY OF THE U.S.; and for other developments in the Far East, see the separate articles on the Far Eastern countries.)

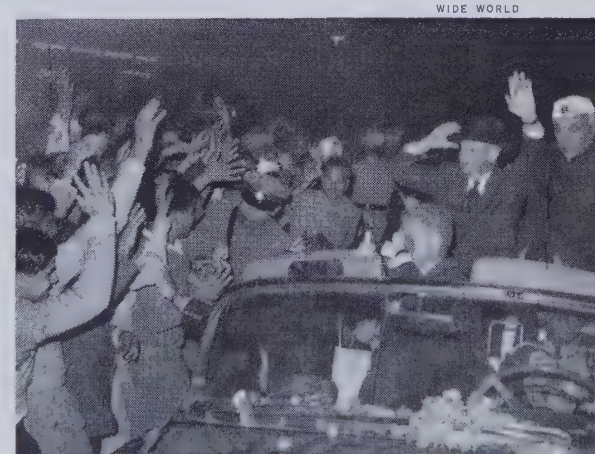
ARTHUR C. TURNER,
Professor of Political Science, and Chairman, Division of Social Sciences, University of California, Riverside.

FARM CREDIT SYSTEM. On June 30, 1959, farmers and their marketing, purchasing, and service cooperatives were using $4.4 billion in loans from the cooperative Farm Credit System supervised by the Farm Credit Administration. This was a record fiscal year-end peak and was $730 million, or 20%, more than a year earlier. During the year, farmers and their cooperatives obtained $3.9 billion in loans—also a record high—which was $862 million, or 29%, more than in fiscal 1958.

The Farm Credit System is composed of about 850 national farm loan associations and 12 federal land banks—a completely farmer-owned farm mortgage credit system; 495 production credit associa-

New Delhi throng surges around car carrying President Eisenhower and Prime Minister Nehru (right) in a spectacular welcome as the president arrives in India on December 9.

WIDE WORLD



tions and 12 federal intermediate credit banks—a system of operating credit for farmers; and 13 banks for cooperatives, which provide credit for farmers' cooperatives.

Again in 1959, farmers and their cooperatives increased their capital stock ownership. They owned $317 million in capital stock of the banks and associations on June 30, 1959, as compared with $268 million a year earlier. The increase of $49 million was the largest in any year in the history of the system.

The investment market provides most of the system's loan funds. In the 1959 fiscal year, Farm Credit banks sold a record high of $3.2 billion in bonds and debentures, which was $600 million, or 23%, more than in the previous year. Of this total, $880 million was in federal farm loan bonds, $1.9 billion was in federal intermediate credit bank debentures, and $464 million was in bank for cooperatives debentures. These securities are not guaranteed by the United States government in any way.

On June 30, 1959, farmers were using 374,000 long-term land bank loans, totaling a record $2.3 billion, obtained through local national farm loan associations. While the number of loans outstanding increased only 2%, the amount was up 14% from a year earlier. The $574 million in land bank loans was 67% more than in fiscal 1958; of this amount, $52 million was in loans to 9,000 part-time farmers.

Farmers' need for operating credit reached a new peak in 1959. They obtained $2.4 billion from their 495 production credit associations, an increase of 25% from the previous year. On June 30, 1959, 282,923 members of production credit associations had loans totaling $1.5 billion, an increase of 27% in amount from June 30, 1958. Total membership in these associations was 506,000.

The 12 federal intermediate credit banks extended credit totaling a new high of $3.2 billion in the fiscal year 1959. Of this amount, 92.8% represented loans and discounts for production credit associations; 7.2% was for other financing institutions rediscounting with them; and 0.1% was for banks for cooperatives. Loans and discounts of $229 million for other financing institutions compared with $190 million in fiscal 1958.

Farmers' cooperatives borrowed $637 million from the banks for cooperatives in the year ended June 30, 1959, which was 20% more than in the previous year. The 2,378 loans represented an increase of 24% in the year. The $526 million in loans outstanding to 2,689 farmers' cooperatives on June 30 represented an increase of 29% in amount and 7% in number, compared with a year earlier. Both the amount outstanding and the number of cooperatives borrowing represented new peaks.

R. C. Engberg,
Chief, Research and Information Division,
Farm Credit Administration.

FARM STATISTICS. See Index entry, *Farm.*

FARMERS HOME ADMINISTRATION. Farmers throughout the United States borrowed $361,629,000 in insured and direct loans from the Farmers Home Administration in the fiscal year 1959, compared with a fiscal 1958 total of $330,162,000. The agency closed a total of 99,358 loans during the year. Borrowers used approximately 52% of the funds for operating purposes, 37% for farm real estate purposes, and 11% to meet emergency credit needs.

Approximately 196,000 farmers used the agency's credit services in the fiscal year 1959, including those who borrowed in previous years. Farmers eligible for credit were those who could not obtain adequate loans from other local sources. Some 39,000 fully repaid their loans during the year. The total repaid was $347,700,000 in principal and interest, compared with $316,700,000 in fiscal 1958. As of June 30, 1959, outstanding loans totaled $1,117,397,000, compared with $1,068,000,000 a year earlier.

Operating loans totaling $188,500,000 were made to 74,405 farmers, who used the money to purchase fertilizer, fuel, and equipment and livestock needed for full use of land and labor resources, to provide for other farm and home operating needs, and to refinance certain chattel debts. The agency made and insured 4,452 farm ownership loans totaling $64,733,000 to buy, enlarge, or develop farms or refinance debts. Private lenders provided $35,733,000 of this total through the insured loan program. Loans totaling $60,674,000 were made to 8,186 additional farm owners to build or repair farm houses and other essential farm buildings.

Soil and water conservation loans to 854 individual farmers and 53 associations amounted to $7,468,000, of which $2,492,000 was insured. Loan funds were used primarily to develop irrigation and farmstead water systems and to carry out soil conservation measures. The agency also made three loans totaling $402,500 to groups under a new program which provides that certain organizations may borrow to help pay for planning and carrying out structural and land-treatment measures to protect and develop small watershed land and water resources.

Emergency loans totaling $39,851,000 helped 11,405 farmers to resume normal operations after losses and damages caused mainly by floods and droughts during the year.

Applications and loans were handled by the agency's approximately 1,500 county offices in 50 states and in Puerto Rico and the Virgin Islands. Local county committees determined applicants' eligibility, reviewed borrowers' progress, and helped adapt national policies to local conditions.

Kermit H. Hansen,
Administrator.

FASHIONS. Silhouette.—The spring of 1959 saw the return of the waistline to the silhouette. American designers retained the feeling of height and waistline definition from last season's Empire and Directoire influences but stressed the entire waistline area, from the natural point up, doing away with the Empire skimpiness. All collections included clothes that never go out of style—the shirt-dress, the neatly fitted or full-skirted dress. There were a few carry-overs from the chemise in the less rounded, more supple, but still unfitted lines of some dresses.

Puffy tops on clothes of all kinds made the torso look delicate and fine-boned. Large collars stood out around the throat or curved down around deep necklines. Loose kimono bodices had draped armholes, and wide "doll dress" sleeves made the arms and waist seem thinner. Skirts were gently plumped out at the hipline by folds and gathers, or were pleated high in front and at the normal waist in back, leaving the sides slender. The waistline—on everything from tweed suits to ball gowns—was often wrapped with sashes, from neat bands or the popular soft, draped suede belts to gorgeous bowed affairs of silk satin. Many collections featured body-hugging set-in waistbands.

Sleeves created the biggest silhouette news for spring—at least editorially. Sleeveless jumpers had underblouses with hugh flowerlike sleeves; suits

GEORGE ROWEN

The international scene took on a note of glamor in 1959 as the United States and the Soviet Union exchanged showings of their latest fashions. (*Left*) American models show off designs which delighted women at the American National Exhibition in Moscow. (*Right*) Russian models pictured in New York City, where they appeared at the Soviet National Exhibition.

and coats had deep kimono sleeves or sleeves cropped short in various lengths.

Necklines were generally low. Every New York collection showed low-necked suits and coats, not meant to be veiled by anything more concealing than pearls or a bib necklace. The larger the collar, the more appropriate it was to frame a considerable expanse of chest. Wide and deep V necklines were seen both day and night.

For fall there was a buoyant, lifted feeling about the silhouette, with a "back to normal" look and a form that allowed the individual to mark her own waistline. The shaped-in sheath was back, but sloping or puff sleeves, big cape collars, and draped scarf necklines gave a new width at the top. The "free form" cut showed the influence of modern painting. The sharp, clean outlines of an abstraction were seen in such effects as triple-stacked pleats, terraced tiers of varying widths, split tunics, and the subtle architectural structuring intricately worked out in the outer seaming or lining. Above all, dressiness went side by side with the so-called "little boy" or Madison Avenue look.

The favorite daytime neckline was the shallow, collarless oval; for night, the daring plunge. Coat collars were up around the chin, and those on suits and dresses out around the shoulders and down in front. The long evening gown, in all fabrics and price ranges, became important for fall and holiday collections.

Fabrics.—The fabric story for spring 1959 featured weightless woolens, loosely woven and pressed into flat mat surfaces—airy as a breeze. There were loose bouclés and basket weaves with a porous look, and many fabrics had a thin-and-thick effect, such as mohair loops, which added texture to the surface. Wool jersey made a comeback for coats and suits, and silk was found looking like everything but silk—slubbed for suits, printed with tweed patterns, in ottoman coats, or with the textured, grainy look of the wild Indian silks in natural colorings.

Checks, the bigger the more exciting, predominated in both wool and silk for sport or dress wear. Flower patterns were newly formalized and dark-toned, some reflecting wallpaper tracery that stood out in bold relief on pale grounds.

Embroidery and lace touched both day and evening clothes. Bouquets were embroidered on organdy and dots on linen. Tinted cotton thread lace formed patterns on slim linen dresses, and many suits and dresses had crocheted edging. Big flat lace collars created a pristine touch on dark silk dresses.

Fall fabrics were luxurious. For day, reversible coats and costumes brought in about-face wools, exciting combinations of smooth textures and brushed surfaces that made each seem richer by contrast. Classic checks, herringbones, and diagonals were discreetly textured for a tailored daytime look, and tweeds were bewhiskered with reindeer hair. Jersey hit a new high in fall popularity, for dresses and suits and even coats. All fabrics had a thistledown softness, and chinchilla, long-haired cashmere, velour, duvetyn, and lacy openwork mohair were newly important. Ottoman, too, was a new fall star, seen at its best in day and evening coats.

Evening fabrics were aristocratic, the simpler tailoring of new evening styles calling for more formal moires, cut velvets, luxurious brocades, or damasks inspired by motifs of the Middle Ages.

Color.—Spring colors were vivid, both light and dark, and luminous as jungle landscapes. Greens predominated, in all shades, with violet and lilac as high fashion favorites. Yellows ranged from lemon sherbet to a strong Spanish saffron; and off-whites, from oyster to rich cream, were particularly important in coat and suit fashions. Red was not as important, except in spicy paprika and dark carnation colors. Pinks were brighter—azalea, fuschia, and geranium-toned. Beiges prevailed in shades from oatmeal to tea brown, and washes of white included the rich unbleached tones. Black and white made many dramatic interplays, and cobalt blues gave an electrifying effect.

Fall colors were newly muted in 1959. There was an interesting range of acid colors and neutrals so interplayed that they seemed like colors. Brown, in every variation, was a favorite for smart, understated clothes, and taupe and lentil colors were rich neutrals for day wear. The men's-wear look returned gray to popularity in deep shades, and black was made a great variable by texture differences, appearing smoky in heavy weaves or glowing as licorice on smooth fabrics.

White was important, from early fall into the holiday and resort seasons, and pastels, particularly in soft wool flannel, jersey, and knits, added new excitement to color schemes.

Sportswear.—Sportswear has become an American fashion institution. From beach clothes to elaborate evening separates, the American woman's practical approach to fashion, along with her love of casual but glamorous clothes at moderate prices, has created for sportswear one of the most interesting places in the ready-to-wear field.

In beach wear, the two-piece bathing suit came back in 1959, in cuts from conventional to the bikini, replacing the covered-up look of last summer's wool suits. In the field of separates, the classic lines and distinctive tailoring of city wear were combined with the uncontrived manner of the country for casual weekend clothes of great smartness. Silk knits were in demand and proved excellent for travel costumes. Italian knit ensembles and beautifully coordinated

sweaters, dyed-to-match silk shirts, and rich tweeds highlighted sportswear sales. Skinny pants came in gaily printed jerseys and knits, in addition to the usual fabrics. The cropped jacket, in braid-bound tweed, velveteen, or printed cotton and jersey, topped all casual wear with ease and dash for city or country. At-home clothes became an important category in sportswear, featuring coveralls, pants, and long skirts in all fabrics from cotton to elegant brocades.

Shoes.—Shoes for the first part of 1959 assumed an airy look frequently brightened by color. Keyhole openwork, string lacings, or a single strap arching over the instep were characteristic. Leathers were soft and polished, with patent prevailing, and the fabric shoe was popular. A flattering trend toward a contour toe, flatter and more rounded, predominated all year, and there were new middling heels, some of stacked leather, for day wear. Fall shoes, like clothes, were designed with a new refinement and practicality. Lines were elongated, trim, and firm. The bootie look, with the long vamp, influenced both casual and town shoes. Fall textures were gentler, reflecting the classic lines of clothes. Evening shoes appeared in damasks, silks and woven metallics to match formal costumes. Soft slipper-shoes in travel packs were one of the year's popular successes.

Millinery.—Spring hats celebrated a return to shape along with the silhouette. The pillbox reappeared, sometimes with a jaunty turned-up cuff, and turbans spiraled in prints to match dresses. Some crowns were high and pointed, some soft and manipulated. There were small hats —tailored in shiny straw or caps of flowers—and large ones swathed in chiffon or flowers.

Bows and bands were popular in every price range and fabric, sometimes coordinated with the costume. Fall hats were feminine. For daytime there were neat profile brims and crushable toques of felt or jersey. Tiny velvet pillboxes were worn like a crown jewel. Some hats concentrated all the width on one side, others—calottes or turbans—could be set straight on the brow or tilted slightly. Derbies and fedoras appeared, along with the mannish mode, in velours and velvet femininely dressed with veils. Velvet was appropriate with all costumes in this season of elegance, and fur hats of all kinds made a great impact on the market. For evening, tiny pillboxes, haloes of rich materials, were sometimes marked with real jewels to match opulent costumes.

Accessories.—Belts, as noted before, made headlines in 1959. Hardly a dress or sports ensemble failed to draw upon a belt line, and wide crushed suedes and fitted calf were universal favorites. Casual costumes were enhanced by Paisley and foulard ascots and combining stoles in textured wools, bold plaids, bright mohair, or self fabrics. The fur-lined stole was an elegant evening accessory. Eight-button gloves in blending (rather than matching) colors were a stylish touch. A harvest of cut-velvet and tapestry handbags pointed up the wealthy look of daytime clothes, and a wide range of fur bags played a prominent part.

Spring jewelry blossomed in beautifully enameled and jeweled flowers. Beads were a highlight of the year—pastel gems and crystals tumbled together, smoky and less brilliant than in 1958. The new higher necklines gave popularity to chokers and high necklaces.

Men's Wear.—The year 1959 saw the Continental style challenging the Ivy League look in men's wear. Pattern became more predominant, and off-beat colors brightened the picture. Styling was more formal, and fabrics were richer. The Continental influence was seen in form-fitting trousers, often cuffless, and shorter jackets with side vents, semi-peaked lapels, and squarer shoulders. This American Continental style, which appeared simultaneously in quality stores and bargain basements, was described by the New York *Times* as "a consciously dressy model with an urbane, sophisticated look." The overall favorite, however, was still the three-button, single-breasted suit with natural shoulders and the squarish-cut front.

Country clothes broke all conventional standards. Pattern and color abounded, and odd jackets, casual hats, and vests gave new life to men's fashions. Still popular were the blazer with decorative buttons, the bulky sweater, and stadium coats in synthetic fur pile and fleece.

Awards.—Two designers shared America's top fashion honor in 1959. On October 1, Pauline Trigère, French-born New York designer, and James Galanos, California's brilliant creator, both won the Coty American Fashion Critics' Award for the second time and thereby joined Norman Norell and the late Claire McCardell in Coty's Fashion Hall of Fame. Miss Trigère also received the Seventh Annual Cotton Fashion Award.

ANNE FOGARTY,
Fashion Designer.

FATS AND OILS. World production of fats and oils and oil-bearing materials apparently declined somewhat in 1959. While estimated production of cottonseed reached a new high, and soybean production was only moderately below the 1958 peak, production of peanuts and flaxseed was substantially lower than a year earlier.

The United States, easily the world's largest producer and exporter of fats and oils, had its second biggest output of soybeans in 1959—538 million bushels. This was 7% less than the record crop of 574 million bushels in 1958, but 65% above the 1948–57 average. United States flaxseed production dropped sharply to 22.7 million bushels, 41% below the 1958 crop and 43% below the 1948–57 average. Cottonseed production of about 6.1 million tons was about 27% above 1958, and was the largest since 1953. Peanut production was 3% below average, and about 13% below 1958.

Lard output for the year ended Sept. 30, 1959, was estimated at 2,703 million pounds, up 269 million over the preceding year.

Estimated production of fats and oils from domestic materials in the United States for the year ended Sept. 30, 1959, was 16.7 billion pounds, compared with 14.9 billion for the preceding year and 15.6 billion pounds for the year ended Sept. 30, 1957.

U.S. PRODUCTION OF FATS AND OILS
(For years ending Sept. 30)

Product	1958	1959
	(millions of pounds)	
Butter	1,524	1,439
Lard	2,434	2,703
Cottonseed oil	1,418	1,587
Soybean oil and oil equivalent of soybean exports	4,739	5,460
Other food fats and oils	662	740
Inedible tallow and grease	2,749	3,134
Linseed oil	523	638
Tall oil	608	750
All others	278	244
Total	14,935	16,695

World output of soybeans for 1959 was expected to be second highest on record—about 944 million bushels. Although this production would be about 5% less than the 1958 record, it would be almost 40% above the 1950–54 average. The decline in soybean output in 1959 followed 5 years of increasing world production. It was due almost entirely to smaller production in the United States and Communist China. These two countries normally provide about 95% of the world total.

World production of peanuts was estimated at 14 million short tons, 9% less than the record high of 1958, but 20% above the 1950–54 average. Smaller outputs in India, mainland China, and the countries of former French West Africa accounted for the decline.

World flaxseed production was estimated at 117.2 million bushels, 10% below 1958 and slightly less than the 1950–54 average output. The sharp decrease in United States production was the principal factor in the decline.

World cottonseed production in 1959 was estimated at a record 22.8 million short tons, up about 4% from 1958 and almost 25% above the 1950–54 average. The improvement was due to increased United States production, which more than offset a decrease in Asian production.

WORLD PRODUCTION OF MAJOR OIL CROPS, 1959

	Soybeans	Flaxseed	Peanuts	Cottonseed
	(1,000 bushels)		(1,000 tons)	
United States	537,895	22,709	801.1	6,100
Canada	...	21,479	...	...
Mexico	...	630	...	821
China (Communist)	350,000	....	2,500.0	4,480
India	...	17,200	4,480.0	2,240
Africa	...	2,470	4,015.0	2,105
South America	5,512	27,020	728.0	1,490
All others	60,857	26,611	1,414.1	5,492
World total	944,480	117,200	13,965.0	22,770

World exports of fats and oils in 1959 were at a record high of over 8.5 million short tons. The United States accounted for 2.46 million tons

(compared with its 1950–54 average of 1.25 million tons), or about 29% of the world total.

C. J. ENZLER,
Information Specialist, Office of Information, U.S. Department of Agriculture.

FEDERAL AVIATION AGENCY. Created by the Federal Aviation Act of 1958, which was signed into law by the president on Aug. 23, 1958, the Federal Aviation Agency began operations on Dec. 31, 1958. It is an independent agency headed by an administrator who reports directly to the president. Creation of the FAA brought together into one organization the Civil Aeronautics Administration, the Airways Modernization Board, and the safety rule-making authority formerly vested in the Civil Aeronautics Board. Under the law, personnel from the armed services are assigned key positions in the agency's organizational structure to assure proper coordination and cooperation between civilian and military activities.

On Oct. 7, 1959, the FAA announced Project Friendship—a plan under which the agency, in accordance with the intent of the Federal Aviation Act of 1958, within two years would absorb most of the air traffic control functions and stations of the military departments, involving 2,095 military facilities at 337 locations.

Functions of the new agency are carried out by five major bureaus: (1) the Bureau of Flight Standards, which sets standards and maintains a check on the safety of aircraft, airmen, and air navigation and landing aids; (2) the Bureau of Research and Development, whose urgent task is the modernization of the air traffic control system to a semiautomatic basis by 1963 and to a fully automatic basis as soon as possible thereafter; (3) the Bureau of Facilities and Materiel, concerned with establishment and maintenance of air navigation aids, as well as with the development of public airports; (4) the Bureau of Air Traffic Management, concerned with air traffic control and the allocation of air space; and (5) the Bureau of National Capital Airports, which provides management responsibility for Washington National Airport and for the Dulles International Airport (which was under construction in 1959 at Chantilly, Va.).

The newly created post of civil air surgeon in the FAA calls attention to the importance aviation medicine and aeromedical research have attained in the field of nonmilitary flying. Technical advances in design, construction, and performance of aircraft present civil aviation with its own set of problems, not the least of which is the physical competency of pilots and air traffic controllers.

The FAA also has an Office of International Coordination which provides technical assistance to foreign countries and arranges training programs in the United States for foreign students, officials, and technicians.

In Oklahoma City, Okla., the FAA's Aeronautical Center provides a centralized facility for matériel, agency aircraft maintenance, flight inspection data processing, and personnel training.

At Atlantic City, N.J., the FAA maintains the National Aviation Facilities Experimental Center, which tests and evaluates much of the equipment and many of the systems and procedures proposed for the modernization of airways and air traffic control systems.

The FAA has six regional offices, each headed by a regional manager, located in New York, N.Y.; Fort Worth, Texas; Kansas City, Mo.; Los Angeles, Calif.; Anchorage, Alaska; and Honolulu, Hawaii.

The FAA operates 219,122 miles of airways which are 10 miles wide and extend between altitudes of 700 and 24,000 feet. The airways are served by 35 air route traffic control centers, which provide en route guidance to aircraft flying on instruments and maintain 300 airport towers for terminal traffic control. These facilities are linked by 157,652 miles of interphone lines and 113,587 miles of teletype circuits, through which the air traffic control data are transmitted.

Key navigational aids along the federal airways are the VOR's (very high frequency omnidirectional radio ranges) and the VORTAC's (combination civil VOR and the military tactical air navigation system, TACAN). By June 30, 1959, the FAA had in operation 592 VOR's and 52 VORTAC's.

To aid the FAA's air traffic controllers in monitoring flights along the federal airways, the FAA has stepped up its long-range radar installation program. In addition to the five long-range radars operating in 1958, 29 systems became operational in the fiscal year 1959, and 20 more were scheduled for commissioning by July 1, 1960. These high-powered radars are capable of detecting aircraft within a 200-mile range and up to 60,000 feet in altitude. Also, as a result of FAA-military cooperation, FAA personnel have been stationed at 28 Air Defense Command radar sites to give radar advisory service to the civil air carrier jet aircraft flying on the three jet transcontinental routes between the 17,000 and 22,000-foot altitude limits.

The FAA's airport surveillance radars, which can detect aircraft within a 50–60 mile radius up to altitudes of 25,000 feet, now number 47 operational units. By the end of 1961, 82 will be in operation.

These and other facilities, including the instrument landing systems, high-intensity approach light systems, and several newly installed "electronic brains" which are taking over the routine arithmetical functions of the air traffic controllers are the FAA's means for handling more efficiently the ever-increasing numbers of civil and military aircraft crowding the federal airways.

E. R. QUESADA,
Federal Aviation Agency Administrator.

FEDERAL BUREAU OF INVESTIGATION. The Federal Bureau of Investigation, with headquarters in Washington, D.C., maintains 53 field offices in major cities throughout the United States and in Puerto Rico. This investigative arm of the U.S. Department of Justice is strictly a fact-gathering and fact-reporting agency and neither evaluates the results of its investigations nor makes prosecutive recommendations. Charged with investigating violations of certain specific federal laws and collecting evidence in such cases, the FBI presently has jurisdiction over more than 150 federal matters encompassing both general criminal investigations and domestic intelligence operations.

The very nature of the FBI's work in the internal security field, of course, precludes publication of its highly confidential activities. Since 1939, however, the FBI has been vested by presidential directives with primary responsibility for combating internal enemies of the United States and with the duty of correlating internal security investigations. Nationwide in scope, this authority embraces investigative jurisdiction over subversive activities, espionage, sabotage, treason, violations of the Atomic Energy Act, and related domestic intelligence functions.

As the largest single subversive organization in the United States, the Communist Party, USA, is an integral part of the international Communist conspiracy which represents a threat to freedom. Recent activities reflect a renewed feeling of confidence and optimism throughout the party. Using blackmail, bribery, and similar techniques, Communist agents, many of them cloaked with diplomatic immunity, have stepped up their efforts to obtain the nation's military, scientific, and industrial secrets. Their primary targets are the establishment of a new Communist youth group and infiltration of American labor organizations and basic industries—particularly the automobile, steel, and railroad industries. Growing public complacency toward these Communist conspirators, continuing success of the Communist Party in employing legal technicalities and delays to thwart the interests of justice, and increasing boldness on the part of Soviet and satellite espionage networks—all contribute immensely to the investigative problems of the FBI.

In addition to the FBI's intensive efforts in the domestic intelligence field, the volume of investigations and accomplishments in the general investigative field continues to be high.

During the 1959 fiscal year, convictions in cases investigated by the FBI rose to 11,719, representing 97.4% of all persons brought to trial. Of these convictions, 93% were persons who pleaded guilty to the crimes with which they were charged. Sentences resulting from these convictions totaled 32,019 years, and six life sentences and fines totaling $1,421,141 were imposed. In addition, the FBI located 9,090 fugitives from justice, and savings and recoveries resulting from FBI investigations totaled $133,986,959. Included in the property recovered in cases investigated by the FBI were 16,957 stolen automobiles.

Cooperation with local, state, and federal law-enforcement agencies continues to be a major phase of the FBI's operations. On request, the services of the FBI Laboratory and the FBI Identification Division are available without cost to law-enforcement and to other federal agencies. Technicians in the FBI Laboratory handled 36,812 requests for assistance during the 1959 fiscal year. These requests involved 184,993 scientific examinations of 162,918 specimens of evidence. Each working day throughout the fiscal year, the FBI Identification Division received 19,713 sets of fingerprint cards—a total of 4,987,362 for the entire year. Fugitives identified through fingerprint comparisons totaled 16,435. At the close of the fiscal year, the Identification Division files contained a total of 152,594,022 fingerprint cards of all types, representing 74,791,407 individuals.

Also, on request, the FBI assists in training officers of municipal, county, and state law-enforcement agencies. In response to invitations from local authorities, the FBI participated in 2,556 local police training schools during the 1959 fiscal year. Two sessions of the FBI National Academy in Washington, D.C., were held during this period, bringing the total graduates to 3,722. More than 28% of these graduates currently hold positions as executive heads with their respective departments or agencies.

Regional law-enforcement conferences sponsored throughout the United States are also an integral part of the training program of the FBI. These gatherings serve as a medium for the mutual exchange of ideas and the analysis of pressing crime problems, and facilitate better understanding and closer cooperation among the participating agencies.

In addition to the annual law-enforcement conferences, the FBI also conducts annually a series of special conferences dealing with specific aspects of the crime problem. During the 1959 fiscal year, the FBI conducted special law-enforcement conferences across the nation dealing with such subjects as organized crime and racketeering, and bombings and threats of bombings against educational and religious institutions.

Among the other services of the FBI are the publication and distribution of pamphlets, charts, posters, and other printed materials dealing with various aspects of the crime problem and law enforcement.

The best known and most widely circulated of these publications are the *FBI Law Enforcement Bulletin* and the *Uniform Crime Reports* bulletin—both issued on a regular, periodic basis. The *FBI Law Enforcement Bulletin,* published monthly, contains editorials and articles relating to various aspects of the crime problem and investigative work. In addition to providing information concerning new trends and developments in law enforcement, it serves as a medium for the exchange of ideas throughout the profession. The *Uniform Crime Reports* bulletin provides a statistical analysis of the crime problem based on reports submitted by law-enforcement agencies throughout the United States. Police agencies voluntarily participating in the Uniform Crime Reporting Program represent over 97% of the nation's population.

(See also CRIME.)

J. EDGAR HOOVER,
Director, Federal Bureau of Investigation.

FEDERAL COMMUNICATIONS COMMISSION. The commission's regulatory activities in its 25th year of operation (fiscal year 1959) reflected both the substantial progress made in electrical communication in the past quarter of a century and continuous United States world leadership in this field. During the FCC's history, the number of radio stations of all kinds in the United States increased from 51,000 (in 1934) to over 507,000 (in 1959), and the number of broadcast receivers rose from 18.5 million to over 200 million (including 50 million TV sets), which represented two thirds of the world's total. Telephones in use, which numbered 17 million in 1934, totaled 70 million in fiscal 1959, or more than half of the world's aggregate.

The FCC received less than 10,000 applications of all kinds in its first year of operation and now handles nearly 600,000 annually. Its budget, which in 1934 was under $2 million, exceeded $9 million for the first time in the fiscal year 1959. The number of employees increased in the same period from 500 to 1,300. During fiscal 1959, Rosel H. Hyde was reappointed commissioner; John C. Doerfer was chairman of the FCC.

National Defense.—The FCC administers the CONELRAD (Control of Electromagnetic Radiation) program, designed to alert the nation in event of war, to thwart an enemy from using electrical transmissions as navigational aids for bombers and guided missiles, and to permit essential radio operations during an air attack. In cooperation with the Air Force and U.S. Weather Bureau, the commission utilizes the CONELRAD alerting system to warn the public about impending hurricanes, floods, and other natural disasters.

International.—Communication between the United States and 125 foreign countries is provided by four cable and six radiotelegraph carriers and one radiotelephone carrier. In fiscal 1959, international telegraphic traffic totaled about 22 million messages, and international telephone conversations, 2.7 million. International telegraph gross income increased to over $77 million in calendar year 1958; overseas telephone revenues, to $26 million. Another transatlantic telephone cable between Newfoundland and France was laid in fiscal 1959.

Common Carriers.—The $24 billion telephone industry (Bell System and about 4,000 independent companies) earned gross revenues approaching $8 billion in fiscal 1959. Dial telephone operation is possible on 94% of the Bell System and 80% of the independents; about 12 million subscribers can dial nearby points and another 8 million can dial long distance. In fiscal 1959 the Bell System, at the request of the FCC, reduced charges for interstate long distance calls by about $50 million annually.

Western Union, the domestic telegraph carrier, in the calendar year 1958 handled about 123 million land-line messages and grossed $240.7 million in revenues, a decline of $4.8 million from 1957. It operates 2,000 private-wire systems, 36,000 desk facsimile (Desk-Fax) machines, and a two-way telegraph system (Telex) between New York City and Chicago and with 24 Canadian cities. Its eastern microwave network was under extension in 1959 from Chicago to Kansas City.

Broadcast Services.—Broadcast authorizations for radio and TV stations (excepting remote pickup and other auxiliaries) numbered about 5,440 as of June 30, 1959. Of the 971 authorized TV stations, 566 commercial, 43 educational, and 158 translator stations were in operation. The number of TV channels reserved for education was 259. The FCC's ruling of Feb. 20, 1959, that news programs came under the "equal time" provision (Section 315) of the Federal Communications Act led to the passage of Congressional legislation specifically exempting broadcasters from the necessity of granting political candidates equal time facilities in certain news broadcasts. The commission requested legislation enabling it to authorize VHF (very high frequency) booster (repeater) stations under safeguards for the prevention of interference, and to regulate community antenna (CATV) systems.

Authorizations of AM radio stations increased in fiscal 1959 to 3,500, of which 3,377 were on the air. FM authorizations again showed a substantial

increase, totaling 934 stations, of which 776 were operating. The number of noncommercial educational FM stations increased from 157 to 165, of which 154 had authority to operate. During the year the commission ruled that daytime AM stations could not extend their hours of operation, but permitted local stations to increase their daytime power from 250 to 1,000 watts.

Safety and Special Radio Services.—Radio is employed for safety and navigational purposes by ships and aircraft, and is also used to expedite traffic, speed emergency medical service, contribute to police and fire protection, and increase industrial and commercial efficiency. In the 1959 fiscal year, FCC authorizations in nonbroadcast radio services increased to 511,907, which covered the use of about 1.7 million transmitters. As of June 30, 1958, authorized stations included: marine, 84,947; aviation, 77,682; public safety, 29,363; industrial, 49,697; land transportation, 59,894; amateur, 195,776; and miscellaneous, 14,548.

Field Engineering and Monitoring.—FCC field engineers, operating through 31 field offices and 18 monitoring stations, investigate about 24,000 interference complaints annually, and in fiscal 1959 uncovered 329 unlicensed radio operations, including 215 illegal TV boosters. The FCC monitoring network patrolled the radio spectrum, furnishing emergency bearings for ships and planes in distress. Another field operation is the processing of applications for high antennas involving aeronautical safety considerations.

Research.—Technical research activities of the FCC involve chiefly radio wave propagation, technical standards, and control of interference. The FCC laboratory at Laurel, Md., tests transmitters and devices before granting type-approval.

(See also RADIO AND TELEVISION; TELEGRAPHY; TELEPHONE.)

GEORGE O. GILLINGHAM,
Chief, Office of Reports and Information.

FEDERAL CROP INSURANCE. The 1959 operations of the Federal Crop Insurance Corporation were featured by a new experience record and development of a new plan of all-risk crop insurance which will provide farmers more choice in fitting the insurance to their needs.

For the first time in its history the corporation experienced a third consecutive year in which the premiums paid by farmers for its all-risk protection exceeded the indemnities paid to its policyholders. It required 71% of the 1959 premium income to pay indemnities, compared with 26% in 1958 and 69% in 1957.

The favorable 1959 insurance experience reflected another good crop production year nationally, although severe crop losses due to drought were suffered by farmers in many counties in the Dakotas and Minnesota. About 60% of the total indemnities paid in 1959 went to farmers in these three states. The loss was heaviest in South Dakota where the corporation paid over $4 million to farmers whose insured crops were destroyed or severely damaged. It required three times the premiums paid by South Dakota farmers to pay the losses in that state, while North Dakota collected sufficient premium within the state to cover the losses in those counties where crop failures were widespread. Minnesota had a 1.07 loss ratio.

The corporation's 1959 premium income exceeded $18.5 million, while the total indemnities paid will total between $12 million and $13 million when all claims are settled.

The new Guaranteed Production Plan developed by the corporation will be introduced into its 847 insurance counties during 1960 and 1961. Under this plan the corporation will guarantee the policyholder a minimum amount of good quality production. Any per cent that the policyholder falls below this guarantee will be his per cent of loss. The per cent of loss applied to the dollar amount of insurance he has selected from the choices available to him will give the amount of indemnity to be paid. This plan simplifies the all-risk insurance operation and at the same time offers farmers more choice than has been available to them previously.

In 1960 the all-risk insurance operations will include insurance on barley, dry edible beans, citrus, corn, cotton, flax, grain sorghums, oats, peaches, rice, rye, soybeans, tobacco and wheat. This insurance protection is against the unavoidable production risks beyond the control of the farmer, such as weather, insects, and plant disease. It is limited by legislation to a maximum of the cost of producing the insured crop in the area.

F. N. MCCARTNEY,
Manager, Federal Crop Insurance Corporation.

FEDERAL DEPOSIT INSURANCE CORPORATION. See BANKING.

FEDERAL HOUSING ADMINISTRATION. See HOUSING.

FEDERAL LAND BANKS. See FARM CREDIT SYSTEM.

FEDERAL POWER COMMISSION. Originally established in 1920, and organized in its present form as an independent agency in 1930, the Federal Power Commission has jurisdiction conferred by the Federal Power and Natural Gas acts, and other statutes and executive orders. The commission has five members, appointed by the president with the advice and consent of the Senate. The membership of the commission as of Dec. 1, 1959, was: Jerome K. Kuykendall, chairman; William R. Connole, vice chairman; Frederick Stueck, Arthur Kline, and John B. Hussey.

Natural Gas.—The commission during the year ended June 30, 1959, issued 198 certificates authorizing 4,900 miles of natural gas pipeline and installation of 613,000 compressor horsepower estimated to cost $763,000,000. Authorizations since Feb. 7, 1942, when the certificate provisions of the Natural Gas Act became effective, included nearly 85,000 miles of pipeline and more than 6,000,000 compressor hp., estimated to cost approximately $7,200,000,000. In addition to the pipeline certificate activities, 1,803 certificate and abandonment applications were filed by independent natural gas producers, 1,216 were disposed of, and 2,507 were still pending on June 30, 1959.

Electric Power.—The commission during the fiscal year 1959 acted on 110 applications relating to hydroelectric projects, authorizing 2,430,736 hp. of new ultimate capacity. On June 30, 1959, there were 613 licenses outstanding for projects designed to provide a total ultimate installation of approximately 32,191,240 hp.

In December 1958, loads of major electric utilities reached a peak of 116.9 million kilowatts, a growth of about 5.7 per cent in 12 months. Generating capacity increased 13.5 million kw. during 1958 to a total of 142.6 million kw.

Rates.—During the 12-month period ending June 30, 1959, approximately 1,724 gas pipeline and electric interstate rate filings were made. They included reductions amounting to approximately $1,994,800 and proposed increases of $166,086,300 annually.

The FPC permitted $3,858,500 of the proposed increases to become effective, and the remainder—about $162,227,800—were suspended. On June 30, 1959, about $234,241,100 per year of the suspended gas increases were being collected subject to refund. At the beginning of the year there was a backlog of $211,513,500 which, when added to the suspensions during the year, made a total of $373,741,300 in suspended rates requiring commission action. Companies withdrew $5,578,200, and the commission allowed $23,131,900 and disallowed $9,968,000. At the close of the year, the commission's dockets included $335,033,200 of proposed

rate increases, under suspension, which were filed during or prior to the 1959 fiscal year.

Independent natural gas producers made 8,769 rate filings during the fiscal year, including 2,042 rate increases totaling $58,868,737 annually. A total of 1,091 of these increases, amounting to $51,903,269, were suspended; and 951, totaling $6,965,468, were allowed. During the fiscal year 6 increases, totaling $1,914,030, were remanded by court order.

At the beginning of the 1959 fiscal year there was a backlog of $59,577,735, making a total of $113,395,034 in suspended producer rates requiring action during the year. Of this amount, $196,053 was disallowed, $1,552,041 was permitted to become effective, and $1,023,874 was withdrawn. Including the carryovers, the suspensions in the fiscal year 1958, and the cases remanded by the courts, there was pending on June 30, 1959, a backlog of $110,623,066 in suspended independent producer rates.

JEROME K. KUYKENDALL,
Chairman, Federal Power Commission.

FEDERAL RESERVE SYSTEM. See BANKING.

FEDERAL TRADE COMMISSION. Functions.—This federal regulatory agency was organized in 1915 to safeguard free and fair business competition in the United States. It is empowered to issue cease and desist orders prohibiting illegal methods of competition in the sale of goods and services. Possessing the widest jurisdiction of any trade regulation body, it has the power to halt illegal acts and practices in their incipiency as well as after their effects have been demonstrated.

Essentially, the commission's purpose is to prevent rather than punish unlawful business competition. Its original orders provide no penalty or punishment; however, if they are violated, the commission can institute court proceedings through the Department of Justice and obtain penalties against order violators up to $5,000 per day per offense. In 1959 this authority was extended to cover FTC orders issued under the Clayton Act as well as the Federal Trade Commission Act.

FTC orders fall into two broad categories: those designed to stop deception of buyers; and those aimed at monopolistic practices, such as price-fixing conspiracies and corporate mergers whose effect is to eliminate competition.

In addition, the commission employs procedures whereby businesses are aided in stamping out illegal competition by voluntary means. Instead of bringing actions against individual offenders, the commission issues trade practice rules for an entire industry. These rules clarify the law's requirements as applied to the particular practices in that industry. Should an industry member thereafter violate the rules (and hence the law), the commission would bring action looking to the issuance of a cease and desist order. The year 1959 saw effective use by the FTC of a companion procedure of issuing industry guides to clarify the law's requirements concerning: (1) a particular area of difficulty within an industry, or (2) a deceptive practice common to many industries.

The commission also makes studies of the nation's economic problems in which possible trade restraints exist. During 1959 it was engaged in such a study of concentration in the food industry.

In addition to its broad authority to proceed against "unfair methods of competition" and "unfair and deceptive acts and practices," the FTC also is charged with policing special statutes calling for truthfulness in the labeling and advertising of furs, woolens, and textiles. Responsibility for the latter was added in 1959 with the passage by Congress of the Textile Products Identification Act, whose provisions go into effect March 3, 1960.

Current Actions.—Case work during 1959 continued at a high level. A slight decline in the number of complaints was more than offset by a sharp increase in orders issued—an all-time high of 331, including 267 prohibiting deceptive practices and 64 halting monopolistic practices.

The commission's growing concern with threatened competition in the food field resulted in complaints challenging the acquisition of nearly 2,400 stores by two of the nation's largest retail food chains. In addition, 35 investigations of suspected monopolistic practices, such as price-fixing, were under way in mid-1959. At the same time, two of the nation's leading dairy companies were confronted by FTC charges of fixing prices for milk and dairy products.

Increased emphasis was given in 1959 to enforcement of the Robinson-Patman Act's requirement that a supplier give proportionally equal advertising and promotional services to all competing customers. Among the firms whose practices were attacked was the nation's largest newsstand chain for favoring publishers and distributors of widely circulated magazines. Another was a large eastern jewelry firm which induced discriminatory allowances from manufacturers of watches, costume jewelry, and movie equipment.

Among other significant antimonopoly actions were FTC attacks on 15 automobile tire and tube manufacturers and two trade groups for conspiracy to fix prices in their $2 billion industry, and complaints against two leading oil companies for fixing and maintaining retail gasoline prices.

The greatest number of complaints and orders continued to be directed at deceptive practices, and the principal target was fictitious pricing of merchandise. In this field alone, 117 complaints and 88 orders were issued, involving more than 45 products ranging from cultured pearls to prefabricated houses. At the same time, the commission encouraged the Better Business Bureaus to make a coordinated effort to halt the same evil in intrastate commerce where the FTC lacked jurisdiction. The result was one of the most spectacularly effective attacks on a business evil in the FTC's history.

Of noteworthy significance in 1959 was the FTC's appeal to the automobile battery industry to stop misleading the public on the meaning of guarantees for batteries. As a result, 21 major sellers of batteries signed stipulations agreeing to stop the misleading advertising.

Directing the work of the commission's staff are five commissioners who serve seven-year staggered terms. They are: Earl W. Kintner, chairman, Robert T. Secrest, Sigurd Anderson, William C. Kern, and Edward T. Tait.

S. F. STOWE,
Director of Public Information, FTC.

FEED GRAINS. See AGRICULTURE; GRAINS.
FENCING. See SPORTS, GAMES, AND SHOWS.
FERTILIZERS. See Index entry.
FIGS. See FRUITS.

FIJI. This largely self-governing British crown colony comprises 322 South Pacific islands (106 inhabited) lying 1,200 miles south of the equator and 1,100 miles north of New Zealand. Its aggregate area, including dependent Rotuma (18 square miles) is 7,040 square miles. At the 1956 census the population totaled 345,737, including 169,403 Indians, 148,134 Fijians, 6,402 Europeans, 7,810 part-Europeans, and 4,155 Chinese; it was estimated at 368,000 on July 1, 1958. The largest inhabited islands are Viti Levu (4,010 square miles), on which is Suva (the capital and chief seaport; pop. 36,967 in 1956), and Vanua Levu (2,137 square miles). About 72% of the total population lives on Viti Levu.

The governor of Fiji is Sir Kenneth P. Maddocks (appointed on Oct. 10, 1958). He is assisted by a 9-member Executive Council, including 1 Fijian and 1 Indian; and a 31-member Legislative Council, including 5 Indians and 5 Fijians. Fiji is administered in 14 *yasana* (provinces) and 76 *tikina* (districts) under a Provincial Council, the Fijians themselves having power to make bylaws, impose taxes, and administer justice in native courts. A Council of Chiefs advises the government on Fijian affairs.

Recurrent revenue for 1959 was estimated at £F6,728,764; expenditure, at £6,285,471 (£F111 = £100 sterling). Capital expenditure, including part of the cost of a new wharf at Lautoka, was estimated at £F2,943,312.

In 1959 schools numbered 557, including a teacher-training college and a medical school.

The mileage of proclaimed roads totals 948, of which 788 miles are usable in all weathers. Work was completed in 1959 to adapt Nandi (Nadi) International Airport to transpacific jet aircraft at a cost of nearly £F3 million. Internal services are operated by Fiji Airways, Ltd., and external services by Tasman Empire Airways, Qantas Empire Airways, and other major lines.

In 1958 a record output of sugar, the main agricultural crop, totaled 202,236 tons (1,531,304 tons of cane crushed, from 76,838 acres). Other leading products were copra (33,089 tons), bananas (184,603 cases), and cacao (introduced in 1956). Minerals included gold (86,794 fine ounces), silver (25,373 fine ounces), and manganese ore (18,295 tons). Light industry comprises copra milling, brewing, electroplating, button making from trochus shell, and the manufacture of tortoiseshell jewelry, clothing, cigarettes, precast concrete products, furniture, and curios.

Exports valued at £F14,045,398 in 1958 included raw sugar, £F7,252,431; coconut oil, £F2,249,114; gold, £F1,140,614; manganese ore, £F402,417; and bananas, £F163,192. Imports were valued at £F17,603,000.

FINANCIAL AND ECONOMIC REVIEW. Major financial and economic developments in the United States and Canada in 1959 are reviewed in separate articles on specific subjects. For a reference guide to these subjects, see the Index entry, *Financial and Economic Review*.

FINE ARTS. See ARCHITECTURE; DANCE; MUSIC; PAINTING AND SCULPTURE; THEATER.

FINLAND. A northern European republic bounded by Sweden, Norway, and the USSR, Finland has a total area of 130,119 square miles (9% inland water, 65% forests) and a population (est. Jan. 1, 1959) of 4,412,631, of which 37% is urban and 8.6% is Swedish speaking. The major cities are Helsinki (441,678), the capital, Tampere (122,000), Turku (120,000), and Lahti (63,000).

Government.—The chief executive is a president chosen by a popularly elected electoral college of 300 for a 6-year term; the incumbent is Urho K. Kekkonen, whose term expires on March 1, 1962. Presidential powers are substantial, especially in foreign relations. The unicameral Diet consists of 200 members chosen by universal suffrage for 4-year terms in direct and proportional elections. As of Oct. 1, 1959, party membership in the Diet was as follows: Finnish People's Democratic League (Communist controlled), 50; Agrarians, 47; Social Democrats, 37; National Coalition (Conservatives), 29; Swedish People's Party, 14; Social Democratic Opposition, 14; Finnish People's Party, 8; and Finnish Small Farmers, 1. An Agrarian minority government headed by Vieno J. Sukselainen came into power on Jan. 13, 1959 (see also below, *Principal Events, 1959*).

Education and Religion.—School attendance is compulsory between the ages of 7 and 16, and literacy is almost universal. A reorganization of the elementary system in 1958 established a 6-year primary school followed by a 2-year citizen school which stresses vocational subjects. As of 1957, there were 6,608 elementary schools with 25,212 teachers and 622,331 pupils. Postelementary education is offered at secondary vocational schools (320 in 1957) or at lyceums and middle schools (422 with 161,881 students in 1957). Higher and adult education takes three forms: universities and colleges (15 in 1959, including Helsinki University, the oldest, founded in 1640, and Oulu University, the newest, opened in 1959); people's high schools (83 in 1957); and workers' academies (91 in 1957). Most educational institutions qualify for government subsidies.

More than 93% of the Finns belong to the state-supported Evangelical Lutheran Church. The freedom of other faiths is guaranteed by the constitution.

Finance.—Government revenue in 1958 totaled 299,059 million markkaa (320 markkaa = U.S.$1), or 5% more than in 1957; expenditures, 292,666 million (4% over 1957), of which 11% was allocated to the maintenance of employment and 8% to agricultural subsidies. The national debt was 146,084 million markkaa, of which 78,996 million consisted of external debt. Budget proposals for 1960 called for expenditures of 334.7 billion markkaa, or 29.7 billion more than the 1958 budget and an all-time record.

Transportation and Communications.—Lakes, rivers, and canals provide 2,700 miles of navigable waterways, and there are 22,446 miles of highways and 18,723 miles of other public roads. In 1959, Finland had 3,220 miles of railroads, nearly all government owned; 753,007 gross tons of merchant shipping; and 203,900 motor vehicles, including 141,600 passenger cars. There were 524,600 telephones and 1,111,877 radios in 1957, and 16,126 television sets as of March 31, 1959. Two Finnish airlines, Aero Oy (Finnair) and Kar-Air, operated 21 commercial planes in 1958. As of Dec. 31, 1958, there were 112 daily newspapers, the largest being the independent *Helsingin Sanomat*, with a circulation of over 270,000.

Production.—While employing nearly 40% of the labor force, agriculture contributed only 11.7% to the national product in 1957. Finnish agriculture is characterized by the small size of the farms, the predominance of dairying and fodder production, and the pursuit of logging as a source of supplementary income. The output of major farm products (in thousands of metric tons) was as follows in 1958: wheat, 220; rye, 126; barley, 398; oats, 778; sown hay, 3,556; sugar beets, 250; potatoes, 1,438; butter, 74.5; and cheese, 22.5. In addition, 702 million eggs were produced. Production is rising, and surpluses of milk products, export subsidies, and cereal deficiencies are causing concern.

Industry accounted for 31.3% of the national product in 1957 and employed 21.2% of the labor force. The five largest industries in terms of the gross value of output are foodstuffs, paper, electricity, wood products, and textiles. Wood products, paper and pulp, ships, and machinery constitute the major industrial exports. The output of basic industrial products (in thousands of metric tons) was as follows in 1958: cement, 925; pig iron and ferroalloys, 101; copper, 31; and steel ingots and finished castings, 188. Consumption of electricity totaled 7,895 million kw.-hr. While the industrial production index (1953 = 100) declined from 134 in 1957 to 127 in 1958, the output of the woodworking industry increased by 10%. The net domestic product, at 941.3 billion markkaa, was 4% higher than in 1957; the index of the real national product (1938 = 100) was 160. The production index rose again in the first 6 months of 1959, to an average of 132. During the year a new copper-nickel mine, with an expected annual yield of 300,000 metric tons of ore (enough to make Finland self-sufficient in nickel), began operations at Kotalahti.

Foreign Trade.—Three factors influenced Finnish trade in 1958: reduced foreign demand, the 1957 devaluation of the markka, and the domestic recession. The volume index of imports (1954 = 100) declined from 123 in 1957 to 110 in 1958, and that of exports from 117 to 115. Imports were valued at 233,302 million markkaa and exports at 247,934 million in 1958, producing a favorable balance of 14,632 million, as compared with an unfavorable balance of 15,542 million in 1957. In the first 6 months of 1959, imports totaled 122,306 million, and exports 114,637 million. Gold and foreign currency reserves rose from 33.9 billion markkaa in 1957 to 55.4 billion in 1958, and stood at 62.6 billion on June 30, 1959.

The percentage distribution of imports was as follows in 1958: industrial raw materials, 47.6; other raw materials, 3.6; fuels and lubricants, 14.0; consumer goods, 13.9; and other finished goods, 20.9. That of exports was: wood products, 31.1; paper products, 46.5; metal products, 13.7; agricultural products, 4.3; and other goods, 4.4. Sterling area countries accounted for 25.6% of Finnish foreign trade in 1958; other members of the Organization for European Economic Cooperation, 36.6%; the Soviet bloc, 24.9%; the United States and Canada, 4.7%; Latin America, 4.5%; and other countries, 3.7%. The USSR furnished 18.0%

WIDE WORLD

Frightened doe bounds to safety in this dramatic photo of brush fire which swept across 250 acres of hilly land in the Santa Monica Mountains, near Ventura, Calif., in July.

of Finnish imports and took 17.3% of Finnish exports in 1958.

Principal Events, 1959.—The year opened with an unsolved governmental crisis provoked by the resignation on Dec. 4, 1958, of a coalition cabinet headed by Karl August Fagerholm, allegedly because of Soviet displeasure. On Jan. 13, 1959, Vieno J. Sukselainen formed an Agrarian minority government, and in a statement of policy singled out two serious problems: Finnish-Russian relations and mounting unemployment. Meeting in Leningrad on January 22–23, President Urho K. Kekkonen and Soviet Premier Nikita S. Khrushchev paved the way for the restoration of normal relations; a new ambassador, A. V. Zaharov, was appointed by Moscow on February 3, and a trade agreement for the year was signed on March 13. In June, Khrushchev cited Finnish-Soviet relations as a model for other Scandinavian countries. A new 5-year trade agreement for 1961–65 was signed by the two countries on October 22, and an agreement for 1960 on December 22.

Developments in European economic integration were closely followed in Finland. While disappointed in the failure of a purely Nordic plan to materialize, Premier Sukselainen indicated on July 11 his government's interest in the projected Outer Seven free trade area, but he stipulated that Finland could not accept any political obligations or supranational organs that might restrict its freedom of action in foreign affairs. On November 17 the Diet rejected (143–49) a Communist-sponsored proposal opposing Finland's participation in any economic bloc. Meanwhile, the government was exploring means by which Finland could participate in the arrangements planned by the European Free Trade Association (q.v.), established by the Outer Seven on November 20.

Unemployment, which reached a peak of nearly 100,000, or more than 7% of the labor force, in mid-March, declined to about 9,000 by July because of domestic and international economic recovery. The gross national product was expected to be about 3% higher than in 1958. Industrial expansion has been greatly aided by loans from the United States and the International Bank for Reconstruction and Development. A $37 million pulp and paper loan on March 16, 1959, brought total IBRD loans since 1949 to $102 million.

Domestic politics were lively, with such issues as reform of presidential elections and need for a coalition cabinet under debate. The leading cultural event of 1959 was the 9th Sibelius Festival.

JOHN I. KOLEHMAINEN,
Chairman, Department of Political Science, Heidelberg College, Tiffin, Ohio.

FIRES AND FIRE LOSSES. According to preliminary estimates of the National Fire Protection Association (NFPA), there were approximately 11,300 deaths and $1,275,000,000 loss from fires of all types in the United States during 1959. The final 1958 loss record completed by the NFPA indicates that approximately 1,993,600 fires caused the death of 11,500 persons and a loss of $1,278,808,000, as compared with 11,300 deaths and $1,279,926,000 in fire losses in 1957.

The notable change in the 1958 fire statistics was an $11,807,000 decrease in building fire losses, partially accounted for by a $56,768,000 decrease in manufacturing losses and an $18,962,000 decrease in mercantile losses. These decreases more than offset increases of $32,750,000 in dwelling losses and of $17,995,000 in losses of office and bank buildings. Fire damage to buildings and their contents was valued by the NFPA at $1,056,308,000 in 1958, $1,068,115,000 in 1957, and $1,016,000,000 in 1956.

The accompanying table shows the number of large-loss fires and the dollar losses involved. These 356 fires, comprising only 0.02% of the total number of fires, caused over 22% of the 1958 fire loss.

CLASSIFICATION OF LARGE-LOSS FIRES, 1958
(Individual loss of $250,000 or more)

Classification	Number	Dollar loss
Manufacturing	85	$ 52,260,000
Mercantile	81	37,167,000
Aircraft	50	129,550,000
Storage and warehousing	43	21,134,000
Schools	17	6,568,000
Residential	10	3,538,500
Forest fires	9	7,781,500
Piers and wharves	6	3,006,000
Amusement places	6	3,130,000
Clubs, night, city, and country	6	2,132,500
Lumberyards	5	1,677,000
Churches	4	1,166,000
Bowling alleys	4	1,919,000
Gas wells, pipelines, and related storage facilities	3	2,106,500
Marinas	3	1,202,000
Railroad rolling stock	3	2,250,000
Buildings under construction	2	572,000
Hangars	2	2,035,000
Office buildings	2	674,000
Public buildings	2	900,000
Roundhouses	2	1,181,000
Ships	2	1,992,000
Miscellaneous	9	4,749,000
Total	356	$288,691,000

According to the NFPA's Fire Record Department, there were approximately 866,700 building fires in the United States in 1958. Some 558,000 of these fires were in dwellings. The remaining 1,126,875 fires in other than buildings involved aircraft (175), motor vehicles (173,000), forests (97,900), rubbish, grass, and brush (810,000), and miscellaneous categories (45,800). These estimates indicate that there were 11.6 fires per 1,000 population, or one fire for every 86 persons. Similarly, there were 5.0 building fires per 1,000 persons, or one such fire for every 200 persons.

Children rank first (approximately 10 deaths per day) on the list of fire victims. More people (over 5,000 in 1958) die from fires in homes than

in any other type of building. Being trapped in a building contributed to the death of an estimated 84% of home fire victims.

(See also FORESTRY.)

HENRY G. THOMAS,
President, National Fire Protection Association.

FISH. See FISH AND WILDLIFE SERVICE; FISHERIES INDUSTRY; and the Index entry, *Fish.*

FISH AND WILDLIFE SERVICE, U.S. The year 1959 was highlighted by unusually satisfying achievements, with particular emphasis on legislation.

Legislation.—The Fish and Wildlife Coordination Act was revised and expanded to give greater recognition to fish and wildlife resources in the planning and execution of federal projects in which fish and wildlife are affected. Steps are being taken to implement the intent of the amended act in cooperation with other federal agencies.

Important amendments to the Migratory Bird Hunting Stamp Act raised the price of the stamp from $2 to $3, effective July 1, 1959, and authorized that all receipts from sale of the stamps, less costs of printing and distribution, be spent to acquire lands for waterfowl, effective July 1, 1960.

The Alaska Statehood Act and subsequent events provide for ending more than 50 years of federal management of Alaska's fish and wildlife resources. On Jan. 1, 1960, Alaska assumed complete responsibility for its sport fish and game resources and for the commercially important salmon fishery. The federal government will continue its research on salmon and other fish and game.

Wildlife Refuges.—The refuge system was enlarged by the purchase of 28,361 acres of land in 112 separate ownerships, and the reservation of 46,713 acres of land by executive and public land orders. Additions included the 4,400-acre Pixley Refuge in Tulare County, California, and the 7,700-acre Buffalo Lakes Refuge in Randall County, Texas—the result of two Department of Agriculture land transfers. In Alaska the Simeonof National Wildlife Refuge of 10,442 acres of land and water was established by the withdrawal of public land for the preservation of sea otter and other species of wildlife. The Migratory Bird Conservation Commission approved the purchase of two new refuges—the Mackay Island National Wildlife Refuge of 7,856 acres in North Carolina and Virginia, and the Modoc National Wildlife Refuge of 6,049 acres in northeastern California. The commission also approved the acquisition of 11,300 additional acres for 8 existing refuges.

In 1958 there were more than 9 million visitor-days of public use on the 270 national wildlife refuges. The recreational use of these areas has increased nearly 170% between 1951 and 1958. Visitor-days increased from 3.4 million to 9.1 million in this eight-year period.

Fish Hatcheries.—Congress provided funds to continue construction of new hatcheries at Garrison Dam, N.Dak., Gavins Point Dam, S.Dak., and Pisgah National Forest, N.C. Funds were available to start a new trout hatchery at Willow Beach, Ariz. A determined, planned effort is being made to explore the ground water potential at fish-cultural stations to supplement diminishing surface water supplies. As a result, additional water of good quality and temperature has been provided at a number of hatcheries. Production and distribution of trout and salmon from federal hatcheries increased 13% by weight above any previous year.

Exotic Bird Introductions.—Important progress is being made in the cooperative foreign game bird introduction program. Studies were made in western Europe, Japan, India, and Afghanistan. Introductions included Reeves pheasants, Japanese green pheasants, red-legged partridges, bamboo partridges, gray francolins, and black francolins. Distribution is made on the basis of recommendations by the Exotic Game Committee of the International Association of Game, Fish, and Conservation Commissioners, and the Fish and Wildlife Service.

Fishery Management.—Technical assistance in the management of the many fine sport fishing waters under federal ownership or control, either separately or in cooperation with the states, was provided to 225 areas in the fiscal year 1959. At least one million man-days of fishing can be credited to the assistance given such areas.

Insecticides and Pesticides.—As directed by Congress in Public Law 85–582, research was intensified on wildlife-pesticide relationships. Laboratory tests were continued on physiological effects of minute dosages of many insecticides, and field studies were carried on to determine the effects of control programs on the fire ant in the South, the Dutch elm disease in the North, and on grasshoppers in the Western states. Field studies disclosed heavy wildlife losses from the fire ant control program. Robins are most vulnerable in Dutch elm disease control.

Licenses.—Nearly a million more fishing licenses were sold in the United States in the fiscal year 1958 than in the previous year, but hunting licenses showed a decline of 154,000. The combined total of 34,941,729 licenses (20,177,605 fishing and 14,764,124 hunting licenses) sold to sportsmen exceeded all previous records and was an increase of 746,546 over the 1957 record of 34,195,183. The cost to hunters and anglers for all licenses, permits, tags, and stamps (excluding the federal duck stamp) was $99,018,130, an increase of $8,401,091 over 1957. Hunting licenses cost $53,607,668; fishing licenses, $45,410,462.

EDNA N. SATER,
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FISHERIES INDUSTRY. Landings.—Fisheries landings in the United States in 1958 were 1% less than in 1957, due to decreased catches of industrial fish. The catch in 1959, however, showed a large increase and was expected to be second only to the record catch of 1956. Monthly wholesale prices from April through October 1959 were lower than in the same period of 1958. In October 1959 the U.S. Bureau of Labor Statistics wholesale index for fish and shellfish was 121.1, or 8.5 points lower than a year earlier. Production of halibut, Alaska herring, jack and Pacific mackerel, menhaden, shrimp, and whiting increased in 1959. Sharp declines occurred in the landings of anchovies, haddock, Maine herring, ocean perch, salmon, and Pacific sardines. Demand for most fishery products was good during 1959, and marketing problems were less acute than they had been for a number of years.

The catch of fish and shellfish in the United States and Alaska totaled about 4.7 billion pounds in 1958. This total compared with nearly 4.8 billion pounds in 1957, and an anticipated 5.1 billion pounds in 1959. From 26% of this catch, together with 233 million pounds of imported herring, salmon, and tuna, packers produced 1,099 million pounds of canned products, worth $388,582,000. About 40% of the catch, together with processing waste and about 12 million pounds of imported herring, yielded byproducts and bait worth $80 million; 32% was used fresh or frozen; and 2% was cured.

Some 131,000 fishermen and transporters, op-

erating over 76,000 vessels and boats, made average catches of 36,700 pounds each in 1958. Fishermen received $370 million for the 1958 catch, almost $20 million more than in 1957. Processing of the catch (by 98,000 shore workers in 4,402 plants) and distributing it to the ultimate consumer increased the value to $1,150 million. In addition, imported fishery products, valued at $552 million were sold to consumers.

In 1958, for the 13th consecutive year, the menhaden fishery produced the industry's largest landings, a total of 772,300 tons. However, the catch was 276,000 tons below the record 1956 production. The 1959 catch was expected to be over 1 million tons.

The Pacific sardine catch, which had averaged over 500,000 tons annually from 1934 to 1945, totaled only 103,700 tons in 1958, but this amount was more than four times the 1957 production. The 1959 catch was expected to total only 30,000 to 40,000 tons. The canned Pacific sardine pack totaled 2.2 million cases in 1958, an increase of almost 350% over the 1957 pack, but the 1959 pack was expected to be less than 750,000 cases. The canned Maine sardine pack of 2,100,000 cases in 1958 was 5% less than the 1957 total, and the 1959 pack was expected to be about 10% smaller. The 1958 canned salmon pack totaled 3,732,000 cases, or 16% more than in 1957. The 1959 Alaska canned salmon pack of 1,770,000 cases was the smallest in nearly 60 years.

The 1958 canned tuna pack of 14,094,000 cases, including the output of Hawaii, American Samoa, and Puerto Rico, was much greater than in 1957, and established a new record. The 1959 pack was slightly smaller.

The canned anchovy pack in California declined sharply to 54,000 cases in 1958, 88% less than in 1957. A further sharp decline occurred in 1959.

Menhaden, herring, "trash" fish, and processing waste were utilized in 1958 to produce 248,000 tons of fish meal (valued at $31,780,000); 22,028,000 gallons of marine-animal oil ($12,333,000); and fish solubles ($11,519,000). Shell products were valued at $11,361,000. Production of fish meal, oil, and solubles in 1959 was much greater than in 1958 because of sharply increased catches of menhaden and Alaska herring.

Fresh fish landings in 1958 at Boston, Gloucester, New Bedford, and on Cape Cod, Mass., amounted to 516,387,000 pounds, valued at $37.2 million, a decline of 5% in volume but an increase of 9% in value from 1957 levels. San Pedro, Calif., led all ports in 1958 with landings of 190,000 tons, mainly tuna, Pacific sardines, and mackerel. Lewes, Del., received 135,000 tons, mainly menhaden; Reedville, Va., 125,000 tons, mainly menhaden; Gloucester, Mass., 115,000 tons, mostly ocean perch, whiting, and menhaden; Beaufort-Morehead City, N.C., 94,000 tons, mostly menhaden, croaker, and gray sea trout; Boston, Mass., 61,900 tons, mostly haddock, cod, and pollock; San Diego, Calif., 61,000 tons, mostly tuna; New Bedford, Mass., 55,800 tons, mostly flounders, scallops, haddock, and industrial fish; and Portland, Me., 31,200 tons, mostly ocean perch, herring, whiting, lobsters, and pollock.

Fur Seal Skins.—A total of 57,810 skins were taken in 1959 from the federally supervised fur seal herd on Alaska's Pribilof Islands in the Bering Sea. Dressed and dyed skins sold at public auction in St. Louis, Mo., averaged $103.23 in the fall of 1959, compared with $99.75 in the spring.

Whales.—A total of 261 whales was taken in 1958 by catcher boats operated from the two whaling stations located on San Francisco Bay. The whales were used for the production of whale and sperm oil, meal, and frozen animal food.

Frozen Fish.—On Nov. 1, 1959, frozen fish holdings in the United States totaled 239 million pounds, compared with 211 million pounds a year earlier. Freezings of 300 million pounds during the first 10 months of 1959 were about 6% more than those for the same period in 1958. Fillets (mainly ocean perch and haddock), shrimp, whiting, halibut, salmon, and bait and animal food made up the bulk of the freezings in 1959. Stocks of fillet blocks, cod and haddock fillets, and shrimp were considerably larger than in 1958, while those of salmon and whiting were much lower.

Foreign Trade.—Foreign trade in fishery products amounted to $358,175,000 in 1958, up 7% from 1957 levels. Imports increased by 10% to $327,171,000 and exports by 14% to $31,000,000. Imported edible products amounted to 991,471,000 pounds, valued at a record $280,212,000. Principal increases in imports in 1958 consisted of frozen tuna, salmon, shrimp, and canned salmon and sardines. Imported nonedible products, consisting principally of fish and whale oils, fish scrap and meal, cultivated pearls, and aquatic leathers, increased 1% to a value of nearly $47,000,000.

Edible products exported in 1958 decreased to 65,468,000 pounds, valued at $19,440,000, a decrease of 23% in volume and 5% in value as compared with the previous year. Exported nonedible products were valued at $11,564,000. Imports of shrimp during the first 9 months of 1959 totaled 70,335,000 pounds, 33% more than for the same period in 1958. Imports of fish meal during the first three quarters of 1959 amounted to 119,923 tons, 50% more than in the same period in 1958 and nearly 20% more than was imported in all of 1958.

A. W. ANDERSON,
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FISHING, Sport. See FISH AND WILDLIFE SERVICE; SPORTS, GAMES, AND SHOWS (*Fly and Bait Casting*).

FLAX. See TEXTILE INDUSTRY.

FLAXSEED. See FATS AND OILS.

FLEMMING, Arthur Sherwood, American public official: b. Kingston, N.Y., June 12, 1905. Taking office on Aug. 1, 1958, as secretary of health, education, and welfare, Flemming came from a long background of federal service.

Educated at Ohio Wesleyan University (B.A., 1927), American University (M.A., 1928), and George Washington University (LL.B., 1933), Flemming became director of the American University's School of Public Affairs in 1934, and was promoted to executive officer of the university in 1938. As one of three members of the U.S. Civil Service Commission from 1939 to 1948 he proved an able administrator in the field of personnel. During World War II he also served with the Office of Production Management (1941–42), the War Manpower Commission (1942–45), and the Navy Department's Manpower Survey Board (1943–44), and thereafter (1947–49, 1953–55) was a member of the so-called Hoover Commission on government organization.

Named president of Ohio Wesleyan University in 1948, he was granted a leave of absence in 1951 to become assistant to the director of the Office of Defense Mobilization. Later he served as its director (1953–57) and as chairman of the Defense Mobilization Board. He resumed the presidency of Ohio Wesleyan in 1957, until joining the Eisenhower cabinet.

In 1959, Secretary Flemming strongly backed two unsuccessful administration measures for federal aid for school and college construction. He told a news conference on June 4 that he opposed any such bill that did not treat federal aid to education as a temporary expedient, that did not require the states to match federal funds, and that did not take into account the overall fiscal situation. He fought a measure in Congress that would have brought health insurance for the aged under the Social Security System, although in December he admitted a need for federal action in the field of medical care for the aged.

In a late-year announcement (December 23),

Flemming reiterated his support for federal aid to school construction and, in connection with the National Defense Education Act of 1958, recommended a supplemental appropriation under its provisions for the student loan program and requested Congress to repeal the loyalty oath requirement from that program.

Shortly before Thanksgiving, Flemming made headlines by publicly announcing that some of the 1958 and 1959 cranberry crop had been contaminated with aminotriazole, a weed killer which he implied might produce cancer in humans if taken in large enough quantities. On December 10 the secretary announced a halt in the production and sale of chickens which had been treated with stilbestrol, an artificial hormone used to fatten poultry and beef cattle. As in the case of the cranberries, there was the implication that the chemical might produce cancer.

FLEXNER, Abraham (92), American educator: b. Louisville, Ky., Nov. 13, 1866; d. Falls Church, Va., Sept. 21, 1959. In a lifetime devoted to the improvement of higher education in the United States and Europe, he helped bring about much-needed reforms, particularly in the field of medical education.

The son of immigrants from Bohemia, Flexner attended Johns Hopkins (B.A., 1886). After graduation he taught in a Louisville high school and in 1891 founded his own preparatory school. Here his radical teaching methods brought great success and attracted wide attention. Following further study at Harvard (M.A., 1906), he attended the University of Berlin for a year and then wrote *The American College: A Criticism* (1908). Through this book he was introduced to the Carnegie Foundation for the Advancement of Teaching, which commissioned him to make an investigation of medical schools in the United States, the first education survey of note ever taken. Flexner's findings chastised the operation of all but 31 of the 155 medical colleges which he visited in the United States, as well as in Canada, and his report, *Medical Education in the United States and Canada* (1910), brought prompt and dramatic results. Nearly half the schools which he cited were forced to close, and the rest instituted reforms in standards and organization. His single report is credited with elevating the general status of American medical teaching.

In 1913 Flexner began a 15-year association as an executive with the General Education Board of the Rockefeller Foundation. In this capacity he was able to raise vast sums of money to use in improving academic standards in colleges and universities. From John D. Rockefeller, Sr., alone he was able to obtain nearly $50 million for medical education, and from other noted philanthropists he succeeded, on behalf of the General Education Board, in securing an additional half-billion dollars.

Flexner's idea of the university was that it should devote itself entirely to a classical curriculum; he had no patience with nonacademic courses and degrees, which he believed to be outside the proper realm of the university. In 1930 he moved toward fulfillment of this ideal by founding the Institute for Advanced Study at Princeton, N.J., through a contribution of $8 million by Louis Bamberger and his sister, Mrs. Felix Fuld. Flexner became its first director, serving until 1939, and induced Albert Einstein to leave Germany to become the institute's first professor.

The author of a number of books and pamphlets on education, Flexner wrote *Medical Education in Europe* (1912); *A Modern School* (1916), which led to the creation of the Lincoln Experimental School of Columbia University's Teachers College; and *Universities—American, English, German* (1930), based on the Rhodes Trust Memorial Lectures which he delivered at Oxford two years earlier. His autobiography, *I Remember*, appeared in 1940.

FLIGHT RECORDS. Unofficial Records.—Major flight records set in 1959 (aside from the official records listed below) include the following:

Maximum speed over a straightaway course: *World record*, 1,520 mph.—Maj. Joseph W. Rogers, USAF, with F-106 Delta Dart; Edwards AFB, Calif., Dec. 15, 1959.

Altitude: *World record*, 103,395.5 feet—Capt. Joe B. Jordan, USAF, with F-104C Starfighter; Edwards AFB, Calif., Dec. 14, 1959.

Maximum speed over a closed course: *World record*, 1,216.48 mph.—Brig. Gen. Joseph H. Moore, USAF, with F-105 Thunderchief; Edwards AFB, Calif., Dec. 11, 1959.

Rotorplane altitude record: *World "class" record for craft weighing between 1,750 kilograms and 3,000 kilograms (2,204.6 to 3,858 pounds)*, 29,770 feet—Capt. Walter J. Hodgson and Maj. William J. Davis, USAF, with Kaman H-43 Baker helicopter; Bloomfield, Conn., Dec. 9, 1959.

Official Records, 1958–59.—Flight records set after Aug. 1, 1958, and officially recognized by the Fédération Aéronautique Internationale by Dec. 1, 1959, include the following major records:

JET-POWERED AIRPLANES

Maximum speed over a closed circuit: *World record*, 1,771 km. per hr. (1,100.426 mph.)—Gerard Muselli (France) with Mirage III-A No. 03 monoplane; June 18, 1959.

Distance in a closed circuit without refueling: *World "class" record*, 10,032.64 km. (6,233.981 miles)—Lt. Col. Victor L. Sandacz, USAF, with Boeing B-52D monoplane; Ellsworth, S. Dak.-Newberg, Oreg.-Douglas, Ariz.-Ellsworth, Sept. 26, 1958.

Altitude without payload: *World "class" record*, 28,852 meters (94,635 feet)—Vladimir Iljiuchin (USSR) with T-431 monoplane; July 14, 1959.

Speed for 100 kilometers (62.137 miles) in a closed circuit without payload: *World "class" record*, 1,771 km. per hr. (1,100.426 mph.)—Gerard Muselli (see above).

Speed for 500 kilometers in a closed circuit without payload: *World "class" record*, 1,313.677 km. per hr. (816.3 mph.)—Capt. George A. Edwards, Jr., USAF, with McDonnell RF-101C; Edwards AFB, Calif., April 15, 1959.

Speed for 1,000 kilometers in a closed circuit without payload: *World "class" record*, 1,126.6195 km. per hr. (700.047 mph.)—Col. E. H. Taylor, USAF, with McDonnell RF-101C; Edwards AFB-San Francisco-Oakland-Edwards, April 8, 1959.

Speed for 2,000 kilometers (1,242.739 miles) without payload: *World "class" record*, 948.354 km. per hr. (589.279 mph.)—Capt. Charles E. Gibbs, USAF, with Boeing KC-135 Stratotanker; Spokane-Hoquiam-Spokane, Wash., Sept. 17, 1958.

Speed for 5,000 kilometers (3,106.849 miles) without payload: *World "class" record*, 961.867 km. per hr. (597.675 mph.)—Capt. Cholett Griswold, USAF, with Boeing B-52D monoplane; Ellsworth, S. Dak.-Houston, Texas-Waterville, Ohio-Ellsworth, Sept. 26, 1958.

Speed for 10,000 kilometers (6.213.698 miles) without payload: *World "class" record*, 902.369 km. per hr. (560.705 mph.)—Lt. Col. Victor L. Sandacz, USAF, with Boeing B-52D monoplane; Ellsworth, S. Dak.-Newberg, Oreg.-Douglas, Ariz.-Ellsworth, Sept. 26, 1958.

Altitude with payload of 1,000 kilograms (2204.622 pounds): *World "class" record*, 20,456 meters (67,096 feet)—Vladimir Smirnov (USSR) with monoplane Type RV; July 13, 1959.

Speed for 2,000 kilometers (1,242.739 miles) with payload of 1,000 kilograms: *World "class" record*, 948.354 km. per hr. (589.279 mph.)—Capt. Charles E. Gibbs (see above).

Speed for 5,000 kilometers (3,106.849 miles) with payload of 1,000 kilograms: *World "class" record*, 944.907 km. per hr. (587.138 mph.)—Capt. Charles E. Gibbs (see above).

Altitude with payload of 2,000 kilograms (4409.2 pounds): *World "class"* record, 20,174 meters (66,170.72 feet)—Vladimir Smirnov (USSR) with RV monoplane; July 29, 1959.

Speed for 2,000 kilometers (1,242.739 miles) with payload of 2,000 kilograms: *World "class" record*, 948.354 km. per hr. (589.279 mph.)—Capt. Charles E. Gibbs (see above).

Speed for 5,000 kilometers 3,106.849 miles) with payload of 2,000 kilograms: *World "class" record*, 944.907 km. per hr. (587.136 mph.)—Capt. Charles E. Gibbs (see above).

Speed for 2,000 kilometers with payload of 5,000 kilograms (11,023 pounds): *World "class" record*, 948.354 km. per hr. (589.279 mph.)—Capt. Charles E. Gibbs (see above).

Speed for 5,000 kilometers with payload of 5,000 kilograms: *World "class" record,* 944.907 km. per hr. (587.136 mph.)—Capt. Charles E. Gibbs (see above).

Speed for 2,000 kilometers with payload of 10,000 kilograms (22,046 pounds): *World "class" record,* 948.354 km. per hr. (589.279 mph.)—Capt. Charles E. Gibbs (see above).

Speed for 5,000 kilometers with payload of 10,000 kilograms: *World "class" record,* 944.907 km. per hr. (587.136 mph.)—Capt. Charles E. Gibbs (see above).

Greatest payload carried to an altitude of 2,000 meters (6,561.666 feet): *World "class" record,* 35,421 kilograms (78,089.5 pounds)—Capt. William H. Howell, USAF, with Boeing KC-135A Stratotanker; Westover AFB, Mass., Sept. 24, 1958.

Propeller-Driven Airplanes

Altitude with payload of 10,000 kilograms (22,046 pounds): *World "class" record,* 13,154 meters (43,156 feet)—Vladimir Kokkinski (USSR) with IL-18; Nov. 15, 1958.

Altitude with payload of 15,000 kilograms (33,069 pounds): *World "class" record,* 12,471 meters (40,915 feet)—Vladimir Kokkinski (USSR) with IL-18; Nov. 14, 1958.

Greatest payload carried to an altitude of 2,000 meters (6,561.666 feet): *World "class" record,* 53,478.5 kilograms (117,900 pounds)—Lt. Col. John K. Thompson and Capt. Rayvon Burleson, USAF, with Douglas C-133A Cargomaster; Dover, Del., Dec. 16, 1958.

Light Airplanes, 1,750 to 3,000 Kilograms (3,858.1 to 6,613.9 Pounds)

Airline distance: *World "class" record,* 12,341.26 kilometers (7,668.48 miles)—Max Conrad (United States) with Piper Comanche 250; Casablanca-Los Angeles, June 2–4, 1959.

Speed for 2,000 kilometers (1,242.739 miles) in a closed circuit: *World "class" record,* 364.116 km. per hr. (226.972 mph.)—Miss Jerrie Cobb (United States) with Aero Commander 680-E; Las Vegas, Nev., April 13, 1959.

Rotorplanes

Altitude with payload of 5,000 kilograms (11,023 pounds): *World "class E" record,* 5,584 meters (18,916 feet)—Sergyei Bvovtsev (USSR) with MI-6 helicopter; April 16, 1959.

Altitude with payload of 10,000 kilograms (22,046.22 pounds): *World "class E" record,* 4,885 meters (16,023 feet)—Rafail Kaprelian (USSR) with MI-6 helicopter; April 16, 1959.

Speed for 100 kilometers over a closed circuit: *World "class E-2" record,* 307.22 km. per hr. (190.897 mph.)—Sqd. Ldr. Wilfred R. Gellatly (New Zealand) with Rotodyne XES-21; Jan. 5, 1959.

Light Rotorplanes, 1,000 to 1,750 Kilograms (2,204.6 to 3,858 Pounds)

Speed for 500 kilometers (310.685 miles) in a closed circuit: *World "class" record,* 170.445 km. per hr. (105.91 mph.)—Vsevolod Vinitsky (USSR) with KA-15 helicopter; May 6, 1959.

Light Rotorplanes, 1,750 to 3,000 Kilograms (3,858 to 6,613.9 Pounds)

Altitude without payload: *World "class" record,* 6,700 meters (21,982 feet)—Fiodor Belouchkin (USSR) with MI-1 helicopter; March 12, 1959.

Speed for 100 kilometers (62.137 miles) in a closed circuit: *World "class" record,* 210.535 km. per hr. (130.82 mph.)—Vsevolod Vinitsky (USSR) with MI-1 helicopter; May 21, 1959.

Speed for 599 kilometers (310.685 miles) in a closed circuit: *World "class" record,* 196.452 km. per hr. (122.069 mph.)—Vsevolod Vinitsky (USSR) with MI-1 helicopter; May 19, 1959.

Gliders, Multiplace

Distance to a predetermined point with return to point of departure: *World "class" record,* 484.4 kilometers (303.48 miles)—Zbigniew Kirakowski (Poland) with Bocian SP-1921 sailplane; May 12, 1959.

Speed for 100 kilometers over a triangular course: *World "class" record,* 87.511 km. per hr. (54.377 mph.)—Harland C. Ross (United States) with Ross R-6 sailplane; starting and finishing point, Odessa, Texas, August 14, 1958.

Speed for 200 kilometers over a triangular course: *World "class" record,* 81.349 km. per hr. (50.548 mph.)—Harland C. Ross (United States) with Ross R-6 sailplane; Odessa, Texas-Wink, Texas-Eunice, N. Mex.-Odessa, Aug. 12, 1958.

Speed for 300 kilometers over a triangular course: *World "class" record,* 82.349 km. per hr. (51.169 mph.)—Harland C. Ross (United States) with Ross R-6 sailplane; Odessa, Texas-Eunice, N. Mex.-Lamesa, Texas-Odessa, Aug. 13, 1958.

Feminine Records

Rotorplanes—Altitude: *World "class" record,* Mme. Tatiana Roussian (USSR) with MI-1 helicopter; March 27, 1959.

Gliders, single-place—Distance to a predetermined point with return to point of departure: *World "class" record,* 368 kilometers (228.66 miles)—Pelagia Majewska, (Poland) with Jaskolka SP-1421 sailplane; June 20, 1959.

Gliders, multiplace—Distance in a straight line: *World "class" record,* 518.59 kilometers (322.236 miles)—Pelagia Majewska (Poland) with Bocian SP-1552 sailplane; Aug. 10, 1958.

Gliders, multiplace—Speed for at least 100 kilometers over a triangular course: *World "class" record,* 85.42 km. per hr. (53.077 mph.)—Mme. Cvetka Klancnik-Belin (Yugoslavia) with Kosava YU-5022 sailplane; Sept. 8, 1958.

Gliders, multiplace—Speed over a triangular course of 300 kilometers (186.41 miles): *World "class" record,* 61.717 km. per hr. (38.35 mph.)—Mme. Lucyna Bajewska (Poland) with Bocian SP-1928 sailplane; May 9, 1959.

FLOOD CONTROL. Serious flooding hit Indiana, Ohio, Pennsylvania, and New York in January 1959. Following these disasters, the U.S. Corps of Engineers issued a comprehensive statement on the nation's present capacity to protect itself against flood damage. The Corps of Engineers, which has primary responsibility at the federal level for flood control, estimated that damages from floods now cost about $700 million a year in the United States. The report stated that it would not be economical to try to forestall about a third of this damage; but the other two thirds of all present flood damage could be prevented at costs lower than the cost of the losses themselves. The $5.2 billion allocated to projects now either under construction or authorized for construction would cut the nation's present annual flood damage bill by one third; another $8 billion spent on projects not yet authorized might cut another third from the $700 million annual damage total, according to the Corps of Engineers.

However, even if the authorized flood control projects were completed, it is possible that the annual cost of flood damage might go up instead of down. This would be the case if, for example, builders were left free to construct buildings in the flood plains of rivers. Flood damage can be greatly reduced by proper zoning of the flood plains; but thus far, only Connecticut has done much in the way of zoning to prevent flood-damaged structures from being rebuilt where they can be damaged again. A recent study of urban areas across the country shows a net increase, rather than a decrease, in the number of structures in flood plains since flood control became a federal responsibility in 1936.

The first appropriation of funds for flood control by Congress was $81 million in 1938. This figure has risen to about $300 million a year. Meanwhile, the federally supported flood insurance that was foreseen in a Federal Flood Insurance Act of 1956 has not yet materialized.

In the spring of 1959 the Tennessee Valley Authority, which has an effective harness on the Tennessee River and its tributaries, reported on a six-year experiment in zoning. TVA has cooperated with communities in its area by providing the information for flood plain planning, and six of the cities have adopted zoning.

An interstate compact to prevent floods on streams in the Brandywine Valley was concluded by Pennsylvania and Delaware. Wilmington, Del., is the principal city in the river basin. The plan is to create several river-control structures in the valley.

More disastrous floods occurred in the fall of 1959. In the Southwestern states of Texas, Oklahoma, and Arkansas flood damage amounted to approximately $47 million, but the Corps of Engineers estimated that a further $80 million of damage was prevented by existing flood-control structures.

Among the worst floods of the year was a del-

uge that broke a masonry dam on the Tera River in northwestern Spain in January, destroying a village and drowning about 325 persons. The dam was a power dam only two years old. Rain had filled its reservoir for the first time, and the dam reportedly failed as its spillway was overtopped.

On Dec. 2, 1959, the Malpasset Dam on the French Riviera gave way, the ensuing flood leaving at least 421 dead and 82 missing near the town of Fréjus in the Reyran River valley. The dam, built of reinforced concrete, was the thinnest in the world when it was completed in 1954. It broke after several days of heavy rains had built up the pressure of the water behind it.

(See also TENNESSEE VALLEY AUTHORITY.)

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FLOODS. See FLOOD CONTROL and the Index entry, *Floods.*

FLORIDA. South Atlantic state, United States; admitted to the Union, March 3, 1845. The "Everglade State" ranks 22d in area and 11th in population among the 50 states.

Area and Population.—Area: 58,560 square miles (land, 54,262; inland water, 4,298), divided into 67 counties. Population: (1950) 2,771,305; (est., July 1, 1958) 4,515,000. Urban places with 1950 populations above 10,000 (unless another date is given):

Bradenton	13,604	Miami Beach	50,981[2]
Brownsville—Brent Goulding[1]	20,269	Miami Springs town	10,138[2]
Clearwater	15,581	North Miami	23,463[2]
Coral Gables	29,210[2]	North Miami Beach	12,161[2]
Daytona Beach	30,187	Ocala	11,741
Fort Lauderdale	62,906[2]	Orlando	52,367
Fort Myers	13,195	Panama City	32,097[3]
Fort Pierce	13,502	Pensacola	50,954[4]
Gainesville	26,861	St. Augustine	13,555
Hialeah	43,135[2]	St. Petersburg	96,738
Hollywood	22,798[2]	Sanford	11,935
Jacksonville	204,517	Sarasota	18,896
Key West	26,433	Tallahassee[5]	38,100[2]
Lake Worth	15,315[2]	Tampa	124,681[6]
Lakeland	30,851	Warrington[1]	13,570
Miami	259,035[2]	West Palm Beach	51,015[2]

[1] Unincorporated. [2] Special census, 1955. [3] Special census, 1957. [4] Special census, 1956. [5] Capital. [6] Not including annexations which, in a special census of Jan. 21, 1954, totaled 92,100.

Executive.—Chief state officers in 1959:
Governor: LeRoy Collins (Democrat)
Secretary of State: R. A. Gray
Treasurer: J. Edwin Larson
Attorney General: Richard W. Ervin
Comptroller: Ray Green
Supt. of Public Instruction: Thomas D. Bailey

Constitution and Judiciary.—The present constitution went into effect in 1887. The Supreme Court comprises seven justices; chief justice in 1959 was Elwyn Thomas.

Legislature.—The Florida Legislature, comprising a 38-member Senate (in 1959, 37 Democrats and 1 Republican) and a 95-member House of Representatives (92 Democrats and 3 Republicans), meets in odd-numbered years commencing the first Tuesday after the first Monday in April.

The 1959 session (April 7–June 5) appropriated $714,067,970 from the General Revenue Fund for the 1959–61 biennium and extended sales and use tax coverage to many additional items, principally all sales of alcoholic beverages. School appropriations totaled $409,546,707, including $276,353,403 for the Minimum Foundation Program, $13,378,334 for junior colleges, and $27,500,000 for capital outlays.

The Pupil Assignment Law was strengthened, students in integrated schools were exempted from compulsory attendance, county school boards were permitted to segregate school pupils by sex, and citizen groups were allowed to set up private schools.

Unemployment compensation benefits were increased to $33 weekly and the maximum duration of claims extended to 26 weeks; revisions were made in requirements for workmen's compensation claims; and public employees, except for specified personnel, were prohibited from striking or belonging to organizations advocating strikes.

Other legislation provided for establishment of a children's psychiatric center at the South Florida State Hospital; set up a Suitable Home Law for dependent children; created a Citizens Advisory Committee for the Aged; and reorganized the Department of Agriculture. Motor boat registration was required, and water safety standards were established.

A constitutional amendment was proposed for the reapportionment of the Senate and the House (see below, *Principal Events, 1959*), and a joint resolution was promulgated (subject to voter approval) requiring at least 45% of racing taxes to be distributed to the counties.

Finance.—In the 1958–59 fiscal year, state revenue of $1,097,745,021.01 comprised $521,944,571.82 from state tax sources, $123,579,582.98 from the federal government, and $452,220,866.21 from all other sources. Tax revenue consisted of $148,148,363.38 from a 3% general sales tax, $115,343,958.52 from motor fuel taxes, and $258,452,249.92 from all other state tax sources. Expenditures of $1,110,769,702.47 comprised $224,875,289.04 for education, $204,520,766.32 for health, welfare, and safety, $177,678,128.44 for highways, and $503,695,518.67 for all other purposes. There was no state long-term indebtedness.

Banking.—As of June 10, 1959, the state's 104 national banks had $3,246,596,000 in assets, $2,205,266,000 in demand deposits, and $729,114,000 in time deposits. The state's 183 other banks (June 30, 1959) had assets of $1,798,946,523.70 and total deposits of $1,650,239,268.63.

Education.—School attendance is compulsory between the ages of 7 and 15, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $216,867,000 ($291.78 per pupil), and revenues comprised $111,158,705 from local school districts, $165,279,919 from the state, and $9,944,051 from the federal government. Outlays for construction and improvements amounted to $65,365,655, and salaries of all instructional personnel averaged $4,811.

FLORIDA SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–6)	1,250	17,811	555,978
Public junior high (7–9)	...*	...*	208,957
Public senior high (10–12)	485	13,594	130,945
Private and parochial elementary and secondary	396	2,295	50,856
Public junior colleges	7	259	7,224
Public colleges and universities	3	1,820	27,701

* Included in senior high figures.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $69,128,443, including $43,505,123 for the aged, $18,979,859 for dependent children, and $4,892,824 for the permanently and totally disabled. A monthly average of 106,158 persons received public assistance. State expenditures for all mental health activities totaled $22,877,087; for correctional and penal programs, $11,318,649.

Labor Force.—The state's labor force totaled 1,666,100 in July 1959, including 100,900 agricultural workers. Nonagricultural employees in all categories numbered 1,485,500, well above the 1,393,000 reported for the previous July and slightly above the 1,445,800 average for 1958. Of

New terminal building at Miami International Airport was dedicated in week-long ceremonies in January. The airport's $26 million expansion and development program followed an enormous increase in Miami air traffic in recent years.

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all persons employed, 27.5% were engaged in trade, 16.2% in government, 15.3% in manufacturing, and 14.1% in service industries. Unemployment dropped by almost 25% to 79,700 in July 1959 from 100,300 a year earlier. The state paid $29,277,407 in unemployment compensation claims in 1958.

Manufacturing.—Estimates for 1958 showed 6,650 manufacturing plants employing 177,600 persons who received $735,264,000 in wages. Value added by manufacture (1957) totaled $1,261,615,000, and outlays for new plant and equipment amounted to $181,757,000. In August 1959, production workers averaged $74.62 for an average workweek of 41 hours.

MAJOR FLORIDA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Food and kindred products	35,859	$123,916	$322,069
Chemicals and products	13,651	56,298	196,504
Pulp, paper, and products	13,023	63,296	175,823
Printing and publishing	11,026	48,230	89,487
Fabricated metal products	9,980	38,480	84,067
Lumber and wood products	15,454	41,694	65,918
Stone, clay, glass products	7,236	25,098	57,490
Transportation equipment	9,858	41,671	56,296
Furniture and fixtures	7,660	23,303	41,398
Tobacco manufactures	7,924	21,459	38,233

* For definition, see text footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Florida ranked 25th among the states with a record value of mineral output accounting for 0.86% of the national total. It was first in output of fuller's earth (59% of domestic production) and of phosphate rock and zircon and stood second in peat, titanium minerals, and rare-earth metals.

FLORIDA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	450,000	$ 5,808,000
Peat	36,438	165,000
Phosphate rock (long tons)	10,851,000	68,951,000
Sand and gravel	5,490,000	4,389,000
Stone[1]	23,549,000	30,983,000
Zirconium concentrate	30,302	1,018,000
Other minerals	...	34,008,000
Total	...	$142,111,000[2]

[1] Excludes certain stone; value included in "Other minerals."
[2] Total adjusted to eliminate duplications in value of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in 1958 was valued at $29,352,898. Principal species landed were shrimp, 51,110,580 pounds valued at $18,517,519; mullet, 35,677,921 ($2,221,026); and red snapper, 6,433,777 ($1,708,145).

Agriculture.—Cash farm income for the first nine months of 1959 was up to $629,556,000 from $521,270,000 in the corresponding 1958 period.

FLORIDA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Avocados (tons)	9,110	4,100	8,300
Corn (1,000 bu.)	10,031	14,924	16,281
Grapefruit (1,000 boxes)	33,970	35,200	32,000
Limes (1,000 boxes)	322	200	300
Oranges (1,000 boxes)	78,110	86,000	93,000
Peanuts (1,000 lb.)	57,192	58,240	47,040
Pecans (1,000 lb.)	4,860	2,600	3,500
Potatoes (1,000 cwt.)	5,262*	5,977	4,944
Strawberries (1,000 lb.)	9,577*	2,600	3,300
Sugarcane for sugar (1,000 short tons)	1,249	1,303	1,771
Sweet potatoes (1,000 cwt.)	182*	72	75
Tobacco (1,000 lb.)	27,463	21,359	25,420
Tomatoes (1,000 cwt.)	4,868*	3,497	4,206
Tung nuts (tons)	17,380	35,000	33,000

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

For the full year 1958, income comprised $194,605,000 from livestock and livestock products, $494,384,000 from crops, and $7,907,000 from government payments. Principal income sources were: oranges, $220,463,000; dairy products, $75,269,000; cattle, $65,121,000; grapefruit, $43,705,000; and greenhouse and nursery products, $34,207,000.

There were 62,500 farms in 1958. Total farm area (1954) of 18,162,000 acres included 1,936,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 2,011,000 cattle and 4,565,000 chickens (excluding commercial broilers). Some 98,000 family and hired workers were engaged in farming during the week of Oct. 18–24, 1959.

Tourism.—In the 10-year period since 1949, tourism in Florida has almost doubled in volume. Only the year 1958, which experienced a drop in the number of visitors, halted the steady rise. The 1958 season, affected by the national recession and a number of unusually severe freezes, nevertheless accounted for an estimated 7 million visitors who spent $1,160 million within the state. The 1959 volume, on the basis of data for the first nine months, was expected to reach a full-year total of nearly 9 million visitors. As 1959 ended, it was estimated that there were more than 425,000 rental units available in the state for tourists.

To facilitate tourist air arrivals a new $26 million terminal was opened on Feb. 12, 1959, at Miami International Airport. An outstanding addition to tourist accommodations in 1959 was the new 26-story, $6 million Robert Meyer Hotel in Jacksonville. New Florida tourist attractions of the year included a $2 million speedway at Daytona Beach, a bird park (Busch Park) at Tampa, and a seven-year statewide quadricentennial celebration. The latter was inaugurated on May 13 at Pensacola, where the first (although unsuccessful) settlement was made in 1559. The celebration was scheduled to close in 1965 at St. Augustine, which was permanently settled in 1565.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $164,837,792.84, and 2,430 miles of new construction were completed.

Highways and roads on Dec. 31, 1958, totaled 64,840 miles (32,579 surfaced). Registered *motor vehicles* in 1958 numbered 2,346,775, including 1,766,671 passenger cars. There were (1958) 13 *railroads* operating 4,699.01 line miles; 56 regularly scheduled *airlines;* and (1959) 208 *airports and airfields* (121 commercial and municipal, 55 military, 12 private, and 20 other).

Communications media (1958) included 144 AM and 21 FM *radio stations;* 20 VHF and 1 UHF *television stations;* (1959) 48 daily *newspapers* (circulation, 1,427,089) and 164 other newspapers (968,610); and (Jan. 1, 1959) 571,500 business and 1,091,700 residential *telephones.*

Principal Events, 1959.—In his message to the 1959 session of the Florida Legislature, which convened April 7, Gov. LeRoy Collins strongly urged the lawmakers not to pass any new segregation laws and "never, never, never set up any plan or device by which our public schools can be closed." He maintained that the Pupil Assignment Law of Florida could be used to prevent wholesale desegregation and warned that any other approach would be disastrous and illegal. Despite some fiery speeches and many drastic proposals, the legislators on June 5 closed their session, leaving only a few mild bills regarding this issue on the governor's desk. (See also above, *Legislature.*) The following September, due to pending court action, two public schools in Dade County became the first in the state below the college level to open on a racially integrated basis.

In a highly unusual second message of April 9

to a joint session of the House and Senate, Governor Collins predicted a "devastating era of sectionalism" unless Floridians were given fairer representation in the legislature. Collins sought remedy for a situation in which North Florida, containing only a small fraction of the state's total population, controls the Senate, whereas Central and South Florida, with the larger portion of the population, carry the heavier burden of taxation. An amendment to the constitution, worked out by the legislature, proposed eight additional House members and six new Senate seats for the most populous counties. While regretting the proposal was not a better one, the governor called it "the greatest advance in 34 years."

On November 3 the reapportionment amendment was defeated. Vote-powerful Southeast Florida turned it down by 177,955 votes to 146,601. Dade (Miami), Broward (Fort Lauderdale), and Palm Beach counties accounted for 83,463 opposition votes, and virtually Republican Pinellas County voted 26,463 to 9,965 against the measure. Thus the decennial constitutional mandate for reapportionment, which bitter controversy had prevented from being carried out during the previous four years, continued to be unfinished legislative business at the end of 1959.

The spectacular advance in Florida of electronics and missile industries was dramatized in mid-1959 when the Orlando Division of the Martin Company, which came to Florida in 1956, emerged as the state's biggest manufacturing employer, with more than 8,000 workers.

Natural gas flowed into the economic veins of Florida from 1,477 miles away when a valve at the Brooker mainline compressor station of the Houston Corporation was opened in June. The new pipeline runs from producing fields in south Texas to a terminus south of Miami, and brings with it important fuel savings to existing industries and impetus for the building of new ones. The total investment budgeted by the corporation for facilities in Florida was $132,657,000, and an annual $6 million Houston payroll was predicted within four years.

In 1959 Florida became the first state to have placed over 5 million acres in tree farms. Its acreage devoted to plantings and tree farms exceeded the acreage being cut for timber. The state's forest products have reached a wholesale manufactured value of more than $450 million annually.

Principal Events by: A. J. Hanna,
Weddell Professor of History, Rollins College;
Author of "Flight Into Oblivion" (1959).

FLOWERS. See Gardening; Horticulture.

FLUORSPAR. See Mineral Production.

FLY AND BAIT CASTING. See Sports, Games, and Shows.

FOOD. See Index entry.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Founded in 1945 as a United Nations specialized agency, FAO aims to improve living standards and raise the nutritional levels of all peoples by improving their agriculture, fisheries, and forestry. In December 1959 it comprised 77 member nations and 9 associate members. On Nov. 18, 1959, Binay Ranjan Sen of India was re-elected to a 4-year term as director-general of FAO, and Louis Maire of France was elected chairman of the FAO Council.

FAO's biennial budget for 1958–59 amounted to $17,128,646. In addition, FAO was allocated over $9 million each year (1958–59) to finance its Expanded Technical Assistance Program. The organization had over 400 technical assistance experts at work in 72 countries in mid-1959, when the number of completed assignments had risen to 2,030. More than 220 Technical Assistance Program fellowships were scheduled for the year, and the total number awarded since the program began in 1951 rose to 1,746.

FAO's Freedom from Hunger Campaign, proposed by Director-General B. R. Sen, is intended to focus attention on the continuing problem of hunger in the world and to mobilize national and international efforts toward its solution. With the world population still growing—it increased by 1.7% in the less developed countries and by 1.2% in the more developed areas during 1959—there is an urgent need to produce more and better food, to increase the incomes of agricultural populations, and to improve the distribution of food. The campaign will be carried out with the cooperation of governments, the United Nations and its specialized agencies, and various nongovernmental bodies. Efforts will be made to inform and educate world opinion regarding the hunger problem, and the campaign will culminate in a World Food Congress in 1963.

FAO's World Seed Campaign seeks to promote the use of better seeds by farmers, and it is planned to designate 1961 as the World Seed Year.

The organization's Mediterranean Development Project is concerned with the arable and grazing land, forests, and irrigation of 18 countries in the Mediterranean region. Teams of experts have prepared reports on 10 of these countries—Greece, Iraq, Israel, Lebanon, Morocco, Spain, Syria, Tunisia, Turkey, and Yugoslavia. With the completion of the overall study and these country reports, which were considered by the FAO Conference at its meeting in November 1959, it is hoped that governments concerned will promote national pilot projects.

Much progress was made during 1959 in FAO's program in atomic energy. For example, an international training course on radioisotope techniques in agricultural research was organized at the Laboratory of Radiation Biology, Cornell University, Ithaca, N.Y.; and a European seminar on the training of agricultural advisory services on agricultural aspects of environmental contamination was organized at Cambridge University, England.

An overall picture of the world food situation in 1959 showed that production had reached a record level, being up 4% over that of the previous year, while surplus stocks had increased by 10%. Of the surpluses, North America held 80%. These growing surpluses, the unfavorable terms of trade of agricultural exporters, the need for adjustments in agricultural policies of individual countries, and a tendency toward regional arrangements, were the main features of the commodity situation. In general, FAO's principles of surplus disposal were found as adequate today as when developed in 1954.

An FAO expert panel met in April 1959 and prepared a report on price support and stabilization measures. The panel suggested 25 guiding principles to mitigate the harmful effects of such measures on consumption and to reduce the accumulation of surpluses.

A regional office for Africa was opened in 1959 at Accra, Ghana. It will be supported by two suboffices which will shortly be established elsewhere on that continent.

Agriculture.—In 1959 much progress was made in the soil mapping of Europe and Latin America, and a Development Center on Farm Management Problems was held in Bangkok. The interregional desert locust-control project placed particular emphasis on the coordination of the international campaign in the Arabian Peninsula.

Special attention has been given to establishing standards of comparability for the various systems in use for performance and progeny testing of animals, and work continued on artificial insemination. Much progress was made in Africa and the Far East in the control of rinderpest, and FAO was active in fostering development in research for the production of more effective vaccines against foot-and-mouth disease and hemorrhagic septicemia. FAO cooperated with the United Nations Children's Fund (UNICEF) in developing dairy industries in member countries, where surveys were made for the planning of future dairy programs and technical advice was provided in establishing and running new dairy plants.

Economics.—The first international meeting in the Far East on agricultural marketing, especially of rice, was held in 1959 at New Delhi, and a crop insurance experiment was started in Ceylon with the assistance of FAO. A special study of agricultural incomes and living standards in countries varying in economic development was made during the year. Work continued on the program for the 1960 World Census of Agriculture, which has been adapted to regional requirements. Census seminars were conducted in 1959 at Accra and Warsaw, while training centers were held at Lima, Tokyo, and Damascus.

Fisheries.—The Second World Fishing Boat Congress was held at FAO headquarters in April 1959. Some 50 technical papers were presented and more than 300 participants from 35 countries attended. There were also meetings on fishery cooperatives and statistics, and a statistics training center. A World Scientific Meeting on the Biology of Sardines and Related Species was held at FAO headquarters.

Forestry.—The regional forestry commissions for Latin America, the Near East, and Europe formulated their work programs for the next two years. The European Forestry Commission discussed particularly the impact of economic integration schemes on Europe's forestry. Planning for the World Forestry Congress in 1960 was continued. A study of wood resources and requirements for Asia and the Far East was completed. (See also FORESTRY.)

Nutrition.—FAO continued its nutrition work in association with the World Health Organization (WHO) and UNICEF. Nutrition problems in a number of countries, including Ghana, were studied, and immediate and long-term plans drawn up in consultation with the governments concerned. Further attention was given to the improvement of diet through education in nutrition, and to the contribution which home economics can make. Regional and national nutrition and home economics seminars were convened in various parts of the world.

An evaluation survey was made of the results achieved by the distribution of skim milk through UNICEF-assisted programs, and methods of improving distribution were recommended. Attention was given to the development of protein-rich foods other than milk and, in cooperation with WHO, to problems arising out of the increasing use of food additives. A seminar on food technology for countries in South and East Asia was held in India.

Publications.—In addition to its regular yearbooks, periodicals, and bulletins, FAO publications in 1959 included: a series of *Marketing Guides* dealing with *General Problems, Fruits and Vegetables, and Eggs and Poultry; Uses of Sampling in Census; Income Elasticity for Food; National Grain Policies;* Reports on *Rice, Dairy Products, Olive Oil, Tea, Coffee,* and *Coconut; Land Consolidation in Europe; State of Food and Agriculture 1959; Tabulated Information on Tropical and Sub-Tropical Grain Legumes; World Cocoa Survey; Study of Grasses in Agriculture; Irrigation by Sprinkling; Application of Science to Inland Fisheries* (Fisheries Study No. 8); *Modern Fishing Gear of the World* (ed. by Hilmar Kristjonsson); and *Fishing Boats of the World,* vol. 2 (ed. by Jan-Olof Traung).

BINAY RANJAN SEN,
Director-General, FAO.

FOOD AND DRUG ADMINISTRATION. As a member agency of the U.S. Department of Health, Education, and Welfare, FDA enforces the Federal Food, Drug, and Cosmetic Act of 1938, as well as four other laws. Enforcement of these laws is intended to ensure the healthfulness and purity of foods, and the safety and effectiveness of drugs, cosmetics, and therapeutic devices. Seventeen district offices, with another scheduled to begin operations, coordinate their enforcement activities with offices in Washington, D.C.

FDA's educational program was intensified in 1959, particularly in the areas of nutritional quackery and deception arising from weight-reducing schemes. Widespread sales of mislabeled vitamins, minerals, and food supplements to health-conscious Americans, and unscrupulous sales of so-called weight-reducers—worthless mechanical devices and bogus diet aids—precipitated a vigorous campaign by FDA to control this growing problem.

Foods.—The 1958 Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act played an important role in FDA operations in 1959. The death of a child and several illnesses traced to the addition of sodium nitrite to flounder fillets pointed to the importance of assuring the safety of chemical substances before they are added to food. Consumer protection against excessive pesticide residues was increased by extensive collections and analyses of crops, and by close surveillance of pesticide spray practices. Seizures were made where foods displayed unpermitted residues. Attention also was given to the improper use of antibiotics in medication of cows, which results in milk residues. The sampling for radioactivity of foods and feeds was continued.

Educational efforts in FDA's corn and wheat programs were extensive. Samplings of bulk wheat being shipped in the fiscal year 1959 resulted in federal seizure of 76 lots. Sixty-seven criminal cases charging shipment of filthy or decomposed food were instituted, and 68 similar cases were terminated in the courts, with penalties ranging from probation to a $4,500 fine. Injunctions to prevent distribution of foods in violation of sanitary requirements were requested against 12 firms.

Filth or decomposition was charged in 79 per cent of the food seizures; and 7,430 tons were seized in 656 actions. Of these, 336 seizures involved merchandise that became unfit after interstate shipment. An additional 7,964 tons of unfit food were voluntarily destroyed or converted to nonfood uses by their owners as the result of FDA inspections. Prosecution actions were filed against 18 firms for storage of food under unsanitary conditions.

Drugs and Devices.—Ninety-five criminal actions charging drug violations were filed in the fiscal year 1959. Of these, 72 cases involving 140 defendants were filed on charges of illegal sales of prescription drugs. Sixty-nine cases against 124 defendants were terminated in federal courts, with jail sentences ranging from 6 months to 2 years. Fines ranged from nominal sums to $3,000. Bootleg sales of amphetamines continued in 1959 despite efforts to determine where the amphetamines were diverted from legitimate drug sales.

Twenty-seven defective or misbranded drugs were recalled by manufacturers during the fiscal year 1959. Eighty-three seizures were made of drugs bearing false and misleading therapeutic claims, and 36 drugs were seized because of failure to meet official or declared composition. In addition, four injunctions involving drugs and devices were requested of the courts. Fifty-seven devices were seized because of false and misleading claims by their makers.

FDA approved 273 new-drug applications and made effective 1,067 supplemental applications.

Predistribution Certification.—In fiscal 1959, 5,262 batches of coal-tar colors, representing 7,348,717 pounds, were certified for use in foods, drugs, or cosmetics. Recent laboratory studies on animals produced evidence that 17 coal-tar colors were harmful when taken in significant amounts. Thirteen of these colors, in addition to 7 previously banned for food use, will continue to be certified for use in drugs and cosmetics that do not get into the digestive system. The remaining four have been removed entirely from the list of certifiable colors. Other certification programs involved the testing of 350 batches of insulin and 13,716 batches of antibiotics before they could be marketed.

Enforcement of Other Acts.—Under the Tea Importation Act, 109,809,995 pounds of tea were examined in fiscal 1959, of which 99,367 pounds were rejected as substandard. Four cleaners were seized for failure to bear the word "poison" as required by the Caustic Poison Act. No permits were issued under the Import Milk Act, nor were there any actions under the Filled Milk Act.

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FOOD RESEARCH. Meat Quality.—Research in the area of meat quality has increased materially during the past year or so. For the most part it has centered around identifying the factors causing or associated with tenderness; determining the interrelationships of various chemical, physical, and sensory measurements; and evaluating quality directly by consumer acceptability studies.

Currently, considerable attention is being given to the muscle plasma fraction of meat as a possible factor in determining tenderness. One theory now being tested is that tenderness may be related to the degree of hydration of the meat proteins. Evidence has been presented which shows that the water-holding capacity of ground beef and pork is directly related to pH when the latter is within the normal range for meat (5.4 to 6.9). Shifts in pH, however, effected greater change in the water-holding capacity of fresh than of cooked meat, a result interpreted as indicating that heat denaturation of muscle proteins destroys a major portion of the water-holding forces which result from the addition of hydrogen or hydroxyl ions to meat.

Evidence has been presented that a more precise delineation of tenderness by trained judges is possible if this trait is separated into two components, one associated with the tenderness of muscle tissue and the other with that of connective tissue.

The extent to which connective tissue affects tenderness in meat still intrigues investigators. The suggestion has been made recently that selective enzymes might be used to disentangle collagen and elastin from the other meat proteins. Before such a method is developed, however, properly selective enzymes will have to be prepared in reasonably pure form.

The degree to which hereditary differences are responsible for observed differences in the tenderness of meat is under study. Present results indicate that the heritability of tenderness is probably high or moderately high. Considerable variation in this trait exists, however, among the progeny of sires from the same as well as from different breeds.

Various chemical, physical, and sensory evaluations of the quality of over 300 beef carcasses indicated that tenderness of lean increased as external and internal finish increased and as lean became firmer. Tenderness was significantly related to overall preference, but juiciness and flavor were not.

Consumer acceptability is being investigated largely through furnishing families with comparable retail cuts from carcasses of different federal grades and having each adult member indicate preference and/or degree of acceptability. In most of the studies a significant proportion of the consumers preferred the meat from the higher-grade carcasses, but there were a few who consistently preferred that from the lower grades. Results suggest that consumers, although agreeing on overall quality, differ considerably in the relative importance of flavor, tenderness, and juiciness.

Food Flavors.—Control of flavor problems is being sought through fundamental investigations of the chemical identity, origin, and mode of formation of flavor compounds. Problems in this area are concerned with maintenance of characteristic flavors, as in processing frozen juice concentrates; with development of desired flavors, as in roasting coffee; and with prevention of development of off-flavors, as in irradiating foods. Progress has been made in identifying some flavor compounds in some foods. For example, about 30 compounds have been identified from strawberry and orange juice concentrates, and a somewhat smaller number from grapefruit juice concentrate. But in none of these foods, nor in fact in any food, do the experimenters feel that the flavor has been fully characterized. Results to date show that food flavors are exceedingly complex mixtures of chemicals which vary greatly in their amounts, volatilities, and flavor intensities.

The origin and mode of formation of flavor compounds have received relatively little attention. Flavor precursors in cabbage and onions are among the few which have been studied. In these studies, L-S-methylcysteine sulfoxide was identified as the principal precursor of dimethyl disulfide, the constituent mainly responsible for the odor of cooked cabbage. S-allyl-cysteine and S-propyl-cysteine sulfoxide were found in aqueous onion extract, and the possibility of their being precursors of compounds responsible for the odor of onions has been suggested but not investigated.

Evidence of flavor precursors in dehydrated vegetables has been provided by a recent study. When enzyme preparations from white mustard seed were added to dehydrated watercress in water, the typical odor and taste of watercress was regained within a short time. Rehydration with water alone produced a product which had none of the characteristic odor or taste of watercress. Dehydrated cabbage also reacted with white mustard seed enzyme to give an increase in flavor. For such products maximum regeneration of flavor required water and adequate amounts of appropriate enzymes and precursors to react within the allotted time.

Investigation of food flavors has been aided tremendously by new analytical methods, particularly those of gas chromatography and mass spectrometry. The former provides a relatively simple method of separating a mixture of gases or easily volatile compounds into the individual components. Emanations from coffee have been studied directly by this method with considerable success. Aqueous extracts or press fluids from foods must be freed of much of their moisture, however, before the flavor compounds are concentrated enough to be detected by present instruments. During concentration, decomposition of flavoring materials may occur. It is to be hoped therefore that the new detectors which are becoming available for gas chromatography apparatus will be sensitive enough to respond to the flavor compounds at the concentration levels of the original extract.

Botulinal Toxins.—The nature of the neurotoxins produced by *Clostridium botulinum* is being clarified. These toxins are of particular interest because they are the most potent poisons known. Present evidence indicates that they are simple globular proteins. Type A has been obtained in a white, odorless, crystalline form. In many respects this material acts as if composed of homogeneous, single, large molecules. For example, separately prepared samples show constant biological activity and amino acid composition; recrystallization does not increase toxic potency; during electrophoresis, all of the molecules migrate at the same rate; and during ultracentrifugation a single sedimenting boundary appears at various pH values on the acid and alkaline side of the isoelectric point.

In other respects, however, crystalline toxin does not meet the tests of homogeneity. Thus, discrepancies are found in the amounts of precipitate formed when toxin and antitoxin are mixed at different temperatures. These discrepancies led to the discovery that crystalline type A toxin could be separated into two factors, the toxin and hemagglutinin, by selectively adsorbing the hemagglutinin to erythrocytes. These results indicate that crystalline type A toxin is a complex in which toxin and hemagglutinin exist in an intimate association of unknown type.

The nature of the molecular configuration responsible for toxicity has not been determined. The view that maintenance of the structural integrity of the protein molecule as a whole is required for toxicity is supported by the fact that proteolytic enzymes and chemical reagents which cause loss of toxicity attack bonds characteristic of simple proteins.

(See also AGRICULTURAL RESEARCH SERVICE; BACTERIOLOGY; CANNING INDUSTRY; X-RAY.)

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FOOD SUPPLY. See AGRICULTURE; STANDARDS OF LIVING.

FOOTBALL. See SPORTS, GAMES, AND SHOWS.

FOREIGN AFFAIRS. See AFRICA; DISARMAMENT; FAR EAST; FOREIGN POLICY OF THE U.S.; MIDDLE EAST; SUMMIT CONFERENCE; articles on the major countries; and references under the Index entry, *World Politics.*

FOREIGN AID PROGRAMS, U.S. The United States spent $68.9 billion in foreign aid from the end of World War II through June 30, 1959, or approximately $391 for every person in the country. Of the total, $56.9 billion was extended in outright grants, and $12.0 billion in net credits. The chief purpose of these grants and credits at the end of the war was European reconstruction, and this purpose prevailed through the period of the Marshall Plan (1948–52). Communist aggression in Czechoslovakia (1948) and Korea (1950) shifted the emphasis to military aid, however, and its share of the total has remained high, as is shown in Table 1. Nevertheless, the raising of the economic level of the less developed countries was conceived, by President Harry S Truman in his Point Four Program and by President Dwight D. Eisenhower in his various messages to Congress, as an important means of stemming the advance of communism, particularly in areas outside Europe.

Table 1—NEW FUNDS AVAILABLE FOR MUTUAL SECURITY, 1948–60[1]

(Millions of dollars, for years ending June 30)

Fiscal year	Total new funds	Military assistance[2]	Military as % of total
1948–49	6,387	none	0.0
1950	5,173	1,314	20.6
1951	7,339	5,223	71.0
1952	7,282	5,267	72.3
1953	6,012	4,086	68.0
1954	4,724	2,814	59.6
1955	2,781	1,193	42.9
1956	2,703	1,022	37.8
1957	3,767	2,018	53.6
1958	2,769	2,029	73.3
1959	3,298	2,265	68.7
1960	3,226	1,995	61.8

[1] Figures before 1955 reflect slight adjustments in the annual appropriations to include statutory transfers or reimbursements from accounts or sources outside the Mutual Security Program. From 1955 on the actual amount of the annual appropriation is given. [2] Includes defense support. (Sources: U.S. International Cooperation Administration, Office of Research, Statistics and Reports; Public Law 86–383.)

Since World War II the administration of United States foreign aid has passed through four major phases.[1] The fourth and current period began on June 30, 1955, when the International Cooperation Administration (ICA) was established within the Department of State. Military aid is administered by the Department of Defense. The Mutual Security Act of 1959 provided that military assistance for the fiscal years 1961 and 1962 be included in the defense budget, and on Nov. 21, 1959, Gen. Williston B. Palmer was appointed to the newly created post of director of military assistance.

Developments Through the Fiscal Year 1959.— According to a report prepared by the Office of Business Economics of the U.S. Department of Commerce, foreign countries received $4,401 million in commodities, services, and money through United States net grant and long-term credit programs in the fiscal year ending June 30, 1959. In addition, $170 million in short-term assistance was available through the sale of United States agricultural products against foreign currencies. Total United States foreign aid in the fiscal year 1959 therefore amounted to $4,571 million, or about 6% less than in the fiscal year 1958.

As is shown in Table 2, total net grants and long-term credits were $160 million lower in the fiscal year 1959 than in the preceding year. Whereas nonmilitary grants rose from a postwar low of $1,548 million to $1,630 million, military grants declined by $236 million, to $2,162 million. Foreign credits by the United States government were utilized in the amount of $1,276 million, or $141 million more than in 1958. Disbursements by the Export-Import Bank of Washington declined by $52 million, to $708 million, while loans extended to foreign governments under the Agricultural Trade Development and Assistance Act more than doubled, reaching $328 million. Net credits under the Mutual Security Program declined from $226 million to $171 million, but payments by the Development Loan Fund reached $68 million, and total mutual security credits therefore rose by $12 million, to $240 million. Repayments, on the other hand, reached a record $668 million largely because of an advance repayment by West Germany of $150 million on a 1953 credit settlement. The resulting net credits outflow of $608 million was only $8 million lower than in the 1958 fiscal year.

Table 2—U.S. NET FOREIGN GRANTS AND LONG-TERM CREDITS, FISCAL YEARS 1958 AND 1959

(Millions of dollars)

Area and type	Fiscal year 1958	Fiscal year 1959
Total	$4,561	$4,401
Military supplies and services	2,398	2,162
Other net grants and long-term credits	2,164	2,239
Western Europe and dependent areas[1]	1,147	736
Military supplies and services	799	722
Other net grants and long-term credits	348	14
Eastern Europe (nonmilitary aid)	19	24
Near East, Africa, and South Asia	1,116	1,367
Military supplies and services	622	554
Other net grants and long-term credits	494	813
Far East and Pacific	1,755	1,526
Military supplies and services	877	810
Other net grants and long-term credits	878	716
American republics	404	621
Military supplies and services	73	50
Other net grants and long-term credits	331	571
International organizations and unspecified areas	120	127
Military supplies and services	26	26
Other net grants and long-term credits	94	101

Note: Because of rounding, totals do not necessarily add up.

[1] Because of the inclusion of dependencies in the grouping "Western Europe," data shown for other groupings, particularly "Near East, Africa, and South Asia," are correspondingly understated. Greece and Turkey are included with "Near East, Africa, and South Asia." (Source: U.S. Department of Commerce, Office of Business Economics.)

In the 1959 fiscal year the Far East and Pacific area received slightly more than a third of all aid delivered,

[1] The first phase, extending from 1945 to 1948, was marked by the founding of the International Bank for Reconstruction and Development and the International Monetary Fund, but otherwise aid was extended under *ad hoc* and emergency grants without central organization. In the second phase increasing world tension led to the launching of the Marshall Plan or European Recovery Program (ERP) under the Economic Cooperation Act of 1948, which was administered by the Economic Cooperation Administration (ECA). The Mutual Defense Assistance Program (MDAP) was established in 1949. Military and economic types of assistance were subject to final oversight by a coordinating committee of representatives from the Departments of State and Defense and from ECA. The third phase, extending from 1951 to 1955, began with a general shift of emphasis from economic to military aid. The period was marked by efforts on the part of the administration to counteract centrifugal tendencies in the conduct of foreign aid. The Mutual Security Act of 1951, which abolished the ECA, attempted to centralize foreign aid programs by establishing the Mutual Security Agency (MSA) in the Executive Office of the President. On Aug. 1, 1953, President Eisenhower created a new foreign aid authority, the Foreign Operations Administration (FOA), charged mainly with responsibility for operations in the field of foreign aid, while the State, Defense, and Treasury departments bore responsibility for policy. There were increasing demands from Congress that the operating functions be returned to the Department of State, and the International Cooperation Administration was accordingly established in 1955.

with military assistance accounting for over half of the total. It was followed by the Near East (including Greece and Turkey), Africa, and South Asia, where assistance consisted chiefly of nonmilitary grants and credits. In third place was aid to western Europe, almost all of which took the form of military supplies and services. The distribution of military grants remained about the same as in the 1958 fiscal year, the decline in the total affecting all areas. Deliveries to the Far East and Pacific accounted for almost two fifths of the total, while those to western European countries continued to aggregate about a third of all military assistance.

In contrast to the trend in military aid, the distribution of nonmilitary assistance changed markedly in the fiscal year 1959. The share of the Far East and Pacific area declined from two fifths of all nonmilitary net grants and long-term credits in the previous fiscal year to less than a third of the total, while that of the Near East, Africa, and South Asia rose from less than a fourth to over a third, and that of the American republics increased by 75%, to account for a fourth of the nonmilitary aid.

In the Near East, where grants accounted for four fifths of all nonmilitary assistance, the chief recipients were Turkey, Jordan, Iran, Israel, Greece, Lebanon, and the U.N. Relief and Works Agency for Palestine Refugees in the Near East. Aid to Turkey, which rose from $66 million in the previous fiscal year to $172 million, consisted mainly of deliveries to improve the country's balance-of-payments situation. The $62 million disbursed to Iran included substantial loans from the Development Loan Fund, while aid to Jordan ($64 million) and Lebanon ($32 million) included relief shipments of grain. Net assistance to Israel ($44 million) and Greece ($34 million) declined slightly from the previous year.

Nonmilitary aid to South Asia rose from $184 million in the 1958 fiscal year to $286 million in the 1959 fiscal year. The largest recipients were India ($106 million) and Pakistan ($151 million), both of which borrowed from the Development Loan Fund and also received major grants of farm products. In Africa, grants to Tunisia increased from $9 million to $35 million, and those to Libya from $12 million to $21 million.

South Korea and South Vietnam continued to be the major recipients in the Far East and Pacific area, where grants accounted for nine tenths of all nonmilitary assistance. Japan, which received $104 million in new loans and made repayments totaling $65 million, was the only country in which loan assistance played an important role. While deliveries to South Korea declined from $327 million in the 1958 fiscal year to $293 million in 1959, and those to South Vietnam from $232 million to $167 million, those to Taiwan ($76 million) remained about the same, and those to Thailand increased from $27 million to $39 million. Aid to the Philippines ($24 million), Cambodia ($24 million), and Laos ($26 million) also declined.

Argentina ($65 million) and Brazil ($165 million), both of which received major loans from the Export-Import Bank of Washington, led other Latin American republics in nonmilitary assistance in the fiscal year 1959. The area as a whole received $600 million in new credits, or well over half of the total, but repayments amounted to only $137 million, to which Brazil contributed $74 million. Aid to Mexico, almost all in the form of credits, rose from $37 million in the previous fiscal year to $65 million, and that to Peru from $58 million to $63 million. Declines were registered in deliveries to Colombia ($60 million), Chile ($44 million), Bolivia ($23 million), and Guatemala ($11 million).

In western Europe only six countries received net nonmilitary assistance in the fiscal year 1959: Yugoslavia ($165 million), Spain ($83 million), Italy ($38 million), Austria ($11 million), Iceland ($7 million), and France ($1 million). Major net repayments on earlier loans were made by West Germany ($182 million) and the United Kingdom ($67 million). In eastern Europe, aid to Poland amounted to $24 million, consisting mainly of loans from special presidential funds.

Foreign Aid Program for the Fiscal Year 1960.— Foreign aid came under close scrutiny in 1959, both by Congress, which made substantial cuts in President Eisenhower's requests, and by the President's Committee to Study the Military Assistance Program, headed by William H. Draper, Jr. In his message to Congress of March 13, 1959, the president proposed a Mutual Security Program authorization of $3,929,995,000 for the fiscal year 1960, but the bill passed on July 22, 1959, authorized a maximum of $3,556,200,000. (An additional $1,200,000,000 was authorized for the Development Loan Fund for the fiscal year 1961.) The foreign aid appropriations bill approved by Congress on September 15 provided only $3,225,813,000 in new funds, as is shown in Table 3. Military assistance was cut by $300 million from the president's request, defense support by $140 million, and the Development Loan Fund by $150 million.

In four reports submitted to the president between March 17 and August 20, the Draper Committee made an exhaustive study of both economic and military assistance. It recommended that military assistance be increased to at least $2 billion annually, with most of the increase being devoted to missiles for the members of the North Atlantic Treaty Organization. The program should be authorized for more than one year and be included in the budget of the Department of Defense (these two recommendations were adopted). The committee also recommended that the Development Loan Fund be given an authorization of $1 billion annually for five years. Insofar as general economic assistance was concerned, the committee found that there was justification for charges by congressional critics and others that the programs were marred by maladministration and waste, but stated that they "must be continued and better administered, not emasculated or abandoned." It recommended that a single agency outside the Department of State be responsible for economic aid.

Table 3—MUTUAL SECURITY APPROPRIATIONS FOR THE YEAR ENDING JUNE 30, 1960[1]

Distribution	Amount
Military assistance	$1,300,000,000
Defense support	695,000,000
Development Loan Fund	550,000,000
Technical cooperation:	
General authorization	150,000,000
United Nations program	30,000,000
Organization of American States	1,200,000
Other programs:	
Special assistance	245,000,000
Intergovernmental Committee for European Migration	7,371,000
U.N. Refugee Fund	1,100,000
Escapee program	4,632,000
U.N. Children's Fund	12,000,000
U.N. Relief and Works Agency	25,000,000
Ocean freight charges	1,910,000
Administrative expenses:	
International Cooperation Administration	38,000,000
Department of State	8,100,000
Atoms for Peace program	1,500,000
President's contingency fund	155,000,000
Total	$3,225,813,000

[1] Approved Sept. 28, 1959; new appropriations only. (Source: Public Law 86–383.)

The Development Loan Fund, established in 1957, greatly expanded its operations in 1959. By September 15, it had approved loans totaling $833,656,000 to borrowers in 39 countries. India, with 8 loans totaling $195,000,000, and Pakistan, with 13 loans totaling $111,550,000, were the major borrowers. Appropriations through the fiscal year 1960 totaled $1.4 billion. The fund is designed to advance the economic growth of less developed countries by extending loans for which capital cannot be obtained elsewhere, and repayment is accepted in local currencies. A similar agency on an international scale, the International Development Association (q.v.), first proposed by Sen. A. S. Mike Monroney, was inaugurated in 1959. The new organization was intended to associate other industrialized nations with the United States in assisting underdeveloped countries.

The belief of the Eisenhower administration that the industrialized nations were now financially able to extend long-term loans to less developed countries, coupled with a desire to reduce the large deficit in the United States balance of payments, was responsible for the introduction of a disputed "Buy American" policy for foreign economic aid. First announced on Oct. 19, 1959, for the Development Loan Fund, it was extended on November 16 to development projects financed through ICA funds. In future such funds would

ordinarily be spent on goods produced in the United States.

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FOREIGN INVESTMENTS. United States investments abroad continued to rise at the record rate of about $5 billion during 1958. As in the previous year, private investment accounted for $4 billion. The growth in direct investments, however, declined from the previous year's record rate of $3 billion to about $1.8 billion in 1958, and totaled more than $27 billion at year-end. Government investments, through additional credits and loans, provided an additional $900 million. Foreign investments in the United States also moved upward at a fast rate ($3.4 billion to $34.8 billion). However, the increase in market prices of United States securities accounted for $2 billion of this rise, while the investment of new private foreign capital was insignificant. Holdings by foreign countries (mainly Europe and Japan) of liquid dollar assets, even after gold purchases in the United States of $2.3 billion in 1958, increased by about $1 billion, reflecting their favorable balance of payments position with the United States.

During 1959 the net outflow of United States capital continued to decline from the level of earlier years. While direct investments of business firms in foreign branches and subsidiaries expanded over the year before, the high prevailing interest rates in the United States reduced the flow of American funds into foreign bonds and securities and limited bank loans to foreigners.

ments: first, the renewed interest of United States manufacturing companies to venture into foreign investments, frequently for the first time and in partnership with foreign interests; and second, the interest of some companies with long-established foreign operations to buy out foreign minority holders. Examples of this desire to obtain more or sole control of foreign affiliates are Ford Motor Company, which spent about $150 million to increase its ownership in its Canadian affiliate; and Timken Roller Bearing Co. and International Business Machines Corp., which spent substantial amounts to buy out the minority interests in their British subsidiaries.

Canada.—Of all areas, Canada accounted for the largest amount of new United States investments, with an increase of $600 million to $8.9 billion at year-end 1958. Two thirds of these new investments were accounted for by new capital investments, while one third of the growth was financed by the reinvestment of earnings of existing enterprises. Somewhat more than one half of these new funds went into the development of natural resources in the oil and mining industries. Most of the remainder was spent by manufacturing industries. As in most other areas, investment activity in Canada was considerably below the level of 1957. It mirrored the broad decline of industrial activity in Canada and the development of excess capacity in certain industries, especially petroleum. However, some new mining projects were noted, especially in the development of iron ore.

The continued interest in the development of mining operations, the removal of the quota on Canadian oil imports into the United States, and

INTERNATIONAL INVESTMENT POSITION OF THE UNITED STATES, BY AREA AND TYPE OF INVESTMENT
(As of December 31, 1957 and 1958; in millions of dollars)

Type of investment[1]	Year-end 1957	Year-end 1958						
		Total	Canada	Latin America republics	Western Europe	Western European dependencies	Other countries	International institutions
U.S. investments abroad, total	*54,232*	*59,155*	*14,253*	*12,832*	*17,737*	*1,100*	*7,963*	*5,270*
Private investments	36,814	40,824	14,249	11,133	7,768	1,091	4,789	1,794
Long-term	33,632	37,336	13,842	9,769	6,714	1,063	4,154	1,794
Direct investments	25,238	27,075	8,929	8,730	4,382	1,038	3,142	854
Foreign dollar bonds	3,255	3,931	2,094	139	244	...	547	907
Other foreign securities[2]	2,693	3,690	2,474	40	974	...	169	33
Other investments	2,446	2,640	345	860	1,114	25	296	...
Short-term	3,182	3,488	407	1,364	1,054	28	635	...
U.S. government credits and claims	17,418	18,331	4	1,699	9,969	9	3,174	3,476
Long-term	15,573	16,192	...	1,559	9,074	9	2,078	3,472
Short-term	1,845	2,139	4	140	895	...	1,096	4
Foreign assets and investments in the U.S., total	*31,427*	*34,816*	*5,344*	*3,720*	*19,225*	*617*	*2,894*	*2,126*
Long-term investments	12,834	15,219	2,943	1,080	10,399	340	376	81
Direct investments	4,782	4,940	1,631	135	3,080	21	73	...
Corporate stocks	6,091	8,305	1,171	663	6,030	218	191	32
Corporate, state, and municipal bonds	417	455	1	64	316	17	8	49
Other	1,544	1,519	140	218	973	84	104	...
Short-term assets and U.S. government obligations	18,593	19,597	2,401	2,640	8,826	277	2,518	2,045
Private obligations	9,901	10,816	1,440	2,357	4,587	227	1,961	244
U.S. government obligations	8,692	8,781	961	283	4,239	50	557	1,801
Long-term	1,449	1,480	252	187	473	24	43	501
Short-term[3]	7,243	7,301	709	96	3,766	26	514	1,300
Net debtor (—) or creditor position	22,805	24,339	8,909	9,112	—1,488	483	5,069	3,144

[1] Direct investments at book value; securities at market value; other investments at stated values. [2] Consist primarily of securities payable in foreign currencies but include some dollar obligations, including participation in loans made by the International Bank for Reconstruction and Development. [3] Includes United States currency, not distributed by area, of $847 million at the end of 1957 and $890 million at the end of 1958. (Source: U.S. Department of Commerce, Office of Business Economics, and estimates by the author.)

Direct Investments.—During the first nine months of 1959, direct United States investments abroad increased by about $1.75 billion. Of this total, the net capital outflow was nearly $1 billion, or at an annual rate of about $1.3 billion, nearly 20% above the previous year's rate. Reinvestment of undistributed subsidiary earnings was on the upgrade during 1959, as companies drew more heavily on this source of funds to finance the higher level of investment in foreign properties. Investment flows were buoyed by two opposed developments: a fresh expansion of manufacturing operations in Canada promised to renew the period of growth in 1959.

Latin America.—After the record rise of $1.3 billion in United States direct investments in the area in 1957, the total for 1958 fell to just above $400 million. While political difficulties and upheavals in several countries contributed to this drop, the main cause was both the singularity of some of the expenditures in the earlier years and economic and marketing difficulties in 1958 and

1959. The petroleum industry, which accounted for $900 million of the new investments in 1957, invested about $150 million in 1958. About $250 million of the 1957 amount represented payments for new leases, but the remainder represented a considerable decline in new development and plant expenditures. However, there was an upturn in activity in a number of other countries, such as Argentina and Bolivia, as well as in Central America. Manufacturing investments in Latin America also declined in 1958 in most countries, although some increase was noted in Brazil and Venezuela.

Europe.—Continued prosperity in western Europe caused a considerable flow of new United States capital to both the United Kingdom and the Continent in 1959. In 1958, when economic activity was slowed, direct investments rose by $400 million to a total of $4.4 billion at year-end. The decline from the earlier year could be traced to a drop in capital flows and reinvested earnings of the petroleum industry. In contrast to this decline of new funds from the United States, expenditures by industry for development, plant, and equipment actually increased as companies raised a larger proportion of the required funds in local capital markets.

Investment in European Economic Community (q.v.) countries was substantially above earlier years' levels, indicating the interest of United States businessmen in the prospects of the area.

Capital flows to the United Kingdom were reduced in 1958, particularly in the petroleum industry, while reinvested earnings declined in that industry as well as in manufacturing. The strengthening of European currencies and liberalization or virtual abandonment of old exchange control measures was an encouraging sign, and together with the already planned expansion in petroleum and manufacturing industries, it should cause an upswing in capital flows to Europe.

Other Areas.—Investments in Africa, exclusive of Liberian shipping operations, rose by about $80 million to $789 million in 1958. Most of these new investments were made in the newly developing areas in western Africa and in oil exploration and development in northern Africa, primarily Libya and Algeria. Manufacturing investments in the Union of South Africa expanded moderately. In the Middle East, investments in the petroleum industry rose at a better pace than in 1957, raising the total by $100 million to more than $1.3 billion at year-end. In the Far East, an increase in manufacturing investments in Australia and increases in the Philippines were notable. Direct investment in that area rose to nearly $1.7 billion at the end of 1958. Investments by United States shipping companies in foreign flag fleets also rose by $78 million. These ships are largely operated through Liberian and Panamanian subsidiaries.

Other Investments.—During 1958, United States purchases of foreign dollar bonds reached a peak of about $900 million. Of this total, Canada and the International Bank for Reconstruction and Development accounted for about $350 million each; Israel obtained about $50 million; and 11 other countries accounted for an additional $100 million. With interest rates in the United States rising in the latter part of 1958 and 1959, much of this borrowing was discouraged and the total for 1959 was down to about one half the rate for 1958.

Purchases of foreign corporate securities were also reaching for a new high in 1958, amounting to about $330 million. This movement remained strong through the early part of 1959 but appeared to be slackening in the later months, partly due to rising market prices of foreign securities.

Rising United States interest rates also slowed down the outflow of United States bank loans, and in the early part of 1959 the amount of outstanding short-term bank loans actually declined. Net outflows in long-term bank loans continued at a smaller scale in 1959.

United States government credits and short-term assets abroad continued to rise moderately in 1958. However, in 1959, the government subscribed an additional $1,375 million to the International Monetary Fund, and commitments of $3,175 million were made to guarantee additional obligations of the International Bank for Reconstruction and Development. Participation in new regional development banks was also agreed to.

Foreign Investments in the United States.—After the decline of foreign investments in 1957, these investments moved strongly upward in 1958, mainly due to price advances of United States securities held by foreigners and the accumulation of liquid dollar assets. During 1959 this development continued. In the first six months of the year, foreigners added $2.2 billion to their dollar reserves and, in addition, purchased $130 million of corporate securities. While foreign direct investments in the United States increased only moderately in 1958, some sizable new investments were made in 1959. Much of the capital for these new ventures, however, came from United States capital markets.

Earnings of Foreign Investments.—While earnings on United States investments abroad declined by $220 million to $3,677 million, earnings on foreign investments in the United States rose from $770 million in 1957 to $786 million in 1958. Earnings on United States direct investments abroad declined by $380 million to $2,954 million. Most of this decline resulted from a decline in earnings of the petroleum industry, reflecting higher foreign taxes, increased exploration costs, and reduced earnings from tanker and some marketing operations. Earnings on portfolio and short-term investments increased by $50 million to $417 million, and the interest on United States government credits rose by $100 million to $307 million. Of the direct investment total, $1.4 billion came from the Western Hemisphere, $532 million from Europe, $717 million from Africa and the Middle East, and about $300 million from the rest of the world. An industry breakdown shows that petroleum companies accounted for about $1.3 billion of the direct investment total, manufacturing accounted for $873 million, and mining for $219 million. All other industries accounted for earnings of $555 million.

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FOREIGN MONEY VALUES. See EXCHANGE RATES.

FOREIGN POLICY OF THE UNITED STATES. Important developments affecting United States foreign policy in 1959 included the resignation of Secretary of State John Foster Dulles on April 15, 1959, because of ill health (and his subsequent death on May 24); the succession to that office by Under Secretary of State Christian Herter on April 22; and the stronger role taken by President Eisenhower in formulating foreign policy.

Although Secretary Herter declared in a television address on May 7 that there would be "no lack of continuity in our foreign policy," observers in both the United States and abroad perceived a change both in leadership and in policy. The British press commented on "the new Eisenhower," suggesting that the president was taking an initiative in foreign policymaking which had been lacking during the past years because of his sieges of illness and his great confidence in Secretary Dulles. It was also widely felt that this initiative was tending toward a less ideological and more tolerant policy—one looking toward the reduction of international tensions by efforts to create a more friendly atmosphere favorable to the conciliation of differences with the Soviet Union.

The change in the top direction of foreign policy in the spring of 1959 did not result in a dramatic shift in that policy, but did give momentum to tendencies, observable even before the death of Secretary Dulles, toward a greater effort to reduce tensions and toward less reliance on security through military preparation and alliances.

Contributing to this change in emphasis was the administration's budget-balancing policy which sought to reduce military expenditures; a serious crisis precipitated by the Soviet note of Nov. 27, 1958, suggesting modification of the status of West Berlin; and the pressure of Great Britain, under Prime Minister Harold Macmillan, for more con-

ciliatory policies toward the Soviet Union. The opposition to this British position by President Charles de Gaulle of France and Chancellor Konrad Adenauer of West Germany presented a dilemma to the United States, but President Eisenhower tended to support the British position.

The changing emphasis in United States foreign policy was manifested less by speeches of President Eisenhower and Secretary Herter than by increasing cultural and other exchanges, including an exchange of national exhibitions in New York and Moscow (see FAIRS AND EXHIBITIONS); by a series of visits among the principal statesmen on both sides of the Iron Curtain; by progress toward a summit meeting such as that which took place at Geneva in 1955; and by more positive efforts to find bases for agreement on the problems of Berlin and disarmament.

The initial reaction of the West to the Berlin crisis (the crisis was interpreted as an initiative looking toward the ultimate incorporation of West Berlin in the Soviet orbit) was the declaration of the NATO foreign ministers, meeting in Paris on Dec. 16–18, 1958, that they would "not yield to threats."

In his State of the Union message on Jan. 9, 1959, the president said his basic purpose was "to promote strength and security, side by side with liberty and opportunity." He then asked: "Can government, based upon liberty and the God-given rights of man, permanently endure when ceaselessly challenged by a dictatorship, hostile to our mode of life, and controlling an economic and military strength of great and growing power?" He justified an affirmative answer by noting "the devotion, the vision, the courage, and the fortitude of our people," and the assurance of cooperation by others because of the American nation's "position of recognized leadership in the free world." He admitted, after noting the military strength of the United States, that "possession of such capabilities helps create world suspicion and tension," although "we know that we seek only just peace for all with aggressive designs against no one." International agreements with Communist states are unreliable, he continued, unless they include "self-enforcing mechanisms." Communist disregard of their own pledges is "one of the greatest obstacles to world success in substituting the rule of law for rule by force," but we must continuously seek "a peace that rests upon justice."

The president then discussed the development of air and ground forces strength as a deterrent to aggression and general war, but warned of the necessity for "collective security agreements." There can be "no such thing," he asserted, "as 'Fortress America.'" We will not countenance aggression, as illustrated in the positions taken in Lebanon, Taiwan, and Berlin. He also emphasized the importance of economic assistance programs through both international and national institutions. The president concluded: "It is my purpose to intensify efforts . . . in seeking ways to supplement the procedures of the United Nations and other bodies . . . to the end that the rule of law may replace the rule of force in the affairs of nations. Measures . . . will be proposed later, including a re-examination of our own relation to the International Court of Justice. . . . We seek victory . . . over ignorance, poverty, disease, and human degradation wherever they may be found. We march in the noblest of causes—human freedom."

His suggestion concerning the International Court of Justice was emphasized in subsequent addresses on April 14 by Vice President Richard Nixon and on August 26 by Attorney General William Rogers, looking toward elimination of the Connally Amendment, which restricts American acceptance of the compulsory jurisdiction of that court (see INTERNATIONAL LAW).

Secretary of State Dulles reaffirmed his established views in discussions with the Senate Foreign Relations Committee on January 14. He noted that even though the world changes, there are "certain values, certain principles, that are enduring . . . individual dignity and the supremacy of moral law." He defined United States foreign policy as working for (1) "a stable world order," (2) "general acceptance of the concept of individual dignity which will lead to the spread of responsible freedom and personal liberty," and (3) "a more rapid rate of economic growth" among free nations "so that their independence will be more secure." Communist competition, he said, was becoming intensified through the economic progress in the Communist zone and economic assistance by the Soviet Union to underdeveloped countries. This increasing Soviet economic strength, along with growing military capability, presents a great immediate danger.

World order, claimed the secretary, requires elimination of the use or threat of force to accomplish international change, greater use of the International Court of Justice, and more effective use of the U.N. General Assembly to induce peaceful changes called for by new conditions. "The free world and Communist concepts," he said, "are mutually antagonistic." But some useful contacts are maintained, as in the discussions on elimination of nuclear testing and surprise attacks, on disarmament, on cultural exchanges, on high-level visits, and on the status of Berlin. Even with Communist China, discussions had been going on at Warsaw.

Progress toward a stable world could, he thought, be noted in developments toward freedom, especially in underdeveloped countries of Africa, Asia, and Latin America. He was fully aware of the demand of these nations for economic progress and the danger that if those in the uncommitted area could not get such progress in freedom through aid from the free world they would seek it by other methods and from other sources. "The cause of freedom," said the secretary, "can be won—or could be lost—in these areas." "Our purpose, ultimately and at all times," he concluded, "should be to use our great power, without abusing or presuming upon it to move steadily toward lasting peace, orderly freedom, and growing opportunity."

In his discussion before the House Committee on Foreign Affairs on January 28, Secretary Dulles commented on the opinion that "we should end the cold war." Tensions, he said, might be reduced by "forms of words," as continuously urged by the Soviet government, but "it is my deep conviction that the cold war cannot be ended in any such way." Such steps would end in "victory for international communism." The cause of the cold war, he continued, is the "creed of . . . the 'monolithic international Communist movement'" which controls the policies and resources of 900 million people. This creed, he said, is based on "atheism and materialism," seeking to force human beings into a pattern. The cold war could end, he said, either if the Soviet government abandoned its creed and its global policies, or "if the free world ceased to resist." All Soviet proposals, he thought, were designed "to diminish our will or capacity to resist international communism in the achievement of its worldwide goals."

Before the New York State Bar Association on Jan. 31, 1959, Secretary Dulles discussed three alternative programs for world peace—centralized

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President Eisenhower (center) confers at the White House with the Big Four foreign ministers on May 28, during a recess from the Geneva conference while they attended the funeral of the late Secretary of State Dulles. The diplomatic chiefs are (from left) Herter of the United States, Couve de Murville of France, Lloyd of Great Britain, and Gromyko of the Soviet Union.

world rule, as sought by the Communists; a balance of power, always precarious and tending to maintain a *status quo* likely eventually to be broken by war; and order based not on force, but on justice reflected in the application of international law and procedures of peaceful change. Since the Soviet government opposed the latter concept, it must be deterred by force. There should, said the secretary, be "more condemnation of aggression . . . in the United Nations," more intensified use of procedures of justice in the free world, and more general respect for law as the basis of stability and confidence.

In his letter of April 15 tendering his resignation as secretary of state, Dulles said he had been brought up to believe that the United States had a "mission to help build a world where liberty and justice would prevail." Faced by the "formidable and ruthless challenge from international communism," it was "manifestly difficult to adhere steadfastly to our national idealism and national mission and at the same time avoid the awful catastrophe of war." He expressed great satisfaction in the leadership of President Eisenhower in dealing with this dilemma. President Eisenhower, in accepting the resignation, expressed warm personal regard for Dulles and deep appreciation of his able "handling of our relations with other countries" as a "staunch bulwark of our nation against the machinations of imperialistic communism."

The new secretary of state, Christian Herter, attended the meeting of foreign ministers in Geneva, beginning May 11. In a televised report after his return on June 23, he said there had been "no significant progress" on the German problem, but that the conference was valuable as indicating the unity of the Western powers. In his first press conference on July 9 he was mildly hopeful of eventual agreement in further discussion at Geneva, but at his conference on October 6, shortly after Soviet Premier Khrushchev's visit to the United States, he said that although there had been "easing to some degree" of existing tensions, and the threat of force to Berlin had been withdrawn, he could see little progress toward settlement. He suggested some conditions for the possible recognition of Communist China, and said that the Soviet Union had some "responsibility for the actions of other members of the bloc."

In the meantime, a series of high-level meetings had improved the atmosphere. Soviet Deputy Premiers Anastas Mikoyan (in January) and Frol Kozlov (in June and July) visited the United States, creating a generally favorable impression and inducing Secretary Herter to characterize their visits as "useful." Prime Minister Macmillan

These three leaders in formulating United States foreign policy figured prominently in the news in 1959. Sen. J. William Fulbright (*left*) replaced Sen. Theodore Francis Green (*right*) as head of the Senate Foreign Relations Committee after the latter, at 91 the oldest man to serve in the Senate, resigned the post. Both men are Democrats. Christian A. Herter (*center*), shown at a press conference, was sworn in as secretary of state on April 21, succeeding the late John Foster Dulles.

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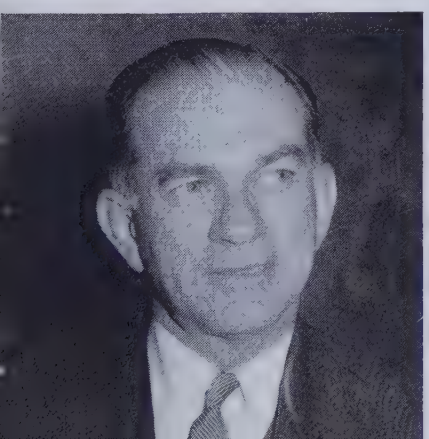

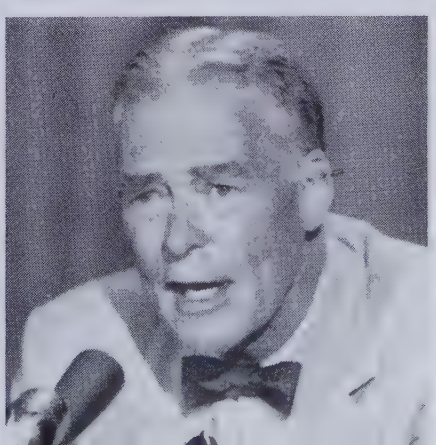

of Great Britain visited both Moscow and Washington in February and March, and Vice President Richard Nixon formally opened the United States Exhibition in Moscow on July 24.

President Eisenhower went to Europe in late August to have conversations with Prime Minister Macmillan, President de Gaulle, and Chancellor Adenauer. In early September he returned for discussion with Premier Khrushchev in Washington and at Camp David in Maryland. The latter meeting resulted in the president's announcement that the threat to Berlin had been withdrawn, that many of his objections to a summit meeting were removed, and that he would visit the Soviet Union in the spring of 1960. Prior to the Camp David conversations, Khrushchev had traveled widely in the United States creating varied impressions, but on the whole his visit seemed to improve the atmosphere.

In accordance with an announcement in early November, President Eisenhower on December 3 began a "mission of peace and good will" in Europe and Asia. "I hope," he said, "to promote a better understanding of America and to learn more of our friends. . . . I shall try to convey to everyone our earnestness in striving to reduce the tensions dividing mankind." He visited Pope John XXIII and the heads of government in Italy, Turkey, Pakistan, Afghanistan, India, Iran, Greece, Tunisia, Spain, and Morocco. In each country he was welcomed by large and enthusiastic crowds. His was the first visit of an American president to Asia, and in this continent particularly, it was generally agreed, he succeeded in his stated purpose. No concrete negotiations had been intended.

Before going to Spain he participated in a meeting of the heads of the four principal Western governments in Paris (December 19–21), at which it was announced that a summit meeting would be held in early 1960. Complete agreement was not, however, reached as to the positions to be taken there. Previous to the summit meeting there was to be another conference of the Western powers, President Eisenhower was to visit Premier Khrushchev in Moscow, and the latter was to visit President de Gaulle in Paris.

On his return, at the White House Christmas ceremony on December 23, President Eisenhower said that the lands he visited were united in "their friendship for America and Americans . . . ; their fervent hope . . . for betterment of themselves and of their children; and their deep-seated hunger for peace in freedom. . . . America's own best interests," he said, "require that we continue our financial investment and aid" to other nations. "Our concept of the good life for humanity does not require an inevitable conflict between peoples and systems. . . . Nor does it offer merely a bare coexistence as a satisfactory state for mankind. . . . We look and work toward a day when there can be open and peaceful partnership . . . between all peoples. . . ."

As the year 1959 moved to a close, the clouds generated by the Berlin crisis appeared less menacing and an atmosphere favorable to reduction of tensions had developed. Ambivalences still existed, however, notably in Congress, whose members had been divided on the expediency of the Khrushchev visit. On May 5 the Senate passed a resolution urging disarmament negotiations, and later both congressional and press comment acclaimed Premier Khrushchev's apparent effort in Peking, which he visited after leaving the United States, to moderate the belligerency of Mao Tse-tung, leader of Communist China.

On the other hand, on July 17 the president proclaimed Capitive Nations Week in accord with a joint congressional resolution passed shortly before. This action resulted in vigorous charges from Communist leaders that it was an incitement to revolution and interference in the domestic affairs of these countries. It was clear that President Eisenhower and Secretary Herter would not find clear sailing in their efforts to moderate the cold war.

(See also AFRICA; DISARMAMENT; FAR EAST; INTER-AMERICAN AFFAIRS; INTERNATIONAL LAW; MIDDLE EAST; SUMMIT CONFERENCE; UNITED NATIONS; UNITED STATES—*The United States in 1959;* and biographical sketches of world leaders mentioned in this article.)

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FOREIGN TRADE. See INTERNATIONAL TRADE; the Index entries, *International Trade* and *Tariffs;* and articles on the individual countries.

FORESTRY. A comprehensive program for development of the national forests was presented to the U.S. Congress in March 1959 by Secretary of Agriculture Ezra Taft Benson. The program called for increased facilities and intensified management in the national forest system during the coming years to meet the needs of a growing population and expanding economy. Proposals included an increase within the next ten years of sustained annual harvest of timber from the current rate of about 8 billion board feet to 11 billion board feet; an increase in the yield of usable water through more intensive management of national forest watersheds; expanded facilities for outdoor recreation; fuller development and use of national forest grazing lands through reseeding of grasses on depleted ranges, control of poisonous plants, and other measures; improvement of food and cover on key wildlife areas; improved facilities for control of fire, insects, and diseases; an expanded system of roads and trails; and a stepped-up program of research.

Secretary Benson stated that the proposals were intended to develop the national forests in line with the program to conserve and improve the national resources of the United States, as outlined by President Eisenhower in his special message to Congress in 1953. Recommendations for financing the national forest program were to be included in the president's annual budget.

For the fiscal year ending June 30, 1960, the Forest Service of the U.S. Department of Agriculture received appropriations totaling $77,815,800 for management and protection of the national forests, $26,000,000 for national forest roads and trails, $14,026,400 for research, and $12,327,800 for federal cooperation with states and private agencies in forestry work. A supplemental appropriation approved by the Congress in July 1959 granted $7.5 million to implement the first year of the forestry program.

National Forests.—The 148 national forests, located in 39 states and Puerto Rico, had a total area of 180,508,232 acres as of June 30, 1958. Experimental forests, land-utilization projects, and related areas brought the total area administered by the U.S. Forest Service to 188,041,707 acres. During the fiscal year 1959 the national forests supplied a record timber harvest of 8,330 million board feet, an increase of 1,900 million board feet over the volume cut in the preceding year. Permits for grazing on national forest ranges were issued for some 3,720,000 cattle and sheep. The Forest Service reported a total of 68,449,500 visits to na-

tional forests for recreational purposes during the calendar year 1958, an increase of 12% over 1957 and of 275% since 1946. Returns to the U.S. Treasury in the fiscal year 1959 from the sale of timber, grazing fees, and other uses of national forest lands and land utilization project areas amounted to $124,067,682, an increase of more than $30 million over fiscal 1958.

Forest Fires.—Dry weather brought high fire danger to national forests in most of the Western states, and during the first seven months of 1959 the Forest Service reported 5,753 fires on lands inside national forest boundaries. The area burned totaled 130,657 acres during the seven-month period in 1959, compared with a five-year average of 92,763 acres for the same months. Largest acreage losses occurred in national forests of California, Arizona, and the Pacific Northwest.

Forest fire losses in 1958 were the lowest on record, according to reports from federal and state foresters compiled by the Forest Service. For all forest lands, public and private, in the United States (exclusive of Alaska), the total area burned was 3,280,000 acres in 1958, compared with an annual average since 1952 of more than 9 million acres. The number of fires reported in 1958 was 97,910, which was under the 100,000 mark for the second year.

In Alaska, 275 fires burned 314,857 acres in 1958. Most of the fires were in interior Alaska where large areas of forest land have had little or no protection. Control activities were being expanded, however, in 1959.

Tree Farms.—The total acreage of tree farms, which are part of the program sponsored by forest industries to encourage the growing of timber as a crop on private lands, passed the 49 million mark in 1959. More than 15,000 certified tree farms were reported.

The Forest Service reported that tree planting in the United States had more than doubled in five years, reaching an all-time high of 1,568,708 acres in 1959. About 86% of the year's planting was on private lands.

Canada.—The Pulp and Paper Research Institute of Canada completed its first year in its new laboratory at Pointe Claire, Quebec, near Montreal. The institute represents a three-way partnership between the Canadian government, McGill University, and the pulp and paper industry.

A forest development commission, created to study the forest resources of New Brunswick, recommended the establishment of a nonpolitical forest advisory council for the province, and long-range planning for land use to give stability to forest tenure and management.

International Forestry Developments.—Marcel Leloup of France, director of the U.N. Food and Agriculture Organization's Forestry Division since its creation in 1946, retired on Dec. 31, 1958. Egon Glesinger became the new director of the division, the name of which was changed on Jan. 1, 1959, to the Division of Forestry and Forest Products.

An organizing committee began preparations for the Fifth World Forestry Congress, to be held in 1960, with the United States government as host. The congress, scheduled for August 29 to September 10 at Seattle, Wash., will be the first held in the Western Hemisphere. Invitations were issued to more than 70 countries which are members of the Food and Agriculture Organization (FAO). Some 1,200 foreign and domestic participants were expected to attend. The last World Forestry Congress was held in Dehra Dun, India, in 1954.

During late 1959, representatives of 19 countries took part in a study tour of watershed management programs in the United States, under sponsorship of the FAO.

The School of Forestry of Hungary's Sopron University observed its 150th anniversary in 1959. The celebration took place at the University of British Columbia, Vancouver, where the staff and students, with the help of the Canadian institution, had re-established the Sopron forestry school following the Hungarian revolution of 1956. Seventy Sopron students received forestry degrees in 1959.

(See also Food and Agriculture Organization of the United Nations; Lumber.)

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Formerly with U.S. Forest Service.

FORMOSA. See Taiwan.

FOUNDATIONS AND TRUSTS. See names of organizations under Societies and Organizations.

FRANCE. Metropolitan (continental) France has an area of 212,821 square miles, which includes various small coastal islands and the island of Corsica (3,367 square miles). The country is a member of the United Nations, the North Atlantic Treaty Organization (NATO), and various European organizations (see European Organizations). France also controls the world's second largest colonial empire, which in 1958 was reorganized under the new label "Community" (see French Community).

Population.—On March 31, 1959, the population of metropolitan France was officially estimated at 44,847,000, as compared with 42,777,174 at the census of May 10, 1954. At the time of the census there were 24 cities with populations of over 100,000. Paris, the capital, had a population of 2,820,534; Marseille, 605,577; Lyon, 462,657; Bordeaux, 250,306; Toulouse, 217,667; Nice, 208,453; Nantes, 197,915; Strasbourg, 193,353; and Lille, 190,078. In 1958 the birth rate was 18.1 per 1,000, as compared with 18.4 in 1957 and 20.7 in 1950. At the same dates the death rates were 11.2, 12.0, and 12.8, respectively. The 1958 death rate was the lowest in recent French history.

Government.—Following the bloodless revolution that began on May 13, 1958, the Fourth Republic's institutions were suspended and were shortly renovated by a hand-picked committee of experts set up by the interim premier, Gen. Charles de Gaulle (q.v.). The new constitution was ratified by popular referendum and was promulgated on Oct. 4, 1958. It preserves many aspects of the traditional parliamentary system but strengthens and stabilizes the executive branch at the expense of the legislature. The president of the republic is elected for a 7-year term by a college of 81,764 electors, which is composed for the most part of delegates of France's 38,000 municipal councils. On Jan. 8, 1959, de Gaulle was proclaimed the first president of the Fifth Republic.

Although the president's prestige and prerogatives have been considerably enhanced, the conduct of government remains in the hands of the premier and cabinet, who are jointly responsible to the lower house of Parliament, the National Assembly. The premier is appointed by the president, but he and his cabinet may be overthrown by a vote of censure adopted by an absolute majority of the assembly's membership. The powers of the assembly have been hedged about by a number of devices in the 1958 constitution. Its annual sessions have been shortened; its freedom to overthrow cabinets has been restricted; and its authority has been partially balanced by expanding the powers of the upper house, now called the Senate. Furthermore, the president's authority to dissolve the assembly and call for new elections has been somewhat reinforced.

The National Assembly is elected by universal suffrage under a system adopted by Premier de Gaulle's interim cabinet on Oct. 7, 1958. This system divides metropolitan France into small electoral districts, each of which sends one deputy to the assembly for a 5-year term. If no candidate in a district receives a clear majority of the votes cast, a runoff election is held a week later, at which time a plurality suffices to elect. This system, traditionally used in France before 1940, replaced the system of modified proportional representation in effect during the Fourth Republic. In Algeria large multimember electoral districts are provided. Voters there choose an entire list of candidates in each district, and election is by mere plurality without a runoff ballot.

The 1958 electoral law assigned 465 deputies to metropolitan France, 67 to the departments of Algeria proper, 10 to the other overseas departments, and 4 to the Saharan departments of Algeria. In addition, those overseas territories that chose during 1958 to retain their

territorial status rather than to become autonomous republics within the French Community were granted continued representation in the National Assembly (6 seats). The composition of the assembly as of July 31, 1959, was as follows:

Parties	Number of deputies
Union for the New Republic (Gaullists)	212
Independent and Peasant bloc	118
Popular Republicans (MRP)	56
Socialists	44
Republican Unity (Algerian deputies)	50
Nonparty group (organized for purposes of committee representation)	40
Communists	10
Republican Center	4
Unaffiliated	18
Total	552

The Senate consists of 307 members elected by indirect suffrage for 9-year terms, one third being chosen every 3 years. Of the total, 255 represent metropolitan France, 7 are chosen by the overseas departments, 34 by Algeria proper and the Saharan departments, and 5 by the overseas territories. The remaining 6 senators are selected by the Senate itself to represent Frenchmen residing abroad. The electoral college in each district is composed mainly of delegates from the municipal councils. The composition of the Senate on July 31, 1959, was as follows:

Parties	Number of senators
Independents	73
Democratic Left (mainly Radicals)	58
Socialists	51
Union for the New Republic	44
Popular Republicans (MRP)	34
Peasants	21
Communists	14
Unaffiliated	12
Total	307

Other central governmental organs include an advisory Economic and Social Council, which may be consulted by the cabinet; and a Constitutional Council of nine appointed experts, which rules on the constitutionality of laws and on the validity of elections. The 1958 constitution also provided for the establishment of a set of federal organs for the new French Community.

For administrative purposes, metropolitan France is divided into 90 departments, 311 arrondissements, 3,031 cantons, and 38,000 communes. Each department's administrative services are supervised by a prefect named by the Ministry of the Interior; he is assisted by an elected departmental council. Municipal services are administered by locally elected councils and by the mayors chosen by these councils. (See also below, *Principal Events, 1958.*)

French President de Gaulle passes in front of missiles on display at 23d International Aeronautical Exhibition at Le Bourget, June 13. He rejected a NATO missile base for France because of differences with the U.S. on question of control.

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Religion.—There are no official census returns on religious affiliation in France, but the country is predominantly Roman Catholic. The number of Protestants is estimated at about 1 million. There are 17 Roman Catholic archbishops and 68 bishops. Protestants of the Augsburg Confession are governed by a General Consistory, while the Reformed Church is under a Council of Administration.

Education.—Education is free in all elementary schools and obligatory for children from 6 to 14 years of age. Secondary education also is free and is open to students who can pass entrance examinations for the 7-year *lycée* course, which prepares them for the baccalaureate degree, a prerequisite for entrance to a university. In 1957–58, France had 5,100 state-operated infant schools with 724,600 pupils and 73,400 state elementary schools with 5,288,500 pupils. Enrollment in the state-operated *lycées* and *collèges* offering secondary instruction totaled 625,000. The 17 universities had 170,023 students in 1957. Private schools (most of them Roman Catholic) had enrollments as follows in 1957–58: infant schools, 24,000; elementary, 1,067,200; and secondary, 444,000. There are 5 Roman Catholic institutes (universities).

The de Gaulle cabinet, by a series of decrees issued early in January 1959, inaugurated significant reforms in the educational system. Compulsory school attendance was extended to the age of 16. An elementary cycle, with the same program for all pupils, will be provided for ages 6 to 11. An intermediate or observation cycle will follow for those aged 11 to 13. Pupils will then be channeled either to general long-term instruction in the *lycées* or to general short-term instruction terminating at age 16. Pupils may also choose to embark on vocational training at age 14. A new system of awarding scholarships is to be established in an effort to equalize educational opportunities.

Transportation and Communications.—The railways are run by the Société Nationale des Chemins de Fer Français, an autonomous corporation in which the government holds 51% of the stock. They handle 70% of the freight, and in 1958 there were approximately 26,000 miles of track, 9,600 locomotives, and 400,000 freight cars. More than two fifths of all rail traffic is powered by electricity. In 1957, France had 49,898 miles of national, 166,970 miles of departmental, and 191,228 miles of local roads. About a fourth of all goods transported in France is moved by water, and navigable waterways, including 2,855 miles of canals, totaled 4,901 miles in 1957. As of July 1, 1958, the French merchant fleet comprised 771 ships (of over 100 gross tons) with a gross tonnage of 4,158,546. French airlines flew 214,090,000 passenger-miles and carried approximately 2.5 million passengers in 1958. (See also AERONAUTICS.)

As of Jan. 1, 1957, France had 3,313,426 telephones. There were 988,600 television sets and 10,646,000 radios on Dec. 31, 1958.

Economic Conditions.—During 1958 the rate of economic expansion slowed down in comparison with the boom years of 1953–57. The gross national product (at current market prices) rose from 20,670 billion francs in 1957 to 23,467 billion in 1958, but most of this increase was inflationary. In spite of the de Gaulle government's efforts to check inflation and to stop the outflow of gold, the treasury deficit continued to increase and imports to outrun exports. France's official gold and foreign exchange reserves, which had dropped to $645 million by the end of 1957, reportedly reached the critically low figure of about $600 million early in 1958. The first budgetary estimates for 1959 indicated a potential treasury deficit twice that of 1958.

In December 1958 the de Gaulle cabinet decreed a series of drastic austerity measures designed to reduce the budgetary gap and to reinvigorate the economy. Taxes were increased to yield an estimated additional $626 million, and governmental expenditures were reduced by abolishing subsidies that totaled $345 million and by suspending most veterans' pensions. Effective December 29, the franc was devalued by 17.55%, from 420 to 493.7 francs to the U.S. dollar.[1] Quota restrictions were removed from 90% of the goods imported into France from other members of the Organization for European Economic Cooperation (OEEC), and from 56% of those from the United

[1] A new heavy franc, worth 100 old francs, was announced in December 1958, and was put in circulation on Jan. 1, 1960.

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(*Left*) Premiers Michel Debré (l.) of France and Antonio Segni of Italy enjoy stroll in Paris, where Segni had gone for talks (March 18–19) with Western leaders. (*Right*) Parisians hail Presidents Eisenhower (waving) and de Gaulle, on September 2.

States and Canada. The government promised to increase its spending for industrial expansion by 25%, and to grant small wage increases to government employees and to low-paid privately employed workers, in an effort to offset anticipated price rises. On December 31, the cabinet, still acting under its grant of emergency powers, proclaimed the 1959 budget in the form of an ordinance.The budget estimated expenditures at 6,189 billion francs and revenue at 5,602 billion. The anticipated deficit was thus slightly less than the 600 billion franc deficit anticipated in the 1958 budget.

During the early months of 1959 the new deflationary measures provoked a slight recession, which the government sought to check by twice reducing the Bank of France's discount rate (from 4½% to 4¼% on February 5, then to 4% on April 23. Antoine Pinay, minister of finance and economic affairs, publicly declared that a brief slump was unavoidable if the new liberalized system were to be given a chance to readjust. He pointed out in March that the 17% devaluation had been followed by a price rise of only about 4%, and in May he was able to announce that prices had leveled off without further rise. He added that $700 million in capital had returned to France in only a few months, that exports in April had almost balanced imports for the first time in years, and that the franc was actually stronger on the black market than on the official market. Improved tax collections brought treasury reserves up by 200 billion francs in the first half of the year. Gold and foreign exchange reserves rose from $1,050 million at the end of 1958 to $1,911 million in October 1959.

These favorable indications were offset by some continuing problems. The burden of war and economic development in Algeria showed no sign of decreasing, and foreign indebtedness now totaled about $3 billion, of which $1 billion was due for repayment within three years. There was growing pressure for wage increases, some of which were granted by individual employers despite the government's appeals. In June, a nationwide railway strike was averted only by drastic governmental action: Premier Michel Debré (q.v.) requisitioned the railway workers, thus forcing the unions to abandon the strike. In October, thousands of war veterans converged on Paris from all parts of France to demonstrate against the suspension of pensions.

Other economic reforms introduced by the government during 1959 included a decree encouraging employers to set up profit-sharing systems in their plants, a decision to authorize rent increases in order to spur housing construction and maintenance, and a bill (passed by the National Assembly on October 30) embodying the most sweeping tax reform in 40 years.

Agriculture.—Of France's economically active population, one person out of four is engaged in agriculture, which contributes about 15% to the national income. The 1958 harvest was somewhat better than that of 1957, although the wheat crop was reduced by bad weather. Wine production also continued to run below the normal figure. Production in 1958 of the chief grain crops (in thousands of bushels) was as follows: wheat, 353,000; rye, 16,930; barley, 178,750; oats, 181,670; corn, 63,960. Sugar beet output (1958–59) increased substantially, to 14,330,000 short tons, while milk production declined slightly, from 46,762 million to 46,535 million pounds. Meat production decreased slightly, to 5,456 million pounds, but continued to run well ahead of the 1951–55 average of 4,811 million. The overall index of agricultural production (prewar = 100) increased from 122 in 1956–57 to 125 in 1957–58.

Industry.—The index of employment (including salaried employees) in manufacturing (1953 = 100) dropped from an average of 107 in 1958 to 105 in June 1959. Production figures, however, tended to rise. The 1958 index of general industrial production (1953 = 100; 1957 figures in parentheses) was 153 (145); that of mining, 118 (115); manufacturing, 158 (148); gas and electricity, 157 (140); and construction, 119 (120). The production curve continued to rise, with some fluctuations, in 1959; in June the general index reached 167. Production of major industrial products in 1957 and 1958 is shown in the accompanying table.

MAJOR FRENCH INDUSTRIAL PRODUCTS

Commodity	1957 (metric tons)	1958 (metric tons)
Coal and lignite	59,088,000	60,036,000
Iron ore	57,768,000	59,460,000
Crude steel	14,100,000	14,604,000
Pig iron and ferroalloys	12,072,000	12,144,000
Aluminum	196,800	209,760
Cement	12,708,000	13,632,000
Cotton yarn	313,200	308,400
Wool yarn	153,600	134,400
Rayon filament yarn	57,840	56,280

Production of electricity rose from 57,432 mil-

lion kw.-hr. in 1957 to 61,800 million in 1958; that of natural gas increased dramatically, from 561.6 million to 1,045.2 million cubic meters. Petroleum output in metropolitan France amounted to 1,387,200 metric tons in 1958, as compared with 1,414,800 tons in 1957. Most of the output came from the Parentis field near Bordeaux.

The prospect of sizable petroleum production in southern Algeria at last began to approach reality in 1959. A 415-mile pipeline from Hassi Messaoud to the Algerian port of Bougie was inaugurated on December 5, and the French expected that in 1960 it would begin to carry about 100,000 barrels of crude oil daily. A second pipeline from the Edjelé area to La Skhira (La Cekhira), Tunisia, was scheduled for completion in mid-1960, and plans were under way for European distribution of Algerian oil through a pipeline extending from Marseille to Strasbourg, to be ready in 1962. Jacques Soustelle, minister delegate in charge of Saharan affairs, told the French Senate on July 21, 1959, that Saharan petroleum would make France self-sufficient by 1963 and an oil exporting nation soon thereafter. French refining companies were notified that they must henceforth give preference to Algerian oil. As of 1959, however, more than 90% of France's petroleum still had to be imported.

Motor vehicle production in 1958 reached an all-time high of 1,127,549 vehicles, of which 938,606 were passenger cars. The de Gaulle government's emphasis on housing construction began to show results in 1958, when 290,400 units were completed. In the first six months of 1959 the figure rose to 150,000.

Foreign Trade.—After several years of increasingly serious imbalance between exports and imports, France managed to close her trade gap in 1959. In 1957 the total value of exports had been 1,868,664 million francs, and that of imports 2,247,828 million. Considerable progress was made toward ending the deficit in 1958, when exports amounted to 2,149,610 million francs, and imports to 2,353,830 million. In the first half of 1959 exports rose to 1,286,498 million francs, while imports remained approximately steady at 1,235,603 million. For the period January–October 1959, France's trade balance showed a surplus of $410 million, as compared with a deficit of $603 million for the same period in 1958. On November 5, France removed one fourth of its remaining quota restrictions on imports from the United States, Canada, and the OEEC nations. An even more sweeping liberalization was predicted for January 1960.

France's best customers in 1958 were West Germany, Belgium-Luxembourg, the United States, the United Kingdom, and Switzerland, in that order. Its largest suppliers were West Germany, the United States, Belgium-Luxembourg, Morocco, and the United Kingdom.

On Jan. 1, 1959, in accordance with the requirements of the European Economic Community (EEC) treaty of 1957, the French government reduced by 10% its tariffs on goods imported from other EEC countries and increased its import quotas from them. In April, France and West Germany signed the first long-term agricultural trade agreement to be negotiated within the EEC. The agreement set annual quotas for the sale of French grain to Germany during 1959–62, with some increase in volume and price over those of recent years. The Saar (q.v.) was transferred from the French to the German customs area on July 6.

Principal Events, 1959.—Developments in France in 1959 were dominated by the figure of a man, President Charles de Gaulle (q.v.), and the shadow of a problem, the Algerian revolt. The seemingly insoluble Algerian crisis had produced the so-called revolution of May 13 (1958) that wrecked the Fourth Republic and brought de Gaulle to power as an interim savior. By the end of 1958, de Gaulle had supervised the construction of a new governmental system and had been elected to a 7-year term as first president of the Fifth Republic. A new National Assembly had also been chosen, on Nov. 23–30, 1958, and was heavily dominated by declared supporters of de Gaulle.

On Jan. 8, 1959, de Gaulle took the presidential oath of office and formally replaced René Coty, last president of the Fourth Republic. His first act was to designate Michel Debré (q.v.), a long-time and fervent disciple, as premier. Most of Debré's ministers were carried over from the interim cabinet that de Gaulle had headed since June 1958. The principal change was the withdrawal of three Socialist ministers, who obeyed party instructions to abandon the governing coalition. At a party congress on January 10–11, however, the Socialists pledged themselves to avoid "systematically negative" opposition to the Debré government.

Debré's cabinet was composed, therefore, of ministers drawn from his own party (the neo-Gaullist Union for the New Republic or UNR), the right-wing Independents, the Popular Republicans (MRP), the Radicals, and the higher civil service. This last category, called in France non-party technicians, had never before been given so direct a role in French political affairs. In accordance with the new constitution, those ministers who had been elected to the National Assembly had to resign their legislative seats in order to take cabinet posts. Although Debré was not required by the constitution to seek confirmation of his powers from the assembly, he appeared before it on January 15 and presented a lengthy policy statement, which on the next day was approved by a massive vote of 453 to 56.

While Debré firmly insisted on France's unshakable sovereignty in Algeria, his government took immediate steps toward clemency for the rebels. The death sentences of about 180 condemned terrorists were commuted on January 13, and plans were announced to release approximately 7,000 interned nationalists. A shift from military to civilian rule in Algeria had already begun in December, when a high civil servant, Paul Delouvrier, had been named delegate general there. Delouvrier's chief task was declared to be the application of a sweeping program of economic development, outlined by de Gaulle in a speech at Constantine on Oct. 3, 1958. This five-year plan, involving heavy public and private investment, was designed to create new industries and 400,000 new jobs, to modernize agriculture, and to provide new housing and schools. A 46-member commission appointed to work out details of the plan met in Algiers on Feb. 10, 1959, with Premier Debré in the chair. By October 1, Delouvrier was able to announce that plans had been approved for the division of 275,000 acres of farm land among Moslem families, the construction of four dams and 45,000 housing units, and the installation or expansion of 132 French firms through state subsidies.

Signs of reviving discontent appeared during the winter months both in France and among the European settlers in Algeria. The settlers attacked the policy of clemency toward terrorists and complained that neither Debré nor de Gaulle had publicly accepted their slogan of complete integration with France. An extreme right-wing group

embodying these views, the Nationalist Party, was organized in Paris on February 6, but was suppressed on February 13 as a threat to state security. On the left, the trade unions, Socialists, and Communists charged that the government's measures for financial stabilization loaded the whole burden on the workers. War veterans resented the suspension of their pensions, decreed as part of the austerity program.

This growing dissatisfaction influenced the results of the municipal elections of March 8, when new councils were chosen in France's 38,000 communes (runoff elections were held on March 15). In the 13 largest cities the Communists increased their popular vote by 19.5% over the November 1958 figure, while the UNR's total fell by 21.5%. In rural areas the swing was back toward the traditional habit of electing conservative (Independent or Radical) or nonparty candidates to local offices. The powerful Gaullist tidal wave of November 1958 was less likely to recur in municipal voting, but the tendency of the large cities to swing back toward the left was significant. On April 26, the election of the new Senate gave further evidence of a return to traditional voting patterns. The UNR again failed to repeat its striking victory of November, capturing only 27 seats in continental France; it was outstripped by the Independents, the Radicals, the Socialists, and the MRP. Among the victors were many prominent politicians of the Fourth Republic who had been beaten by Gaullists for election to the National Assembly.

The revival of the older political elite encouraged the politicians to voice their discontent at the restricted role assigned to Parliament in the Fifth Republic. A sharp controversy developed in May between Premier Debré and an important minority in the National Assembly, which demanded the right to debate and vote on statements made by cabinet ministers in answer to oral questions put by the deputies. Debré resisted this effort to re-establish some of the assembly's lost control over cabinet policy, and he was supported in this stand both by his own UNR and by the Constitutional Council inaugurated on March 5. It was clear, however, that the members of both houses of Parliament would continue to agitate for a broadening of their authority.

Another source of political conflict also began to develop in May. The issue of state financial aid to Roman Catholic schools had long divided Frenchmen. Some limited subsidies were voted by Parliament in 1951, but Catholic pressure for more generous aid continued. Many of the deputies elected in 1958 had committed themselves to such a program, and urgent appeals for action came from Catholic school organizations in 1959. Reports that the Debré government was preparing to satisfy their demands aroused the anticlerical elements of the left, which denounced Debré for allegedly yielding to clerical pressures and asserted that the state schools needed help more desperately than the church schools. On July 23, Debré sought to quiet the storm by announcing the appointment of a special commission to study the problem. In December, the government presented the National Assembly with a bill providing state aid on condition that the church schools accept limited state supervision. The bill was adopted on December 24 by a vote of 427 to 71, after the anticlerical minister of education, André Boulloche, had resigned in protest. Despite this large majority, followed by Senate approval (173–99) on December 30, left-wing hostility in the country threatened to produce serious conflict.

Algeria, meanwhile, remained in stalemate.

UPI; WIDE WORLD

***(Left)* Messali Hadj, leader of a moderate Algerian nationalist faction, listens to question during news conference at his French residence in September. *(Right)* Foreign Minister Maurice Couve de Murville, in October, said France was willing to negotiate cease-fire with Algerian rebels.**

Municipal elections held there on April 19–26 produced ambiguous results, but there seemed to be at least a slight trend away from the extremists of both camps. A few European moderates, a few Moslem moderates not only dared to run but managed to get elected. The outcome, along with de Gaulle's decision (April 7) to commute the death sentences of 30 more terrorists, aroused the diehard settler group. Fears that they might resort to violence on the anniversary of May 13 proved unfounded, but some of them began openly to repudiate de Gaulle's leadership. The president struck back sharply at his critics, who, he charged, wanted to resurrect "Papa's Algeria." On May 7, he insisted that the pacification of Algeria was close at hand, perhaps through the military successes being achieved under the Challe Plan. De Gaulle's hopes were also based on the obvious growth of war weariness in Algeria and on new signs of a turn away from the extremists. On May 31, Algeria proper elected its 32 members of the French Senate and chose moderates over extremists in almost every case.

The stalemate continued through the summer despite repeated rumors of impending negotiations through King Mohamed V of Morocco. De Gaulle made a personal tour of Algeria on August 27–30, partly to test the reactions of the army there toward a new project for ending the revolt. On September 16, his long-anticipated plan was finally announced in a radio-television address beamed to both France and Algeria. De Gaulle offered the Algerian people the right of self-determination no later than four years after the restoration of peace there. Three options, he declared, would be open to the Algerians: independence, integration with France, or a special federal relationship that would ensure internal autonomy. De Gaulle made it clear that he strongly preferred the third alternative, and that independence would in his judgment bring disaster.

De Gaulle's proposal was applauded by many Frenchmen, by the British and American governments, and by President Bourguiba of Tunisia. The Algerian rebel leadership, the National Liberation Front (FLN), issued a cautious reply on September 28. Its communiqué accepted the principle of self-determination as a substitute for its previous demand for immediate independence, and suggested the possibility of an "immediate" cease-fire if the French would agree to negotiate with the FLN as the representatives of the Algerian people. An equally cautious and indirect reply came from the French government on October 13, when Premier Debré offered the FLN leaders a

safe-conduct to come to France for discussion of a cease-fire. But the FLN's insistence on discussing the political as well as the military conditions of a cease-fire continued to be a stumbling block. On November 10, President de Gaulle appealed once more to the rebels to end the conflict.

Although de Gaulle's plan for Algeria did not require parliamentary approval, Premier Debré sought such approval from the National Assembly, where he won a majority of 441 to 23 for the government's plan on October 16. Most of the speakers during the debate had, however, denounced the concept of self-determination for Algeria, and nine UNR deputies resigned from the party to show their disapproval. Their resignation was evidently intended to spark a massive revolt within the UNR, designed to force the Debré cabinet out of office in favor of a more intransigent right-wing group claiming to speak for de Gaulle. The president's behind-the-scenes intervention headed off the coup.

The dissatisfaction of the colonial extremists showed up, however, in other ways. They resented de Gaulle's September plan for Algeria and were aroused at new terrorist attacks in Algiers. On October 15, a Gaullist deputy asserted in Parliament that professional assassins were being spirited into France via Spain with orders to kill politicians accused of betraying French Algeria. That night a prominent left-wing senator, François Mitterrand, reported that he had been pursued through Paris by a carload of armed men, who had shot up his car just after he abandoned it to seek shelter. Four days later, the Paris police conducted a series of surprise raids on the headquarters of right-wing organizations and the dwellings of extremist leaders in Paris. The government also struck at its left-wing critics and at the political activities of certain army officers. Late in October it ordered the prosecution of two leftist weeklies on charges of undermining public confidence in the army, and it scolded Marshal Alphonse Pierre Juin, highest-ranking officer in the army, for publishing an article attacking self-determination for Algeria. (See also ALGERIA.)

Meanwhile, the Mitterrand affair took a curious turn. On October 22, an obscure rightist politician, Robert Pesquet, asserted that Mitterrand had asked him to arrange a false assassination attempt in order to cast discredit on the Gaullist right. Mitterrand retorted that Pesquet had come to warn him and had tricked him into a trap. The senator, who had tried to protect Pesquet by concealing his name from the police, found himself accused of obstructing justice. On November 25, after much political bickering, the Senate voted (175–27) to strip Mitterrand of his parliamentary immunity against prosecution.

On November 28, the first formal attempt to overthrow the Debré cabinet failed in the National Assembly. Deputies of the left-wing opposition introduced a motion of censure aimed at the 1960 budget—particularly at Debré's refusal to restore cuts in veterans' pensions. The government won an overwhelming vote of confidence.

On December 2, the Malpasset Dam in southern France gave way and inundated the Reyran Valley. The dam, only five years old, had been weakened by heavy rains; 503 persons were reported dead or missing.

France and the Western Nations.—President de Gaulle's strong leadership won renewed prestige for France in 1959, but some increase in international friction was an inevitable corollary. The Debré cabinet's first policy statement on January 15, though it expressed support of western European institutions and of NATO, asserted even more strongly France's determination to assert its rights as a nation. The government was not slow in proving that it meant what it said.

On March 11 the French notified the North Atlantic Council that they were withdrawing their commitment to place one third of their Mediterranean fleet under NATO command in the event of war. Instead, the entire fleet would be kept under French command to safeguard communications with Algeria. The new policy was regarded as a product of French resentment at criticism of their Algerian policy in NATO countries, and of de Gaulle's desire for full equality with Great Britain and the United States in the NATO decision-making process. In July, the U.S. Air Force found it necessary to transfer 200 fighter bombers to bases outside France because the French government refused to permit the stockpiling of nuclear bombs. Negotiations for the installation of missile-launching sites in France reached complete deadlock. (See also NORTH ATLANTIC TREATY ORGANIZATION.)

Meanwhile, de Gaulle was moving steadily toward the consolidation of a French-led bloc in western Europe. A meeting with Chancellor Konrad Adenauer in Paris on March 4 tightened the new Franco-German rapprochement. In an official visit to Italy on June 23–28, de Gaulle reportedly advocated close Franco-Italian collaboration and the possible creation of a western Mediterranean security pact that might include Spain and Morocco as well. Out of these talks came reports that France, Italy, and West Germany might set up a joint committee to shape a common political policy for the six-nation European Economic Community (q.v.). This tendency to convert a trading organization into a political association further irked the British, who were still smarting from the breakdown in 1958 of their plan to attach a broader free trade area to the EEC. Franco-British differences on these and other matters were composed in talks by Foreign Secretary Selwyn Lloyd with French officials on November 11–12.

Further friction with the other Western powers was generated by France's insistence on pushing ahead with its program of atomic bomb production and on carrying out its plans to explode a bomb in the Sahara (see ATOMIC ENERGY), and by de Gaulle's resistance to the idea of an early summit conference with the Soviet Union. A certain relaxation of tension between France and the United States resulted from President Dwight D. Eisenhower's visit to Paris on September 2–4. De Gaulle's offer of self-determination for the Algerians also made it easier for the United States to abstain from supporting a motion critical of France's Algerian policy which failed of adoption by the U.N. General Assembly on December 12.

On October 21, it was announced that de Gaulle had invited Nikita S. Khrushchev to visit Paris, and that Khrushchev had accepted (on November 10, de Gaulle stated that the Soviet premier would arrive on March 15, 1960). France's claim to be regarded as one of the four great powers was enhanced by this move, and a summit conference was further delayed.

The widening rift within the North Atlantic alliance led Chancellor Adenauer to visit Paris on December 1–2 for talks with de Gaulle. Adenauer indicated concern that de Gaulle's unbending attitude might endanger the existence of NATO and might lead the United States to withdraw its forces from the continent. De Gaulle reassured Adenauer but contended that western Europe should look to the time when it would ensure its own defense through the development of French atomic weapons. Two weeks later, at the annual NATO minis-

terial conference in Paris (December 15–22), Franco-American differences came into the open because of the disclosure on December 12 of Gen. Nathan F. Twining's severe criticism of France's opposition to the integration of NATO military forces and its refusal to allow stockpiling of American atomic weapons on French soil. The French reacted angrily, but de Gaulle retreated slightly by suggesting that NATO seek a formula midway between integration of forces and a simple coalition. A second round of talks between President Eisenhower and de Gaulle at the Western summit conference held in Paris and Rambouillet on December 19–21 apparently accomplished little except to prevent the rift from growing worse. The French achieved a diplomatic triumph, however, when they persuaded the NATO foreign ministers to accept Paris as the site of the forthcoming summit conference in 1960.

(For further references, see the Index entry, *France.*)

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FRANKE, William Birrell, U.S. secretary of the Navy: b. Troy, N.Y., April 15, 1894. Nominated to the cabinet post on May 5, 1959, Franke was sworn in on June 8. He succeeded Thomas S. Gates, Jr. (q.v.), whom he had earlier followed as the department's under secretary.

Educated in Troy, Franke worked his way through New York City's Pace Institute (now College), became a certified public accountant, and after working with accountancy firms in New York and Rochester, opened his own office in New York City in 1929. This became the firm of Franke, Hannon, and Withey, from which he resigned as a senior partner on taking office as assistant secretary of the Navy in 1954. His entry into public affairs had come in 1935, when he was called on to audit the tangled finances of Louisiana State University. His subsequent service as a civilian adviser to the Army controller (1948) and as special assistant to the secretary of defense (1951–52) brought him an Army commendation for "patriotic civilian service" and the Department of Defense's Distinguished Service Award. He was named assistant secretary of the Navy for financial management in 1954 and under secretary in April 1957.

FRENCH CAMEROONS (known as **CAMEROON** after Jan. 1, 1960). Since Dec. 13, 1946, a United Nations trust territory situated on the west coast of central Africa, the territory became independent on Jan. 1, 1960. Estimated area, 166,800 square miles; pop. (1957), 3,187,621, including 16,515 nonindigenous persons, mainly French. Yaoundé (pop. 1955, 38,000) is the capital, and Douala (pop. 1957, 119,100) is the chief port. Chief ethnic groups are the Bantus, Kirdi, Foulbes, and Bamilekes.

Government.—Under a statute proclaimed in Paris on Dec. 31, 1958, the territory obtained internal autonomy, with responsibility for all matters except defense, foreign relations, and currency, until the attainment of independence on Jan. 1, 1960. Legislative power in 1959 was exercised by a 70-member Legislative Assembly elected by universal suffrage in 1956. The ministry, headed by a premier, was responsible to the assembly. Ahmadou Ahidjo, leader of the Cameroon Union Party, was approved as premier by the assembly on Feb. 20, 1958.

Education and Religion.—In the period 1946–57 there occurred a sixfold increase in school attendance. As of Jan. 1, 1958, there were 2,587 schools, with a total of 303,966 pupils (about 64% of the school-age population). School attendance exceeds 90% of the school-age population in the south, but is considerably lower in the north. Christians number about 1.7 million, mainly among the Bantus and other groups in the south; Moslems approximate 500,000, mainly among the Hamitic tribes in the north.

Finance.—The ordinary budget for 1958 totaled 10.9 billion francs CFA (revised). In the period 1948–58, French subsidies and loans amounted to 110,000 million metropolitan francs (at 1957 value) for development of transport and communications, agriculture, industry, education, and social services.

Transportation and Communications.—The railroad system comprises 2 lines (Douala-Yaoundé and Douala-Nkongsamba) aggregating 314 miles. Roads approximate 7,500 miles (of which nearly half are classified), with about 350 miles asphalted. Shipping capacity of the port of Douala, on the Gulf of Guinea, totaled 850,000 tons in 1958, over 4 times that of 1946. The chief airport, at Douala, is of international class. Passenger cars in 1958 numbered 6,980; telephones, 4,243.

Production.—The economy is chiefly one of subsistence agriculture; food crops include cassava, corn, yams, millet, rice, bananas, and peanuts. Considerable expansion has recently taken place in output of cash crops, chiefly: cocoa beans (1958–59 output, 134 million pounds); coffee (1958–59: 450,000 bags of 132 pounds each); cotton (about 22,000 tons in 1958); and bananas (about 87,000 tons in 1957). Industries, concentrated mainly about Douala, include vegetable oil, meat products, building materials, wood products, soap, and beer. The Edea aluminum plant, the territory's largest single industry, produced 31,866 metric tons of aluminum in 1958, its second year of operation.

Foreign Trade.—Exports in 1958 totaled 22,291 million francs CFA (up nearly 50% over 1957); imports, 21,452 million (up 18%). Chief exports and quantities (in metric tons) were: cocoa beans, 54,403; green coffee, 26,485; timber, 152,348; and bananas, 73,018. Imports were mainly foodstuffs, cotton textiles, petroleum products, and machinery. France purchased 62% of exports and provided 62% of imports.

Principal Events, 1959.—The French government and the native regime under Premier Ahmadou Ahidjo agreed in 1958 that the territory would attain independence on Jan. 1, 1960, and a United Nations mission which toured the territory in late 1958 recommended that the trusteeship status of the territory be terminated. At a special session of the U.N. General Assembly in early 1959, there was considerable debate over whether new elections should be held in the territory prior to independence. Elections were demanded by petitioners from the territory who charged that the Yaoundé regime was subservient to France, since the 1956 elections had been held with French troops present and after certain major parties had been banned. These petitioners were supported by the Soviet bloc, as well as several African and Asian nations. On March 13, however, the U.N. General Assembly voted to end the trusteeship agreement without prior elections, though requesting that new elections be held as soon as possible after independence.

Following the apparent cessation of terrorist activities after January 1958, a general amnesty was enacted by the Legislative Assembly on Feb. 14, 1959. However, the leftist Cameroons Peoples Union, which had been outlawed since 1955 and was alleged to be the main force behind the terrorism, remained prohibited. Terrorism broke out anew in mid-1959, when it appeared that new elections would not be held prior to independence. On June 27, six persons were killed in riots in Douala, and in the succeeding three months over 100 persons were slain in various incidents in Bamileke and Mungo provinces. On December 2, a clash between a large terrorist band and a government force at Bamendou resulted in 24 terrorists killed.

M. J. G.

FRENCH COMMUNITY. By the Constitution of the Fifth Republic, metropolitan France and the French colonial empire (called since 1946 the French Union) have been fused into a new structure officially called the Community. The voters of the overseas territories, by ratifying or rejecting the constitution in the referendum of Sept. 28, 1958, signified their intention to enter the Community or to break all formal ties with France. Only Guinea chose the latter course. In the other

territories, 9,221,585 votes were cast for participation in the Community, and only 632,606 against.

During the six months that followed, the territories were required to choose among three alternatives: (1) to become self-governing states in the Community; (2) to be fully integrated with France as overseas departments; and (3) to retain their status as partially autonomous overseas territories of the French Republic. The choice, made in each instance by the territorial legislature, was in most cases for the first alternative: 12 territories voted to become self-governing states, while 5 smaller and more isolated colonies preferred to continue as overseas territories.

THE FRENCH COMMUNITY[1]

Division	Area (sq. mi.)	Population[2]
French Republic:		
Metropolitan France	212,821	44,847,000
Algeria[3]	919,590	10,265,000
Overseas departments (outside Algeria):		
Martinique	425	267,000
Guadeloupe	687	260,000
Réunion	970	318,000
French Guiana	35,100	30,000
Overseas territories:		
Comoro Islands	838	182,000
French Somaliland	8,500	69,000
New Caledonia and dependencies	8,548	69,000
French Polynesia	1,544	79,000
St. Pierre and Miquelon	93	5,000
Territories under trusteeship:		
French Togoland[4]	22,000	1,100,000
French Cameroons[5]	168,800	3,187,000
Anglo-French condominium:		
New Hebrides	5,700	58,000
Other member states:		
Central African Republic	241,700	1,177,000
Republic of Chad	495,400	2,600,000
Republic of Congo	134,750	795,000
Republic of Dahomey	44,696	1,725,000
Gabon Republic	102,300	[421,000
Republic of Ivory Coast	124,503	3,103,000
Malgache Republic	227,800	5,184,000
Islamic Republic of Mauritania	419,229	725,000
Republic of Niger	458,993	2,800,000
Republic of Senegal	76,124	2,550,000
Soudanese Republic	464,873	4,300,000
Republic of Upper Volta	105,839	4,000,000
Total	4,281,823	91,116,000

[1] Also included in the Community as overseas territories are the Southern and Antarctic Territories, former dependencies of Madagascar, comprising Adélie Coast in Antarctica and the Crozet, Kerguelen, St. Paul, and Amsterdam islands in the southern Indian Ocean, which were given autonomous status in 1955. [2] Latest population estimates from Statistical Office of the United Nations, *Population and Vital Statistics Reports*, Statistical Papers Series A, vol. 11, no. 4 (October 1959). [3] Comprises Algeria proper and the 2 Saharan departments. [4] Scheduled to attain independence on April 27, 1960. [5] Attained independence as Cameroon on Jan. 1, 1960.

Federal Institutions.—The Community's institutional framework was gradually erected during 1959. According to the 1958 constitution, the president of the French Republic serves ex officio as president of the Community, and is assisted by three other federal agencies: an Executive Council, a Senate, and a Court of Arbitration. Charles de Gaulle assumed office as president on Jan. 8, 1959, and proceeded without delay to call the Executive Council into session. It met on February 3–4 in Paris; its membership of 25 included (in addition to de Gaulle) the French premier, the premier or president of each of the new member states, and those French cabinet ministers responsible for the Community's common affairs. At this and subsequent sessions (in all, six sessions were held in 1959), the council filled in the details of the Community's operation. The official language was declared to be French; the motto, "Liberty, Equality, Fraternity"; the anthem, the *Marseillaise;* the flag, the French tricolor with a special insignia on the shaft. Several subcommittees were set up to study the problems included in the Community's jurisdiction (foreign policy, defense, currency, common economic and financial matters, and policy on strategic raw materials).

At the council's 3d session (May 4–5) it was agreed that French economic and technical aid to other member states would be arranged through bilateral accords. The 4th session, held at Tananarive on July 7–8, heard assurances by Foreign Minister Maurice Couve de Murville that the African republics would soon be authorized to send their own representatives to the United Nations specialized agencies, and would be given some share of diplomatic representation in certain French embassies. At its 5th session (Paris, September 10–11), the council discussed the organization of common defense, the expansion of higher education in the African republics, and the development of a Community-wide investment plan.

Meanwhile, the Court of Arbitration had been established on March 7, and the Senate on July 15. The court, charged with settling disputes between member states, consists of 7 judges appointed by the president for a 6-year term; 4 of the members are French, and 3 African. The Senate comprises 284 members, 155 of whom represent metropolitan France. Members are chosen by the French Parliament or by the legislative assemblies of the other member states from among their own membership. The Senate, which meets twice a year in sessions no longer than one month, may be asked to deliberate on matters of economic and financial policy or on international agreements that affect the entire Community. Its powers are thus narrowly restricted.

Political Developments in the African Republics.—During the early months of 1959 most of the 12 new African republics adopted constitutions and held elections for new legislative assemblies. The political situation in the various states was complex and confused. New parties and leaders had been emerging in French Africa since the end of World War II, and some of these parties had begun to federate on a regional or semicontinental scale. The two strongest groups by 1958 were the African Democratic Rally (RDA), led by Félix Houphouet-Boigny of the Ivory Coast, and the African Regroupment Party (PRA), headed by Léopold Sedar Senghor of Senegal. Differences within each of these parties were about as great as those between them. Within almost every one of the African states political issues were overlaid by a complex mosaic of tribal, regional, and religious differences.

Several republics tended strongly toward the kind of single-party domination that had already come to mark such neighboring independent states as Ghana and Guinea. In the Ivory Coast, Houphouet's RDA won every seat in the 100-member Legislative Assembly in the election of April 12, 1959; no opposition candidates even entered the race. In Senegal, on March 22, Senghor's party won all 80 seats. In other republics party rivalries persisted and exploded into violence once French control was removed. At Brazzaville, in the Congo, riots on February 16–20 left more than 100 dead. The outbreak was followed by the arrest of the opposition party leader Jacques Opangault and by a sweeping victory in the elections of June 14 for the party of Premier Fulbert Youlou. In Dahomey a quite different pattern emerged: elections of April 2 produced an uneasy three-way balance of power in the Legislative Assembly.

Structure of the Community.—Two rival concepts of the future character of the Community emerged in 1959 in French Africa. The so-called federalists urged the conversion of the Community into something like the British Commonwealth of Nations. They favored early independence for each of the republics and the fusion of these states into one or more large African federations loosely linked to France. The chief spokesmen for this view, Senghor of Senegal and Modibo Keita of Soudan, fused their states into the Mali Federation in April, but without transferring all sovereignty to it. On July 5–6, they founded the Party of African Federation (PFA), replacing the PRA; it claimed to have branches in Dahomey, Niger, and Upper Volta. At the 5th session of the Executive Council in September, the Mali leaders informed de Gaulle that they intended to press for full independence.

A second faction, headed by Houphouet of the Ivory Coast and tacitly supported by the French, asserted that it would "refuse to belong to a community that was nothing more than a commonwealth." Houphouet insisted that each republic should remain intimately linked with France, whose aid would be essential for development and defense. He sought to offset the growth of Mali by

developing loose confederal ties between Ivory Coast and Dahomey, Niger, and Upper Volta.

In the most remote of the new states, the Malgache Republic (Madagascar), the ruling party of Premier Philibert Tsiranana strongly favored the preservation of an intimate tie with France. De Gaulle, during his visit to Tananarive in July, used his prestige to bolster the Tsiranana government against its ultranationalist critics, who demanded immediate independence. When Dr. Joseph Raseta, a nationalist interned in France since 1947, sought to return to Madagascar in July, he was headed off and brought back to France by French authorities.

By the end of 1959 it was clear that the leaders of the Mali Federation would not be deterred from their demand for independence, and de Gaulle felt it unwise to resist. During the 6th session of the Community's Executive Council, held at St.-Louis, Senegal, on December 11–12, he announced that negotiations would begin in January for the transfer of Senegalese and Soudanese sovereignty from Paris to Dakar, capital of the federation. Premier Tsiranana of the Malgache Republic promptly took advantage of the new mood in Paris; he announced on December 20 that the French had agreed to negotiate independence for the republic as well. A report that the Republic of Dahomey had presented a similar request was denied on December 21 by its premier, Hubert Maga.

Overseas Territories.—Only five remote and thinly populated French possessions chose in 1958 to retain their status as overseas territories, with representation in the French Parliament and with semiautonomous territorial assemblies. One, French Somaliland, was visited by de Gaulle in July 1959. He expressed France's determination to keep this foothold on the Red Sea despite the agitation of the Greater Somalia faction in favor of independence and fusion with neighboring areas.

Overseas Departments.—On Dec. 20–22, 1959, rioting in Fort-de-France, the capital of Martinique, left three persons dead and a dozen injured. Although the disorders were set off by a traffic accident that produced clashes with the police, the upheaval was in fact political in character. The Martinique Communist Party had been agitating for autonomy for the island, while an association of self-exiled French colonists from Morocco and Tunisia had been vigorously resisting the autonomist demands.

Trusteeships.—In July 1959, at its 24th session, the U.N. Trusteeship Council praised the French for preparing the independence of the trust territories of the Cameroons and Togoland, scheduled, respectively, for January 1 and April 27, 1960. Meanwhile, severe outbreaks of terrorism occurred in the Cameroons in July and August, as a consequence of tribal and political rivalries. Dr. Félix Moumie, head of an extremist party outlawed by the Cameroons government, claimed responsibility for the terrorism as a device to force new elections before the arrival of full independence. He accused Premier Ahmadou Ahidjo's government of collaborating with the French to prolong colonial rule behind a façade of false independence. Moumie's followers set off a new and bloodier wave of riots late in December, in a last futile protest against the proclamation of the independence of the new nation of Cameroon.

(See also AFRICA; FRANCE; and separate articles on the states named in this article.)

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FRENCH EQUATORIAL AFRICA. A former federation of four French overseas territories in west-central Africa, which ceased to exist as a political entity when the French Union was succeeded by the French Community (q.v.) and the four territories of the federation became autonomous republics of the Community. On Jan. 17, 1959, the four republics—Central African Republic, Chad, Congo, and Gabon (qq.v.)—signed a protocol in Paris for the establishment of a customs union and for the joint administration of ports, railways, river navigation, postal services, and telecommunications. The president of the Central African Republic and the premiers of Chad, Congo, and Gabon met at Brazzaville, Congo, on June 23–24. Agreement was reached on the form of the customs union and on the establishment of three joint organizations for telecommunications, transport, and mining research, to come into operation upon the formal dissolution of the French Equatorial Africa grouping on June 30.

FRENCH GUIANA. An overseas department of France, on the northern coast of South America. Estimated area (including the Inini hinterland), 35,100 square miles; pop. (est. 1958), 30,000, chiefly of mixed Indian, European, and African descent. Cayenne (13,346) is the capital. The department is ruled by a prefect and an elected General Council of 15 members. In 1956 there were 33 primary schools (4,997 pupils), 1 public secondary school (516), and 1 public technical school (140). Crops include cassava, sweet potatoes, sugarcane, rice, bananas, and manioc. Gold mining and the manufacture of rum are the chief industries. Imports in 1958 totaled 3,433 million francs; exports (mainly gold, timber, and rum), 556 million. Trade is mostly with France. National roads total 170 miles. International airlines operate scheduled flights to Cayenne.

FRENCH GUINEA. See GUINEA.

FRENCH INDOCHINA. See CAMBODIA; LAOS; VIETNAM.

FRENCH LITERATURE. The main events of the French literary year, beside the considerable success obtained by two imports—*Lolita,* by the American, Vladimir Nabokov, and *Docteur Jivago* (1958)[1], by the Russian, Boris Pasternak—were the death of Robert Kemp (b. 1885) and the publication of the memoirs of François Mauriac and Simone de Beauvoir.

Robert Kemp, who died on July 3, 1959, had one of the most cultured minds in France and was one of her best literary critics. Belonging to the great tradition of such critics of the 19th and 20th centuries as Brunetière, Faguet, and Thibaudet, Kemp will be easier to replace on the French Academy than in the realm of criticism.

Mauriac's *Mémoires intérieurs* is the tempestuous soliloquy of a man who, though in his middle 70's, remains a great writer at the peak of his art. An ardent Roman Catholic, Mauriac has composed a lyrical, entirely subjective piece of writing. On the other hand, Madame de Beauvoir's *Mémoires d'une jeune fille rangée* (1958) is a lucid, objective examination of a "case history." The author brilliantly recounts her own transformation from a "well-bred" young lady into an "entirely free" existentialist philosopher and writer. Her book has humor, charm, and style. The reader, however, while admiring this work on the artistic level, may find that its rationalization of the author's childhood from an existentialist and psychological point of view is not completely convincing.

Novels.—As in previous years, the novels of

[1] Unless otherwise noted, all volumes mentioned in this article were published in 1959.

EUROPEAN WORLD: FRENCH PRESS & INFORMATION SERVICE

(*Left*) Robert Kemp, who died on July 3, 1959, was one of the foremost literary critics of France. (*Center*) Simone de Beauvoir, in her memoirs, traces her growth as an existentialist. (*Right*) François Mauriac published his memoirs in 1959.

1959 were abundant and varied, with some of the best French novelists adding new titles to their bibliographies. Jules Romains contributed the third volume in his series that began with *Une femme singulière* in 1957 and *Le besoin de voir clair* in 1958. The new novel, *Mémoires de Madame Chauverel,* proved to be rather disappointing. Henri Troyat, who was elected to the French Academy in 1959[2], published *Les Compagnons du Coquelicot,* the first volume of what promises to be an ambitious, multivolume historical novel. *Les murmures de Satan* by Roman Catholic novelist Michel de Saint-Pierre calls to mind the excellence of his *Les aristocrates* (1955). Louise de Vilmorin's *Migraine* confirms her position as one of the most gifted and charming novelists writing in the classical and psychologically penetrating tradition.

The most impatiently awaited novel of the year was *Aimez-vous Brahms?* by Françoise Sagan, the 25-year-old author of *Bonjour tristesse* (1954), *Un certain sourire* (1956), and *Dans un mois, dans un an* (1957). Mlle. Sagan's new novel is the story of a 39-year-old woman who is torn between her love for two men—her lover, a man of about her own age, and a youth of 25. She returns, of course, to the older man because youth, in Sagan's novels, is always represented as a transitory state of vacillation and unhappiness. *Aimez-vous Brahms?,* a short novel built along almost classical lines, is compact, neatly written, and has a richer emotional content than its predecessors.

La Semaine Sainte is a great historical and lyrical novel by poet and novelist Louis Aragon, who, though regarded as a Marxist, does not indulge his political philosophy in this enormous, magnificent, and brilliant evocation of the week in 1815 when Napoleon returned from Elba.

The *nouveau roman,* the "new novel" of the younger generation, was represented by Nathalie Sarraute's *Le planétarium.* Like Michel Butor and Alain Robbe-Grillet, Nathalie Sarraute is an exponent of the novel in which characters, the story, and psychological character analysis do not count for much, in which the "object" is more important than the "subject" and, in the case of Mme. Sarraute, the "elementary" reactions of the individual are more worthy of analysis than human will or determination. *Le planétarium* finds its fascination, not in its characterization or in its plot, but in the camera-like technique by which the author records the "micromaelstroms" within the unconscious that push people into action.

Other interesting novels were Jacques Howlett's *Le théâtre des opérations,* Claude Simon's *L'herbe* (1958), Bernard Pingaud's *Le prisonnier* (1958), Pierre de Boisdeffre's *L'amour et l'ennui,* Claude Mauriac's *Le dîner en ville,* and Georges Simenon's *Le président* (1958).

Poetry.—In 1959 many French poets contributed new *plaquettes,* or small collections of poems, but very few of these met with unanimous critical acclaim. Among those volumes which seem to have more than a transitory interest are Monique Difrane's *Du cyprès à l'olivier* and Jean Lebrau's *Corbières.* In two very good collections, *En une seule vigne* by Jean-Claude Renard and *Dédicace d'un navire* by Robert Sabatier, the poets try successfully to rejuvenate poetic language by using as their model the source of all great poetry—the poets of ancient Greece.

Formerly, Raymond Queneau was considered to be primarily a poet, but in his new book, *Zazie dans le métro,* he has written in the genre of the novel. However, his language, lying between poetry and prose, is closer to the former than to the latter. The plot of *Zazie* (a young girl of the working class wanders from Montparnasse to Notre Dame) is secondary to its humor and the marvelous way in which Queneau satirizes such things as literature, the intelligentsia, and the oral and written language.

Theater.—French "literary" drama, which aims at pleasing the serious reader, as well as the theater-going public, was represented in 1959 mainly by Jean Anouilh's bitter play, *L'hurluberlu,* Eugene Ionesco's avant-garde *Tueur sans gages,* and Albert Camus' *Les possédés.* The Camus play, adapted from Dostoyevsky's *The Possessed,* is a real tour de force. Camus has succeeded in translating into dialogue the complexity of a great novel, ranging from satirical comedy to moving drama, from realism to stylized tragedy.

Biography and History.—André Maurois made another notable contribution to French biography with his *La vie de Sir Alexander Fleming,* an account of the modest and glorious discoverer of penicillin. In *Les impostures de l'histoire,* Emmanuel Berl disputes the offhand treatment which standard history texts accord to certain historical influences (for example, Robespierre, Tamerlaine, and the Byzantine Empire). Alphonse Juin, the only living marshal of France, published his *Mémoires,* an important study of the Algerian, Tunisian, and Italian campaigns of World War II.

Translations.—The following is a selected list of French books translated into English and published in the United States in 1959: Bruckberger, R. L., *Image of America,* tr. by C. G. Paulding and Virgilia Peterson from *La république Américaine;* Butor, Michel, *A Change of Heart,* tr. by Jean Stewart from *La modification;* Cocteau, Jean, *The Hand of a Stranger,* tr. by Alec Brown from *Journal d'un inconnu;* de Beauvoir, Simone, *Memoirs of a Dutiful Daughter,* tr. by James Kirkup from *Mémoires d'une jeune fille rangée;* Gascar, Pierre, *The Seed,* tr. by Merloyd Lawrence from *La graine;* Gide, André, *So Be It, or The Chips Are Down,* tr. by Justin O'Brien from *Ainsi soit-il, ou Les jeux sont faits;* Giono, Jean, *The Straw Man,* tr. by Phyllis Johnson from *Le bonheur fou;* Kessel, Joseph, *The Lion,* tr. by Peter Green from *Le lion;* Mauriac, François, *Questions of Precedence,* tr. by Gerard Hopkins from *Préseances;* Maurois, André, *The Life of Sir Alexander Fleming,* tr. by Gerard Hopkins from *La vie de Sir Alexander Fleming;* Rochefort, Christiane, *Warrior's Rest,* tr. by Lowell Blair from *Le repos du guerrier;* Simon, Claude, *The Wind,* tr.

[2] Other persons of literary note to be elected to the Academy during the year included playwright Marcel Achard and Dr. Jean Delay, author of *La jeunesse d'André Gide* (1957).

by Richard Howard from *Le vent;* and Troyat, Henri, *Elizabeth,* tr. by Nicolas Monjo from *La grive.*

Prizes, 1959.—The Prix Goncourt was awarded to André Schwarz-Bart for his novel, *Le dernier des justes.* The Prix Fémina was given to Bernard Privat for his novel, *Au pied du mur;* the Prix Médicis, to Claude Mauriac for his novel, *Le diner en ville;* and the Prix Théophraste-Renaudot, to Albert Palle for his novel, *L'expérience.* Antoine Blondin won the Prix Interallié for his novel, *Un singe en hiver,* and Father André Blanchet won the Grand Prix de la Critique Littéraire for his essay, *La littérature et le spirituel.*

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FRENCH OCEANIA. See FRENCH POLYNESIA.

FRENCH POLYNESIA (formerly FRENCH OCEANIA). A French overseas territory in the Central Pacific comprising some 125 islands in 5 main groups: (1) Society Islands (Windward and Leeward); (2) Tuamotu Archipelago; (3) Gambier Archipelago; (4) Marquesas Islands; and (5) Tubuai (Austral) Islands. Clipperton Island, 2,800 miles northwest of Tahiti, is administered as part of the territory. Total area of the territory, 1,544 square miles; pop. (est. 1958), 79,000, chiefly Polynesians, with French and Chinese minorities. The main island of the territory is Tahiti (402 sq. mi.; pop., 36,326), in the Society group. Papeete (17,247), the capital of the territory, is on Tahiti.

On Dec. 16, 1958, French Polynesia chose to retain its status as an overseas territory of France. A French governor heads the administration in the territory. The 30-member Territorial Assembly is elected every 5 years by universal suffrage. A Council of Government, chosen by the assembly, serves as the ministry. The ordinary budget for 1959 totaled 450 million francs CFP; the extraordinary budget, 73 million (the franc CFP equals 5.5 metropolitan francs). In 1958 there were 126 public and private elementary schools (16,391 pupils), and 4 secondary schools (1,128).

Sugarcane, coconuts, tropical fruits, and vegetables are grown. Industrial products include copra, sugar, and rum. Phosphates are mined on Makatéa, in the Tuamotu group. Exports in 1958 totaled 796 million francs CFP; imports, 1,006 million. Chief exports and quantities (in metric tons) were: phosphates, 309,254; copra, 17,384; vanilla, 174; and mother-of-pearl, 620. France purchased 48% of exports, and provided 44% of imports. Shipping lines and a French airline serve Papeete.

FRENCH SOMALILAND. A French overseas territory on the Gulf of Aden in northeastern Africa. Estimated area, 8,500 square miles; pop. (est. 1958), 69,000, including (in 1956) 4,360 non-indigenous persons, mainly French. The chief native groups are the Danakils and Issa Somalis. Djibouti (est. 31,000) is the capital. On Dec. 11, 1958, French Somaliland chose to retain its status as a French overseas territory. A French governor heads the administration. There is an elected 32-member Territorial Assembly, and a Government Council (ministry) chosen by the assembly. The 1959 budget totaled 1,123.3 million Djibouti francs (214.4 Djibouti francs equal U.S.$1.00). In 1958 there were 14 public schools (1,319 pupils), and 8 private (835).

The natives are chiefly shepherds and hunters. There is some cultivation of dates, tobacco, cotton, and rubber. The territory's principal economic activities involve the port operations of Djibouti. General exports (mainly naval supplies for vessels using the free port of Djibouti) totaled 2,192 Djibouti francs in 1957; imports (excluding petroleum products for re-export as bunkers), 2,189 million. Sixty-one miles of the Djibouti-Addis Ababa (Ethiopia) railway is in French Somaliland. All-weather roads total 430 miles. Djibouti has a first-class airport.

Mahmoud Harbi, a supporter of the Greater Somalia movement, was removed as premier by the French governor, following his advocacy of rejection of the new French constitution in the referendum of Sept. 28, 1958. After elections in November 1958, Hassan Gouled, favoring close ties to France, was named premier. Following Gouled's election to the French National Assembly on April 19, 1959, Ahmed Dini became premier. French President Charles de Gaulle, alluding to the Greater Somalia movement during a visit to Djibouti on July 3, declared that France would not relinquish her responsibilities in French Somaliland.

FRENCH SUDAN. See SOUDAN.

FRENCH TOGOLAND or **TOGOLAND UNDER FRENCH ADMINISTRATION.** A United Nations trust territory on the western coast of central Africa. Estimated area, 22,000 square miles; pop. (est. 1958), 1,100,000. Ewe, Mina, and other tribes predominate in the south; Hamitic groups in the north. Lomé (38,921) is the capital and chief port.

Government and Political Events.—Following a referendum in the territory in 1956, French Togoland was established as an autonomous republic of the French Union, with France retaining control of foreign relations, defense, and certain other spheres. The territory's first elections under universal suffrage took place on April 27, 1958, observed by a United Nations team. The National Unity Party, advocating complete independence, obtained 29 of the 46 seats in the Chamber of Deputies. Sylvanus Olympio, leader of the victorious party, was invested as premier on May 16, 1958. In September, Olympio and French leaders in Paris agreed that French Togoland would attain independence in 1960. On Nov. 14, 1958, the U.N. General Assembly adopted a resolution approving this course of action and stating that the trusteeship agreement would come to an end on the date of independence. On July 13, 1959, France and the Togoland government announced in the U.N. Trusteeship Council that the date for independence had been set as April 27, 1960.

Finance.—The ordinary budget for 1959 estimated revenue at 2,125 million francs CFA, and expenditure at 2,550 million (the franc CFA equals 2 metropolitan francs). France has provided the greater part of funds for development purposes.

Education and Religion.—In 1958 there were 493

Somali tribal chiefs greet President de Gaulle (wearing general's uniform) as he arrives in Djibouti, French Somaliland, on July 3. He warned leaders of a separatist movement that France would retain her interests in the territory.

WIDE WORLD

schools with a total of 72,651 pupils (44% of the school-age population). In 1959, 134 Togolese students were studying at French universities under scholarships. Togolese are mostly animists, with some Moslems among the Hamitic tribes in the north. Native Roman Catholics were reported at 145,846 in 1955; Protestants, 33,125.

Economy.—The majority of the population is engaged in the cultivation of yams, cassava, millet, sorghum, corn, beans, rice, and other food crops. Principal cash crops and exports in 1958 (in metric tons) were: cocoa beans, 6,917; green coffee, 4,562; palm kernels, 12,057; cotton, 1,748; shelled peanuts, 3,444; and copra, 2,998. Industries include the processing of agricultural products, weaving, pottery, and woodwork. Exploitation of phosphate deposits has recently begun. Other known minerals are chromite, iron ore, and bauxite. The territory's exports in 1958 totaled 3,157 million francs CFA; imports, 3,776 million. France purchased 70% of exports and supplied 47% of imports. Three short railways from Lomé total 275 miles. Roads aggregate 1,830 miles (1957). The chief airport is at Lomé.

FRENCH WEST AFRICA. A former federation of eight French overseas territories in western Africa, which ceased to exist as a political entity when the French Union was succeeded by the French Community (q.v.), and seven of the territories became autonomous republics of the Community (Guinea, the eighth, became fully independent). In early April, Senegal and Soudan became federated in the Mali Federation (q.v.). On May 29–30, leaders of Ivory Coast, Upper Volta, Niger, and Dahomey met at Abidjan, Ivory Coast, and formed the Sahel-Bénin Union, a loose association for the purpose of coordination in the spheres of customs, finance and taxation, justice, communications, public service, labor, and public health. On June 9, premiers of all seven republics (those named plus Mauritania) signed an agreement in Paris for the free circulation of goods among the signatories, the establishment of a common customs tariff on imports, and the apportionment of property and installations of the former colonial administration of French West Africa. (See articles on each of the autonomous republics, and GUINEA.)

FRENCH WEST INDIES. See GUADELOUPE; MARTINIQUE.

FRIENDS, RELIGIOUS SOCIETY OF. Friends (also known as Quakers) counted almost 200,000 members in 1959, with over 120,000 of this number in the United States and Canada.

Friends have traditionally taken an active interest in public affairs, particularly those connected with peace and social justice. In 1959, Friends' organizations joined with spokesmen from other churches in the United States in testifying against extension of the Selective Service Act. The Philadelphia Yearly Meeting in March pressed for the abolition of capital punishment in Pennsylvania and New Jersey, a measure then being considered but subsequently not passed. The requirement of a loyalty oath and a non-Communist affidavit from every recipient of a United States government school loan brought vociferous objections from many colleges and universities. Among the few colleges that refused any loans with these restrictions were three with strong Quaker ties—Swarthmore, Haverford, and Bryn Mawr.

Lewis Hoskins, for nine years executive secretary of the American Friends Service Committee, resigned his post in January 1959. Colin W. Bell, associate secretary since 1955, was named to succeed him.

The Service Committee reported that since 1945 it had shipped and distributed 25 million pounds of material aid to West Germany; during 1958 alone, 534,000 pounds of relief supplies were sent to many places of need throughout the world. New recipients of relief were the people of Lebanon, Algerian refugees in North Africa, and Tibetan refugees in India. The Committee sponsored an exchange with the Soviet Union whereby three Soviet scientists were brought to the United States in December 1958 for an extended stay. In February 1959 the committee arranged for Martin Luther King, Negro leader of Montgomery, Ala., to visit India to study Gandhi's techniques of nonviolence.

The American Friends Service Committee, the National Council of Churches, and the Southern Regional Council published a widely read report on the increase in violence and the deterioration of law enforcement in the field of minority relations in the United States since 1955.

LYMAN W. RILEY,
University of Pennsylvania Library.

FROZEN FOODS. Production of major frozen foods in the United States in 1957 and 1958 is shown in the following table. The pack of frozen vegetables in 1958 totaled 1,433.2 million pounds, and that of frozen fruits and berries, 610.4 million pounds.

U.S. PRODUCTION OF FROZEN VEGETABLES, FRUITS, AND FISHERY PRODUCTS

Product	1957	1958
	(In thousand pounds)	
Vegetable pack:		
Asparagus	31,201	24,365
Beans, green and wax	134,361	156,006
Beans, lima	131,380	125,910
Broccoli	80,452	109,679
Brussels sprouts	33,354	30,424
Carrots	34,237	53,713
Cauliflower	22,690	33,251
Corn, cut	112,917	111,039
Corn-on-cob	13,699	10,370
Kale	4,106	3,579
Mixed vegetables	41,547	37,297
Okra	17,070	15,767
Peas	295,823	251,934
Peas, blackeye	11,624	13,012
Peas and carrots	21,017	21,467
Potato products	219,860	269,462
Pumpkin and squash	13,151	18,007
Rhubarb	4,704	4,448
Spinach	102,130	97,472
Succotash	10,037	8,937
Turnip greens	10,873	11,041
Miscellaneous vegetables	20,332	26,064
Total vegetables	1,366,565	1,433,244
Fruit pack:		
Apples and applesauce	69,225	67,407
Apricots	8,289	6,909
Cherries	134,715	92,283
Grapes and pulp	15,510	20,355
Peaches	44,462	43,478
Prunes	1,333	3,589
Berry pack:		
Blackberries	19,157	13,604
Blueberries	24,446	15,982
Boysenberries	13,354	19,751
Currants	1,687	1,372
Gooseberries	163	968
Loganberries	1,275	1,464
Raspberries, black	15,122	13,104
Raspberries, red	30,365	24,463
Strawberries	259,262	261,529
Miscellaneous fruits and berries	33,011	24,129
Total, fruits and berries	671,374	610,387
Frozen fishery products[1]	262,228	267,789
Citrus juice pack:[2]	(In thousands gallons)	
Orange, concentrated[3]	58,631	79,911
Orange, unconcentrated	288	...
Grapefruit, concentrated[3]	3,330	4,952
Blend, concentrated[3]	507	690
Lemon, concentrated	233	...
Lemonade base	15,800	...
Tangerine, concentrated[3]	147	1,152
Limeade[4]	437	684

[1] Continental United States, including Alaska, for food purposes only. [2] Year beginning November 1; 1958 preliminary. [3] Florida pack. [4] Florida pack through Sept. 30, 1959. (Sources: fruits, berries, vegetables, concentrated lemon juice, and lemonade base, National Association of Frozen Food Packers; orange, grapefruit, and tangerine juice, and limeade, Florida Canners' Association; fishery products based on estimates of the Fish and Wildlife Service, U.S. Department of the Interior.

FRUITS. Production of fruits in the United States rose to a new high in 1959, exceeding the

1948–57 average by about 10%. The citrus crop for 1959–60 was estimated by the Agricultural Marketing Service of the U.S. Department of Agriculture at 8.39 million tons, 3% above the preceding season and 11% above the average. Production of 14 noncitrus crops, excluding strawberries, amounted to 9.82 million tons, also 3% above 1958 and 8% above average. The strawberry crop of 237,000 tons—the smallest since 1955—was 30,000 tons less than in 1958. New records were set for production of cranberries and California nectarines. Only prunes, cherries, figs, olives, and tangerines fell below average.

Bearing acreage for oranges, tangerines, grapefruit, lemons and limes in 1959 totaled 794,700 acres, close to the level of the several preceding years. Acreage for the eight major deciduous fruits (commercial apples, peaches, pears, grapes, cherries, plums, prunes, and apricots) was 1,730,100. This was 28,000 acres more than in 1958, the largest since 1955, but smaller than in any other years of the last two decades.

Consumption of fruit per person in 1959 was estimated to be close to 200 pounds (fresh equivalent basis), about the same as in other years of the past decade. Consumption of fresh fruit has been declining over the past several years, amounting to slightly over 50% of total fruit consumption in 1959, compared with 60% in 1949. Consumption per person of canned fruit and of frozen fruits and juices has risen steadily, with the former 20% above the 1947–49 average and the latter up 180%. Use of canned juice has fallen 30% per person since 1947–49 as the frozen products gained in popularity. Use of dried fruit in 1959 was 10% below average.

Apples.—Although the 1959 commercial crop of 118,227,000 bushels was 7% smaller than that of 1958, it was 9% above the 1948–57 average, and the third largest of the 1950's. About 1,560,000 bushels were left unharvested for economic reasons, slightly more than in either of the preceding two years. Production of winter varieties was estimated at 100,800,000 bushels, 8% below 1958. The crop of fall varieties was 12,500,000 bushels, slightly above 1958, while summer varieties totaled nearly 5 million bushels, the same as the year before.

U.S. PRODUCTION OF APPLES, PEARS, AND PEACHES BY LEADING STATES
(1,000 bushels)

	Average 1948–57	1958	1959
Apples:*			
Washington	25,951	29,800	23,040
New York	16,469	22,000	18,500
Michigan	8,616	12,200	12,000
Virginia	9,220	11,100	10,900
California	8,349	9,650	10,400
Pennsylvania	6,118	6,400	7,500
West Virginia	4,258	5,200	5,700
New Jersey	2,715	2,500	3,400
Ohio	2,972	3,100	2,750
Massachusetts	2,512	2,400	2,700
Illinois	2,672	2,140	2,300
Oregon	2,534	2,250	2,200
Pears:			
California	14,822	14,375	17,502
Oregon	5,608	5,500	5,640
Washington	5,438	4,700	4,350
Michigan	879	1,400	1,200
New York	491	625	570
Texas	179	250	270
Colorado	188	210	215
Utah	215	330	140
Tennessee	83	140	125
Pennsylvania	159	115	100
Peaches:			
California	33,152	32,502	38,545
South Carolina	2,931	5,300	5,400
Georgia	2,101	4,000	3,200
Michigan	2,912	3,200	3,100
Pennsylvania	2,489	3,000	2,900
New Jersey	1,742	2,600	2,400
Washington	1,492	2,200	2,200
Arkansas	1,452	2,100	1,925
Colorado	1,682	1,820	1,850
Virginia	1,315	1,950	1,500

* Estimates refer to the total production of apples in the commercial apple areas of each state. (Source: Agricultural Marketing Service, U.S. Department of Agriculture.)

Peaches.—Production in 1959 rose 20% above average to 73,806,000 bushels, 4% more than in 1958. The increase came in the California clingstone crop, which totaled 25,400,000 bushels, 20% more than in 1958 and the second largest crop of record. (Clingstones are used mostly for canning.) Production of other peaches amounted to 48,400,000 bushels, slightly below 1958.

Pears.—The total of 31,090,000 bushels in 1959 was 8% more than in 1958 and 5% more than average. The three Pacific coast states produced 27,500,000 bushels, 12% more than in 1958. This included 20,900,000 bushels of Bartletts, which usually account for nine tenths of the pears processed.

Grapes.—The third largest crop on record—3,228,350 tons—was produced in 1959. California accounted for 2,950,000 tons, including 1,834,000 tons of raisin varieties, 590,000 tons of wine varieties and 526,000 tons of table varieties. Raisin production increased sharply to 243,000 tons, 57,000 tons above 1958 and 26,400 tons more than average.

Plums and Prunes.—The 1959 plum crop of 105,400 tons was 53% above 1958, and was the second largest on record. About 3,000 tons of the California crop were dumped because of size restrictions under marketing orders. Prune production also increased sharply over 1958, but the 431,350 ton total (fresh basis) was still 46,300 tons below average.

Cherries.—The sweet cherry crop totaled 80,090 tons in 1959, 9% below 1958 and 14% below average. However, the sour crop of 134,530 tons exceeded 1958 by 29% and the average by 3%.

Cranberries.—The 1959 crop rose 7% from 1958 to 1,252,000 barrels in 1959, a new record. (See also Massachusetts; Oregon.)

Apricots.—Production in 1959 more than doubled the short 1958 crop. The 229,800-ton total was 10% above average.

Avocados.—The 1959–60 crop set a new record of 73,300 tons, 40% greater than in 1958–59.

Dates.—The 1959 crop of 22,900 tons in California was 17% above 1958. Larger crops were produced only in 1955 and 1957.

Figs.—California's production of dried figs in 1959 was 19,000 tons (dried basis), 18% less than in 1958 and 28% below average. Production of figs for other uses was the smallest since 1933—6,600 tons (fresh basis).

Olives.—Production dropped sharply in 1959. California's 26,000 ton crop was only slightly more than a third of the 1958 crop, and was 45% below average. It was the smallest since 1939.

Nectarines.—A 26% increase over 1958 raised the 1959 crop in California to 43,000 tons, a new record.

Strawberries.—The 1959 crop fell 11% below 1958 to 474,745,000 pounds, but was 9% above average. Slightly over half the crop—238,201,000 pounds—was for processing.

Citrus Fruit. *United States Crop.*—Production continued to rise in 1959–60, with only grapefruit and tangerines below the preceding year, and only tangerines below average. Estimates of the Agricultural Marketing Service in December 1959 placed the orange crop at 132,895,000 boxes, 7% more than in 1958–59 and 12% more than average. The crop included 68,445,000 boxes of early, midsea-

son, and navel varieties and 64,450,000 boxes of Valencias. Florida's tangerine production amounted to 4,000,000 boxes, and fell short of both the 1958–59 crop and the average crop by 500,000 bushels.

U.S. CITRUS PRODUCTION, BY LEADING STATES
(1,000 boxes)

Fruit	Average 1948–57	1958	1959*
Oranges:			
California	37,781	40,200	35,000
Florida	78,110	86,000	93,000
Texas	1,676	2,300	3,200
Arizona	1,072	610	1,450
Louisiana	186	220	245
Total	118,824	129,330	132,895
Grapefruit:			
Florida	33,970	35,200	32,000
Texas	3,800	4,200	5,800
Arizona	2,604	1,870	2,800
California	2,424	2,520	2,500
Total	42,798	43,790	43,100
Lemons:			
California	13,669	17,000	18,000
Arizona	...	340	900
Total	13,669	17,340	18,900
Limes:			
Florida	322	200	300
Tengelos:			
Florida	...	300	450
Tangerines:			
Florida	4,530	4,500	4,000

*Preliminary, based on conditions as of Dec. 1, 1959. Season begins with the bloom of the year shown and ends with completion of harvest the following year. (Source: Agricultural Marketing Service, U.S. Department of Agriculture.)

Grapefruit production in 1959–60 was estimated at 43,100,000 boxes, slightly less than in the preceding year and a little above average. Lemon production continued to increase, reaching 18,900,000 boxes, compared with 17,340,000 boxes in 1958–59 and with the average of 13,669,000. Lime production rose sharply over 1958–59, but the 300,000-box crop remained below average. The tangelo crop totaled 450,000 boxes, about 150,000 more than in the preceding year.

World Citrus Production.—Production in 1958–59 increased in all major citrus areas. Orange production rose to 377,220,000 boxes, 39,244,000 more than in the preceding year. The Foreign Agricultural Service of the U.S. Department of Agriculture reported that orange production in the Mediterranean area reached a record and that further increases occurred in Argentina and Brazil. New plantings in the Mediterranean, South America, South Africa, and the United States indicate future production increases. Spain's crop of 44,720,000 boxes of oranges was second only to that of the United States. Japan was third, with 26,790,000; and Italy fourth, with 26,770,000.

WORLD PRODUCTION OF CITRUS FRUITS
(1,000 boxes)

Fruit	Average 1950–54	1957	1958[1]
Oranges and tangerines	325,237	337,976	377,220
Lemons	30,648	35,942	39,350
Grapefruit	47,314	45,185	49,080
Limes[2]	3,328	3,770	3,670

[1] Preliminary. [2] Mexico, United States and Egypt only. Harvest in Northern Hemisphere begins in November of year shown; in Southern Hemisphere, in May of following year. Production in foreign countries converted to boxes of following weights: oranges, 70 pounds; grapefruit and limes, 80 pounds; lemons, 76 pounds. (Source: Foreign Agricultural Service, U.S. Department of Agriculture.)

Increased production in the Mediterranean region accounted for most of the rise in world lemon production (from 35,942,000 boxes in 1957–58 to 39,350,000 in 1958–59). Italy produced 11,600,000 boxes to lead all nations other than the United States. Grapefruit production, dominated by the United States, also increased in 1958–59. Israel's crop of 1,720,000 boxes was second only to that of the United States. Most of the world's limes are produced in Mexico and Egypt. The 1958–59 Mexican crop was 2,370,000 boxes; and the Egyptian crop, 1,100,000 boxes.

U.S. Foreign Trade.—The value of fruits and fruit preparations exported from the United States in the 1958–59 fiscal year was $228,939,000, down 13% from the preceding year. As usual, oranges exceeded any other item, amounting to $36,425,000 in 1958–59. Imports of fruits and fruit preparations increased 10% over 1957–58, to a value of $148,457,000. Bananas ($73,035,000) accounted for about half of the 1958–59 imports.

(See also AGRICULTURE.)

WAYNE DEXTER,
Agricultural Marketing Service,
U.S. Department of Agriculture.

FUEL BRIQUETTES. See MINERAL PRODUCTION.

FUELS. See ATOMIC ENERGY; COAL; COKE; GAS; MINING; PETROLEUM; and the Index entry, *Fuels.* For recent developments in aircraft and missile fuels, see MISSILES and SPACE FLIGHT—*Astronautics.*

FUR INDUSTRY. The years 1958 and 1959 have seen a far-reaching change in consumer attitudes toward furs. Public interest in fur garments, which had fallen to a very low level in the years preceding this period, suddenly came to life. Simultaneously the promotional activities within the industry were greatly increased.

The net result has been a dissipation of the lethargy which existed in the industry and a creative outburst of new designs in fur wearing apparel, trimmings, and incidental accessories. Skin types long neglected have been resurrected, and even though mink is still most in demand, many other furs—such as beaver, muskrat, persian lamb, squirrel, fox, wolf, raccoon, and lynx—have been produced in new designs, colors, and fashion concepts.

The Fur Information & Fashion Council, Inc. has retained a number of widely known fashion designers who have produced patterns for an outstanding assortment of fur garments known as the "Young Designers' Group." These garments were made available to outstanding retail establishments throughout the United States and were very favorably received. Special appeals were directed to youth groups such as campus teenagers and to professional women, clubwomen, and young matrons in a nationwide campaign.

Fur trimmings are again in widespread use, not only on coats and suits but also on dresses and sweaters, the latter having become a national favorite.

The result of all this activity has been a virtual end to unemployment in the industry and a high level of industrial peace. There were 1,509 fur manufacturing establishments in operation during 1959, employing some 21,700 persons. During the fiscal year ended June 30, 1958, the federal government collected excise taxes amounting to $28,544,000. Retail fur sales in 1958 totaled approximately $282,840,000. United States fur and fur manufacture exports in 1958 were valued at $36 million; imports, at $88 million.

(See also FEDERAL TRADE COMMISSION and the Index entry, *Fur Industry.*)

J. GEORGE GREENBERG,
Executive Manager,
Associated Fur Manufacturers, Inc.

FURNITURE INDUSTRY. Production.—As 1960 approached, furniture manufacturers and retailers were pleased to find that the value of production was at the rate of $2,666 million, reversing a

downward trend for the previous two years and topping the record set in 1956. For the first seven months of 1959, shipments of household furniture by some 3,000 companies with about 6,000 factories were 15% ahead of those in the same period in 1958; orders were 21% ahead for the first eight months. The industry did not expect to maintain this pace for the remainder of the year, however, since figures for these months would be compared with those of a period that saw the beginning of recovery.

In August 1959, 276,500 plant employees worked an average of 42½ hours, compared with 40 hours a year earlier. In June 1959, weekly wages averaged $70.30. The increase in production failed to produce a proportionate increase in employment due to some increased mechanization. In defense against rising costs, more plants were turning to mechanization wherever possible. But the industry had a long way to go to achieve maximum production efficiency. The industry was still primarily one of small companies; only about 15% have annual sales of more than $1 million.

Profits.—Since 1946, when profits after taxes were 7%, returns have declined. In 1958, profits were 2.3% after taxes, compared with 4.1% for all manufacturing corporations. Despite the industrywide slump, a substantial number (31%) of firms increased their earnings over 1957 levels. The return on capital investment was 5.53% after taxes in 1958. For every $100 of net sales in 1958 there was $43.23 of investment capital.

Prices.—In July 1959 the wholesale price index for household furniture (1947–49 = 100) stood at 124.3, up 1.1% from the previous July. The consumer price index (same base) stood at 107.2 in June, up 0.5% from June 1958.

Overproduction and intense competition have tended to keep prices stable. In a comparison of prices between March 1948 and 1959, furniture prices increased only 3.1%, while those of automobiles increased 41%, according to the National Association of Furniture Manufacturers.

Furniture Store Sales.—In 1959, sales in more than 25,000 furniture stores made a strong comeback after being hurt by the 1958 recession. For the first eight months, sales totaled $3,296 million, an increase of 8% over the total in the corresponding period of 1958. In the same 1959 period furniture wholesalers had sales of $530 million, compared with $485 million in the first eight months of 1958. Furniture stores account for about 60% of all sales; department stores, 10%; and wholesalers, 10%. The remainder is distributed through variety stores, mail order houses, and other sources.

Exports and imports continued in 1959 to account for only about 0.5% of total American production.

In 1958, business failures included 272 furniture manufacturing companies and 124 furniture and furnishings stores per each 10,000. The 1,041 stores which failed in 1958 had liabilities of $45,098,000.

In 1957, 1.2% of disposable income in the United States was spent on furniture, a slight decline from the previous year. Between 1948 and 1957 the industry lost one seventh of its market in terms of disposable income. To counteract this trend, efforts were made to establish an industrywide promotion campaign. After one year of study the program was dropped because of the failure of important segments of the industry to agree on a method of financing the campaign.

(For discussion of style trends, see INTERIOR DECORATION.)

GENE BENNETT,
Editor, "Furniture Retailer."

FURS. See FUR INDUSTRY.

GABON. The Gabon Republic is an autonomous republic of the French Community (q.v.), situated on the west coast of central Africa. Estimated area, 102,300 square miles; pop. (est. mid-1958), 410,000, including (in 1956) 3,984 nonindigenous persons, mainly French. French is the official language. Chief towns are Libreville, the capital (est. pop., 19,657), and Port-Gentil (16,645); both are seaports.

Government.—Formerly a French overseas territory included within the federation of French Equatorial Africa (q.v.), Gabon chose the status of a member state of the French Community on Nov. 28, 1958. As an autonomous republic, Gabon has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Gabon adopted its constitution on Feb. 19, 1959. The Legislative Assembly consists of 40 members elected for a five-year term by universal suffrage. The premier is chosen by a majority of the assembly. Léon M'Ba, leader of the Gabon Democratic Bloc (local branch of the pro-French African Democratic Rally), is premier.

Education and Religion.—In 1958 there were 321 schools with a total of 40,919 pupils (66.8% of the school-age population). Government expenditure on education amounted to 571.1 million metropolitan francs, or 19.6% of the budget. Many of the natives in the coastal area are Christians, although animism prevails among the tribes of the interior.

Transportation.—Gabon has no railroads. The Ogooué River affords an important means of inland transport. Roads and trails total about 3,195 miles (1956), including 191 miles of hard surfaced roads and 2,399 of all-weather trails. The chief airports are at Libreville and Port-Gentil.

Production.—Gabon's dense tropical forests render her an important producer of *okoumé*, mahogany, and ebony; and logs, plywoods, and veneers form the bulk of the republic's exports. Cocoa beans are also grown for export, and wild rubber, kapok, waxes, and kola nuts are gathered by the natives. Subsistence crops include manioc, sweet potatoes, corn, and plantains. Output of petroleum, the chief mineral, totaled 504,800 metric tons in 1958, nearly three times that of 1957. Deposits of gold and diamonds are worked on a small scale, but the republic's large reserves of iron ore, manganese ore, and uranium are as yet largely untouched.

Foreign Trade.—Exports in 1958 totaled 16.8 billion metropolitan francs; imports, 15.5 billion. Chief exports were lumber (632,000 metric tons), petroleum, cocoa beans, and gold. France is the republic's chief trading partner.

Principal Events, 1959.—On June 30, 1959, the International Bank for Reconstruction and Development extended a loan equivalent to $35 million to the Compagnie Minière de l'Ogooué (COMILOG) for the development of the high-grade manganese ore deposits near Franceville. Construction of production and transport facilities are to be completed in three years, with the first shipments scheduled for mid-1962. The United States Steel Corporation holds a 49% interest in COMILOG, which is incorporated in Gabon.

GALAPAGOS ISLANDS. A group of islands in the Pacific Ocean about 650 miles off the coast of Ecuador, forming a province of Ecuador. Area, 3,123 square miles; pop. (1957), 1,687. San Cristóbal (195 sq.mi.) is the main island and contains about half the total population. Sugarcane, coffee, and yucca are grown, and there is some fishing and cattle raising. Noted for their unique fauna, the Galápagos Islands were made a national park and wildlife refuge by the Ecuadorean government on July 16, 1959.

GAMBIA. See British West Africa.
GAMBLING. See Index entry.
GAMES. See Sports, Games, and Shows.

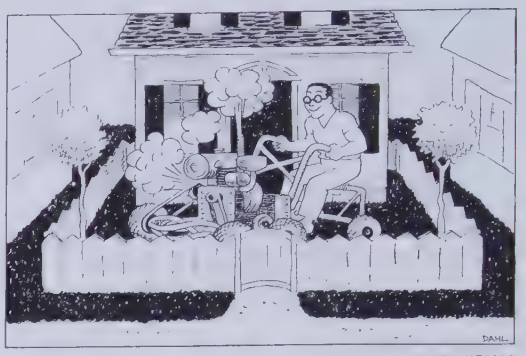
GARDENING. The tremendous interest in gardening in the United States is reflected in the large number of horticultural organizations with a total membership which runs into several millions. Experimental stations, extension services, and horticultural organizations report a greater number of requests for gardening information than ever before.

Trends in Home Gardening.—Whereas fifty years ago one out of every five workers owned his home, today three out of five workers are home owners. For every dollar the worker spent on recreation in 1900, he now spends $20. Better pay and shorter working hours, coupled with increased home ownership, have combined to make home gardening the number one hobby in the United States. In 1959 home gardeners paid an estimated $3,216,000,000 for seeds, nursery stock, garden hardware, fertilizers, insecticides, fungicides, and related supplies. Sales of grass, flower, and vegetable seeds alone were estimated at $400,000,000.

The home market for flowers, ornamentals, garden supplies, and equipment continues to grow with the expansion of home building in the suburbs. Home building in 1959 was well over that of 1958, topped only by the peak year of 1950. Record high employment and income in 1959 also contributed to an increase in sales of over $2 million in the garden lines and associated fields.

Tulip-bordered walk forms one of the many International Flower Show exhibits at the New York Coliseum in March.

EWING GALLOWAY



DAHL IN THE BOSTON HERALD

"In the Suburbs"

The retail volume of seed packets sold in 1959 was up 5% to 10% over that for 1958. Flower seed sales for the home garden have increased steadily, and greatly improved varieties are now available, due largely to the influence of All-America Selections. With the increasing proportion of smaller homes, however, the trend has been away from the home vegetable garden.

The Garden Supply Industry.—In the past ten years the garden supply business has increased tenfold and has seen a revolution in retail selling methods. To share in this greatly expanding business, new retail sales outlets have appeared in many areas. Most of the old downtown seed stores in the high-rent areas not easily accessible have gone out of business or have moved and expanded their lines to better serve the suburban market. At the same time, department stores, grocery stores and supermarkets, hardware stores, and drugstores have made gardening products readily available to the consumer.

There has been fantastic growth in the number of modern garden centers—the one-stop store conveniently located and featuring all types of garden supplies, nursery stock, and gardening equipment. Nurserymen have been foremost in building these centers, and both the nurserymen and seed associations are fast becoming interested in the garden center operator.

A survey made by the University of Oregon showed that for every dollar's worth of nursery stock sold, $4 worth of fertilizer, tools, insecticides, etc. was purchased. It has been estimated that 15 million power lawnmowers were in use in the United States in 1959.

The quality of grass seed has been improved considerably, and sales have doubled since 1950. In 1959 about 15 million pounds were used to beautify grounds of new homes, while about five times that amount was used for reseeding and restoring old lawns. The demand for nursery stock also has doubled since 1950. In 1959 some 45 million home gardeners purchased $775 million worth of nursery stock from some 12,000 nurserymen—an increase of 5% in sales over 1958.

A shortage of good labor, greatly increased cost of tools and other materials, and the inability to raise prices plagued nurserymen in 1959. Improved techniques provided a partial answer to these problems. The raising of nursery stock in containers to facilitate transplanting, the development of new methods of transporting field-grown plants, and the packaging of root-wrapped stock, designed specifically for retailing through garden centers, department stores, etc. have all cut down on labor costs.

Industrial Landscaping.—Five years ago United States industry spent less than $40 million a year on trees, shrubs,

and flowers to beautify its premises. In 1959 it spent four times that amount. To promote employee morale, and to break down local resistance to industrial plants in residential suburbs, more and more companies are turning to landscape architects whose fine landscaping distinguishes the new suburban plants from the earlier in-town establishments.

Miscellaneous.—More than $20 million a year is currently being spent on research in development of insecticides. In North America alone, entomologists have identified about 82,500 kinds of insects of which they roughly classify 10,000 as public enemies. A new family of microbial insecticides has been developed which kill through quick-acting infection of the insect, yet which are not harmful to humans or pets.

The use of mulches has increased sharply in recent years. An all-organic multipurpose mulch said to aid plant growth by storing water, maintaining soil temperatures, adding humus, and increasing aeration is on the market. Now receiving considerable attention also are new compounds used to reduce growth as well as to increase flowering.

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(See also AGRICULTURAL RESEARCH SERVICE; HORTICULTURE.)

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GAS, Natural and Manufactured. Output data for the major producers of the world, shown in the accompanying table, have been taken from the records of the *Monthly Bulletin of Statistics* of the United Nations. (World production figures cannot be completely compiled because data are reported by only a few of the leading producing countries.)

MAJOR PRODUCERS OF NATURAL GAS[1]
(In billions of cubic feet)

Country	1955	1956	1957	1958
Brunei[2]	41.6	50.4	56.7	56.6
Canada	150.9	169.1	206.4	338.2
France	9.4	11.3	19.8	36.9
Hungary[2]	19.2	16.0	14.5	13.3
Indonesia[2]	67.4	72.0	76.7	73.7
Italy	128.0	157.6	176.3	183.1
Mexico[2]	122.9	128.8	164.0	264.0
Trinidad	17.6	19.3	21.2	23.4
United States[3]	6,107.8	6,731.2	7,233.8	7,441.5
Venezuela	97.0	105.9	128.0	139.0

[1] Excluding gas used for repressuring, as well as gas flared, vented, or otherwise wasted. [2] Including gas for repressuring and gas wasted. [3] Gas sold by public utilities, representing 52% to 59% of total production.

The following data are based on figures compiled by the U.S. Bureau of Mines and supplied by the American Gas Association. The marketed production (gross production minus the quantities consumed in repressuring, venting, and wasting) of natural gas in the United States was 11,030,248 million cubic feet in 1958, compared with 10,680,000 million cubic feet in 1957, a gain of 3%. In the first half of 1959, marketed output was 5,671,570 million cubic feet, compared with 5,449,900 million in the comparable period of 1958.

In 1958, Maine and New Hampshire were the only states in which natural gas was not consumed. Consumption of natural gas in the United States in 1958 by classes was as follows: residential, 2,714,251 million cubic feet (up 9% over 1957); commercial, 871,774 million cubic feet (up 12%); field use, 1,604,104 million cubic feet (up 8%); industrial fuel, 5,359,471 million cubic feet (up 2%); and carbon black, 211,048 million cubic feet (down 10%). A large quantity of natural gas was also used as fuel at electric utility plants.

MAJOR PRODUCERS OF MANUFACTURED GAS
(In millions of cubic feet)

Country	1955	1956	1957	1958
Australia[1]	43,479	44,581	46,657	47,632
Austria[1,2]	12,205	13,476	13,010	11,442
Belgium	72,889	79,246	78,398	79,669
Canada[3]	18,900	20,044	15,934	5,721
Czechoslovakia	119,928	125,437	129,251	127,556
Denmark	13,688	13,942	13,518	13,349
France[4]	88,145	91,959	99,587	102,129
Saar	58,057	62,295	64,837	62,718
Germany, East	86,874	95,773	97,468	108,486
Germany, West	737,789	796,694	817,459	794,151
Italy	75,432	79,669	83,483	74,160
Japan[1]	83,060	98,315	109,757	111,876
Netherlands	70,770	75,432	76,703	81,364
Spain[1]	11,188	11,823	12,374	12,798
United Kingdom	600,911	604,725	586,079	590,740
United States[5]	460,218	396,228	300,032	310,202

[1] Excluding gas from cokeries. [2] Vienna only. [3] Sales (in 1957 about 21% of total production). [4] Sales (in 1957 about 38% of total production). [5] Public utilities sales of manufactured and mixed gas according to American Gas Association (in 1957 about 27% of total production).

The Bureau of Mines reported that the average wellhead value of natural gas was 11.9 cents per thousand cubic feet in 1958, or 0.6 cents higher than in 1957. The average value, at point of consumption, increased from 43.1 cents per thousand to 46.2 cents in 1958. Gross injections to underground storage in 1958 were 704 billion cubic feet; withdrawals were 621 billion cubic feet, an increase of 83 billion. Texas, Louisiana, New Mexico, Oklahoma, Kansas, and California were the principal producing states.

Interstate shipments, including exports, increased 6% in 1958, and accounted for 59% of marketed production. Exports of gas totaled 38,719 million cubic feet, of which 32,129 million went to Canada and 6,590 million went to Mexico. Imports in 1958 increased to 136 billion cubic feet, 90 billion of which was received from Canada and 46 billion from Mexico.

(See also FEDERAL POWER COMMISSION; GEOLOGICAL SURVEY; MINING; PETROLEUM; PUBLIC UTILITIES.)

F. E. HARRIS, *Former Publications Editor, "Mineral Trade Notes,"* and BERENICE B. MITCHELL, *Commodity Industrial Analyst, Division of Foreign Activities, U.S. Bureau of Mines.*

GASOLINE. See Index entry.

GATES, Thomas Sovereign, Jr., U.S. secretary of defense: b. Germantown, Pa., April 10, 1906. After serving as under secretary of the Navy (1953–57), secretary of the Navy (1957–59), and deputy secretary of defense (1959), he was sworn in as secretary of defense on Dec. 2, 1959, succeeding Neil H. McElroy.

Gates was graduated from the University of Pennsylvania in 1928 and immediately entered the Philadelphia investment banking firm of Drexel & Company, becoming a partner in 1940. (His father had been a Drexel partner from 1918 to 1930, as well as president of the University of Pennsylvania, from 1930 to 1944.)

A member of the U.S. Naval Reserve from 1935, Gates went on active duty as a staff officer during World War II, serving with both the Atlantic and Pacific fleets, and rising to the rank of commander. After the war he was prominent in Naval Reserve activities and served as an adviser to the Navy Department. In 1953 President Eisenhower

named him under secretary of the Navy and, in 1957, secretary.

Gates resigned from the latter post on Feb. 3, 1959, effective June 1. At the time, a Navy publication reported that he had been "unhappy with the Defense Department reorganization." On May 18 the president appointed him deputy secretary of defense, to succeed Donald A. Quarles (q.v.), who died on May 8.

Gates accompanied President Eisenhower to Europe in August for the meetings of Western leaders prior to Soviet Premier Khrushchev's visit to the United States. On December 1, at the time of Secretary McElroy's long-deferred resignation as Defense Department head, Gates was named to fill the post.

GEM STONES. The United States is a substantial market for diamonds and other precious stones, although its production is trivial. In 1958, imports of gem stones into the United States totaled $165,807,000 compared with $168,664,000 in 1957. The imports in 1958 were chiefly diamonds, including 1,129,297 carats of rough and uncut stones valued at $72,430,000 and 718,422 carats of cut (unset) diamonds valued at $68,065,000. The data do not include industrial diamonds (see ABRASIVES). Other imports included cut emeralds, natural and cultured pearls (especially the latter), real and imitation marcasites, and many others.

World sales of gem diamonds in 1958 totaled 5.2 million carats valued at about $140 million, compared with 5.5 million carats valued at $148 million in 1957. In the United States, production of diamonds in Arkansas was reported at 475 carats valued at over $5,000. Three smoky colored diamonds were recovered from a mud pipe in Nevada, and a claim was filed on the deposit.

In the United States, 41 states produced a wide variety of semiprecious and ornamental gem stones in 1958. For the first time the estimated annual value of gem material produced was more than $1 million. Ten western states produced 87% of the total value, with Oregon leading in output. Jade production was valued at $60,000, a 20% increase over 1957. Alaska was the chief producing state for jade, followed by Wyoming, California, and Colorado. (See also JEWELRY; MINERAL PRODUCTION.)

GENERAL ASSEMBLY, U.N. See UNITED NATIONS.

GENETICS. In mammals and many other animals the sex chromosomes consist of two X chromosomes in the female and an X and Y chromosome in the male. For many years it has been known that in the fruit fly *Drosophila,* sex is determined by the balance between female-determining factors on the X chromosomes and male-determining factors on the autosomes. The Y chromosome plays little if any part in sex determination and is equivalent only to the absence of an X chromosome. No evidence on the mechanism of sex determination has been available in mammals. In the last year, however, it has been shown in both man and the mouse that the Y chromosome is not inert but is the bearer of male-determining factors. It is possible that this mechanism may operate in all mammals.

The evidence in man for the above conclusion came from examination of the chromosomes of two types of intersexes. One of these, predominantly female, was shown to have one X and no Y chromosome, and the other, predominantly male, was shown to have two X's and a Y. Such unequivocal enumeration of mammalian chromosomes has become possible in the last few years because of the development of new techniques which separate the chromosomes sufficiently to allow accurate counting. The same techniques have led to the solution of a long-standing puzzle in medical genetics: the cause of Mongolian idiocy. The distribution of this trait was not explainable by any of the usual genetic or nongenetic mechanisms. It has now been shown that Mongoloids possess an extra member of one of the smallest pairs of chromosomes. This is the first such case to be described in mammals and may lead to an explanation of other cases with similar anomalous distributions.

Classical experiments on the effect of ionizing radiations on the mutation rate in spermatozoa of *Drosophila* have shown that the frequency of mutations is independent of dose rate. In experiments recently reported from the Oak Ridge National Laboratory it has been shown that in mature spermatozoa of mice, the mutation rate is also independent of dose rate, but that in earlier stages of germ cell formation in both males and females the mutation rate at low radiation intensities is much less than at high intensities for the same total dose. If the same should also be true in man, it would mean that small doses of irradiation over long periods of time would be less dangerous from a genetic point of view than the same total dose administered at one time.

Continuing studies on the enzymatic synthesis of deoxyribonucleic acid (DNA) have demonstrated clearly the importance of the primer DNA in determining the composition of the synthesized DNA. The ratio of adenine-thymine to guanine-cytosine base pairs in the synthesized DNA corresponds closely to that of the primer regardless of the relative concentration of substrates in the reaction mixture. This supports the hypothesis that DNA acts as a template for its own synthesis. Further evidence has been supplied that at the time of synthesis of a new molecule, the two strands of the double-stranded DNA molecule separate with each strand serving as a template for the synthesis of its complement. Recent experiments using heavy nitrogen (N^{15}) to label the original molecule have implied that the labeled strands separate at the time of replication, since they retain their integrity through many subsequent generations of molecules.

The two strands of a DNA molecule are linked together by base pairs, and the genetic information carried by the molecule is thought to be determined by its particular sequence of base pairs. A gene mutation may therefore consist of a change in this sequence. Since there are two kinds of base pairs, and since they may each be arranged in either direction between the two strands, a change in sequence could be brought about either by a change from one kind of base pair to the other, or by a change in direction of a base pair. Recent experiments on the chemical induction of mutations in bacteriophage have shown that there are two classes of mutations which differ in several respects. The hypothesis has been advanced that the two kinds of mutation correspond to the two possible kinds of molecular change mentioned above. Confirmation of this hypothesis would represent a first step in understanding the chemical nature of mutation, and might provide an important tool for testing the coding of proteins by DNA. (See also BACTERIOLOGY.)

The year 1959 marked the 100th anniversary of the publication of Darwin's *The Origin of Species.* The event was marked by many symposia exploring the relation of Darwinian theory to the development of modern thought in many fields.[1]

[1] Some 100 papers on various aspects of Darwinism were read at a special centennial symposium held at the University of Chicago in November 1959.

UPI

To enable scientists to carry on year-round polar research and development programs, an underground city is being excavated in the snow and ice of northern Greenland. (*Left*) A digging machine hurls snow from one of the deep trenches being cut to house the Arctic city. (*Right*) Shown at an advanced stage of construction, this trench has been roofed with packed snow.

Geneticists played a prominent role in most of these symposia. Lack of knowledge of the mechanism of heredity was a principal stumbling block in the acceptance of the theory of evolution, since it was not clear how the variation on which natural selection was to operate arose or was maintained. The discovery of the particulate gene and the laws of its transmission resolved this question, and the field of population genetics subsequently supplied staunch support to the theory of evolution by natural selection. (See also ANTHROPOLOGY.)

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GENEVA CONFERENCES. See DISARMAMENT; SUMMIT CONFERENCE.

GEODESY. See INTERNATIONAL GEOPHYSICAL YEAR.

GEODETIC SURVEY. See COAST AND GEODETIC SURVEY.

GEOGRAPHY AND EXPLORATION. Geographical exploration and research continued during 1959 at the rapid tempo that had characterized the International Geophysical Year (IGY), which terminated on Dec. 31, 1958. While the polar regions remained the outstanding attraction, explorers did not neglect milder and more accessible latitudes, nor did they restrict their endeavors to the earth's surface: some probed deep into the oceans and others high into the sky. In fact, it became apparent that the explorer, having searched out the more challenging of the earth's remote corners, was beginning to seek, like Alexander the Great, for new worlds to conquer, and that he was beginning to find them in both the ocean depths and the stratosphere.

Polar Regions.—The first permanent settlement at the South Pole was established in December 1956 as a part of the United States IGY scientific program. Some uncertainty existed as to its exact location in relation to the South Pole itself, but this was reduced during the second year of operation by taking many observations on the star Canopus with more accurate instruments than those formerly available. When computed by the U.S. Coast and Geodetic Survey, the observatory was found to be at 89°59′43.6″ south latitude, or about 1,650 feet from the pole itself. The longitude of the station is about 24.8°W., or due south of Iceland. Subsequent observations may revise these figures slightly.

At the opposite end of the world a submarine was needed to reach the North Pole, and here, too, its precise location was not easily found. During 1958 the atomic-powered *Nautilus* completed a voyage of 1,839 nautical miles across the polar basin, and on August 3 it became the first ship to reach the North Pole, although it did so without surfacing. During 1959 the atomic submarine *Skate* (Commander James C. Calvert), which in August 1958 had cruised in the polar basin and made a call at the IGY drifting Station A, made a second and more hazardous polar voyage in March 1959, at a time of year when sea ice thickness and distribution approach their maximum. The main purpose of the voyage was to test the ability of the submarine to surface either in the very limited pools or "polynyas" within the pack ice, or to break through the relatively thin layer of new ice which forms over them. In addition, further tests were to be made of the new "inertial guidance" system of navigation which was designed to determine the submarine's exact location without the aid of the compass or the customary celestial observations.

On March 17, 1959, the *Skate* surfaced at the pole and there performed the ceremony of scattering to the winds the ashes of the renowned explorer, Sir Hubert Wilkins, who almost 30 years before had attempted a polar cruise in an old World War I submarine also named *Nautilus*. During its cruise of 3,090 nautical miles under the polar ice pack, the *Skate* surfaced ten times, successfully breaking through thin ice with its reenforced conning tower.

During the polar voyages of the *Nautilus* and *Skate*, the existence of a submerged mountain range, first located in 1948 by Soviet scientists working from an ice-floe station, was confirmed. This Lomonosov Ridge extends from Ellesmere Island in northern Canada past the North Pole toward the New Siberian Islands, thus dividing the polar basin into two distinct parts, the one north of Alaska and the other north of Europe.

The ability of a submarine to cruise at will under the ice has greatly simplified the task of charting the bathymetry of the basin. For example, on a 2,400-mile cruise in August 1958, the *Skate* recorded more than 650,000 soundings, in comparison with the few hundred that would have been practicable from a surface station. However,

no submarine has yet been able to take samples of the deposits on the ocean floor or specimens of the bedrock itself. This has proved possible for expeditions based on floating ice floes and on the more massive ice islands. In this way the actual rock structure of the polar basin is being determined. Photography of the ocean bottom has also proved a useful aid. Analysis of the unconsolidated deposits on the ocean floor suggests that there have been quite radical changes in the climate of the area, as is indicated by fairly sudden alterations in the type and quantity of foraminifers laid down in the ooze. This, it is believed—and Soviet scientists have suggested the same thesis—may have resulted from a raising and lowering of the submerged sill which controls the movement of Atlantic water into the polar basin.

More than 60 years ago, Dr. Fridtjof Nansen led an expedition aboard the vessel *Fram* on a three-year drift (1893–96) across the polar basin. His main purpose was to study the movement of ice and ocean currents and record the marine life at various locations. His technique was repeated in 1947 by the Soviet vessel *Sedov* and later by seven Soviet stations on drifting ice, as well as by three United States stations. It has now become possible to work out in some detail the forces that control the drift of ice in this region and to relate observed results to theoretical calculations. The ice drift follows closely the sea-level atmospheric pressure systems, and the clockwise circuit followed by ice on the North American side of the pole is similar to that of the surface water. The main factor in this movement is the wind, but as Nansen had pointed out, there is a tendency for the ice to move to the right of the wind direction due to the so-called Coriolis effect. An unusual piece of evidence of the route and speed of drifting polar ice was provided in December 1959 by the discovery of a damaged Soviet airplane on an ice floe about 160 miles north of Iceland. The plane had been wrecked in 1955 during a supply mission at one of the Soviet drifting stations then near the pole and had been carried southward by the East Greenland Current. (See also ARCTIC EXPLORATION.)

During the 1957–58 Antarctic summer, a tractor expedition led by Dr. Vivian Fuchs completed a 98-day, 2,158-mile traverse of the continent from Weddell Sea to Ross Sea. This was the most spectacular but not the only long traverse undertaken. Because such journeys provide almost the only means for securing data on the structure of large areas of the Antarctic continent, many have been carried out and others will be undertaken during the years to come. Among the more recent of these was a United States expedition through part of Victoria Land, which began on Oct. 15, 1958, at the Little America Station and ended on Jan. 31, 1959, at Scott Station on McMurdo Sound. The route chosen made possible studies not only of the thick icecap which rests on bedrock, but also of the floating sheet of ice known as the Ross Ice Shelf, which was shown to be as much as 3,000 feet thick in places. On Dec. 26, 1959, a Soviet tractor train completed a notable journey to the South Pole from a coastal station at Mirny.

Thanks to observations accumulated by such scientific parties, it is becoming possible to check theories about the geological structure of Antarctica. About 50 years ago, Dr. Griffith Taylor, the geographer on Robert Falcon Scott's last expedition (1911–12), suggested that the Antarctic continent was in fact at least two distinct land masses, largely buried under thick ice and separated by a graben or trough linking the Weddell and Ross seas. One side—that nearest to Africa and Australia—consists of a vast raised "shield" of very ancient rock upon which rests the ice of the south polar plateau: this is East Antarctica. West Antarctica is radically different, consisting mainly of folded ranges and plateaus similar to those of the Andes of South America. The Graham-Palmer Peninsula provides the link between Antarctica and the Western Hemisphere. Traverses made by United States IGY parties from both the Weddell Sea and Ross Sea sides have confirmed the existence of deep troughs in the continent extending, in one case, 8,000 feet below sea level. It should be possible within the next year or two to confirm or disprove the Taylor hypothesis of Antarctic structure.

The extent to which scientific research in Antarctica has become a routine matter is demonstrated by the existence of about 40 more or less permanent scientific stations distributed around the margin of the continent at strategic locations in the interior and on offshore islands. The international collaboration between their scientific personnel is unequaled anywhere else, and the international agreement reached in 1959 to stabilize political matters there and open the whole continent to the world's scientists is a most encouraging recent development. (See also ANTARCTICA).

Ocean Research.—International collaboration in marine research has an even longer history, and in keeping with it a long-range systematic study of the Indian Ocean under international auspices was announced during 1959. The research vessels of several nations continued about their regular business. The Soviet ship *Lomonosov*, under the leadership of Prof. Arkady Kolesnikov, undertook a four-month voyage which included a visit to New York City for the International Congress on Oceanography, Aug. 31–Sept 11, 1959. The Soviet Union also revealed that a large submarine designed specifically for oceanographic research had completed extensive voyages in the Atlantic Ocean. The vessel is said to have been equipped with large windows to permit the study of marine life while en route. The veteran British survey vessel R.R.S. *Discovery II* studied a submerged island known as Galicia Bank lying off the northwest coast of Spain in the area of the fabled "lost land of Atlantis." The island is about 20 miles long, with a flat top and steep sides, and lies at a depth of about 400 fathoms.

In an attempt (the fifth thus far) to emulate the renowned Kon-Tiki expedition from Peru to Polynesia, a Czech-led party of four set out from Callao, Peru, in April 1959. Their balsa raft Cantula II survived several violent storms and was finally reported in August to have reached Polynesian waters. These voyages increase the knowledge of winds and ocean currents in this part of the Pacific Ocean, but their success in demonstrating the Peruvian origins of Polynesian civilization remains in dispute.

The launching of two very powerful new icebreakers should result in greatly increased scientific achievements on the fringes of the polar basin. At Leningrad the atomic-powered *Lenin* completed her sea-going trials in 1959. The Canadian *John A. Macdonald*, which went down the ways in November 1959, is not expected to undertake an Arctic voyage until late 1960 or early 1961. While the *Lenin* is undoubtedly the world's largest and most powerful icebreaker, the Canadian vessel takes third place after the U.S.S. *Glacier*. (See also OCEANOGRAPHY.)

Mountaineering.—Mountaineering expeditions were very active during 1959, in part because of the great advances made in cold-weather clothing and other equipment, and in specially compact and

nourishing foods. They were aided in many cases by aircraft both for transportation of personnel to formerly inaccessible spots and for supplying parties by landing or airdrop.

The major area of concentration was in the Himalayas and related areas where climbing parties from several countries were in the field, while the plans for others were announced. Disaster overtook a number of groups, the outstanding tragedy being the loss of a party of women climbers from France. Attempting the conquest of Cho Oyu (26,861 feet), the party, led by the experienced mountaineer Mme. Claude Kogan, left Katmandu on Aug. 21, 1959, and set up a base camp at 19,000 feet, with a second camp at 22,500 feet. The climbing party of three were then overcome by a blizzard at about 23,000 feet, and rescuers were unable to find any trace of them.

Another tragedy occurred during a British attempt to climb Ama Dablam (22,300 feet) in the Himalayas, which is regarded as among the most difficult peaks in the world. The final party of two may in fact have succeeded and been lost on the return, but nothing definite is known of them on the last 1,000 feet of the climb. Three other British climbers lost their lives on Himalayan expeditions. An Austrian expedition succeeded in climbing Haramosh (24,270 feet) in August, and an Italian group climbed Gasherbrum IV. Final details are not yet available about a four-man United States expedition which went to the Mount Everest area in search of "the abominable snowman" under the auspices of the San Antonio Zoological Society. Reports stated that they had returned to civilization with a skin, claimed by the local population to be that of "a child snowman."

Mount McKinley was conquered again, this time by the more difficult southern route. Led by Jake Breitenbach, a guide at the School of American Mountaineering in Wyoming, four members of the American Alpine Club were landed by airplane on the mountain at 7,000 feet altitude in June. Higher camps were made at 12,500 feet, at 15,000 feet, and finally at 16,800 feet. The final 400 feet of the climb was up an almost vertical snow wall. The climbers found at the summit the pole left in 1947 by Bradford Washburn.

In June, Maj. William D. Hackett led a 7-man party up Mount Logan (19,850 feet) in the Yukon Territory, the highest point in Canada and the second highest mountain in North America. Accomplishments of this party included the fourth ascents of the Central Peak (summit) and the West Peak (19,750 feet); a first ascent of the North Peak (19,000 feet); and establishment of the highest camp (18,600 feet) ever made in North America.

In a mass attack on peaks in the Peruvian Andes, a party of 14 Swiss mountain guides climbed 17 new peaks, the highest being a 20,490-foot peak in the Volcabamba Range northwest of Cuzco. Scientists attached to the expedition carried out topographic and botanical studies below the snow line.

Soviet mountaineers have for some years been active in the Central Asian ranges, particularly the Pamirs and the Tien Shan. During August an 11-man group scaled Mount Voroshilov (21,664 feet) near the Indian frontier. The American Geographical Society of New York sent a seven-man expedition to southern Chile for a two-month study of mountain glaciers. Their main purpose was to obtain data on movements of glaciers in the past 10,000 years, for comparison with results obtained in southeastern Alaska where the society has been at work since 1948.

(See also COAST AND GEODETIC SURVEY; GEOLOGICAL SURVEY; GEOLOGY; INTERNATIONAL GEOPHYSICAL YEAR; SEISMOLOGY; SPACE FLIGHT; and the Index entry, *Geography and Exploration.*)

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GEOLOGICAL SURVEY. The U.S. Geological Survey collects, publishes, and distributes data concerning the physical features, water, and mineral resources of the United States and its territories and possessions. Its major responsibilities include preparing geologic maps; gathering and publishing data concerning the nation's mineral, mineral fuel, and water resources; preparing and maintaining topographic maps of the National Topographic Map Series; classifying public lands as to mineral and water power potential; and supervising mineral leasing on federal and Indian lands.

In 1959, in addition to its nationwide activities, the Geological Survey's technical assistance program of geologic, mineral-resource, and water-resource investigations and topographic mapping was conducted in 15 countries in Latin America, Africa, Asia, and the Far East under auspices of the International Cooperation Administration (ICA). Eighty-nine participants from 24 countries received training in the Survey's domestic program under sponsorship of the ICA, Atomic Energy Commission, and United Nations.

Geologic Investigations.—Geologic mapping and related laboratory investigations were continued in 1959 as part of the Survey's goal of preparing an adequate geologic map of the United States and appraising its mineral resources. These investigations, leading to the preparation of geologic maps and reports, also provide a supply of geologic and mineral-resource data to meet the ever-increasing needs of the nation, and, through the research program, assist in the development of techniques for exploration for mineral raw materials essential to the national economy.

In 1959, mineral deposit investigations included a survey of bauxite deposits on the island of Kauai, Hawaii; studies in the geochemistry of sea water and the concentration of important elements in the sea; investigations of light-isotope ratios, which constitute one of the more promising approaches to the problem of ore genesis; studies of the largest known United States uranium reserves at Ambrosia Lake, N.Mex.; and the collection of new geophysical information on large areas of the United States in the course of obtaining airborne radioactivity and magnetic data while monitoring atomic reactor sites for the Atomic Energy Commission.

In support of these and other investigations, some 13,000 thin and polished sections of rocks and minerals were prepared for examination by geologists, and nearly 14,000 samples were analyzed by chemical, spectrographic, X-ray, microscopic, and other methods.

Mapping and stratigraphic studies, as a part of exploration programs, were in progress in 24 petroleum-producing or potentially producing states. Investigations of coal-bearing areas were carried on in 10 states.

Topographic Surveying and Mapping.—Preparing and maintaining the quadrangle maps that make up the National Topographic Map Series are a major responsibility of the Geological Survey. These multipurpose, "three-dimensional" maps provide basic information on terrain and existing works of man, for use in studies of mineral and water resources, engineering projects, national defense, community planning, and for many other purposes.

In 1959, about 1,700 new maps were published, and mapping projects were under way in

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Streams of lava spill down the slopes of Kilauea Iki on the island of Hawaii, forming a fiery river on the crater's floor, during an eruption which began on November 14.

every state in the Union, the District of Columbia, Puerto Rico, and the Virgin Islands. About 22,000 published topographic maps are now available, most of them selling for 30 cents each. Free map indexes for each state, available on request, show the location of each of these maps. As in previous years, many of the states participated in cooperative mapping programs in which the cost was divided between state and federal funds. (See also CARTOGRAPHY.)

Water Resources.—Water-resources investigations by the Survey were accomplished in 1959 in cooperation with all states and with several federal agencies. The program is designed to determine where and in what amount water is available, the extent and types of water use, the quality of the water, and the extent to which development and use have impaired or may impair its quality, or deplete its amount; and to study and develop hydrologic principles and their application to the solution of water problems.

In 1959, streamflow records were obtained at 7,100 measuring stations throughout the 50 states, Puerto Rico, Samoa, and Guam. The work of compiling all streamflow records in the United States for the period 1888–1950, a project started in 1951, was 98 per cent complete in 1959.

Ground water investigations in 1959 included approximately 640 projects, about four fifths of which were operated in financial cooperation with state and local public agencies in 46 states and Guam. About a fifth of these studies, predominantly of national interest or of direct concern to other federal agencies, were financed wholly from federal funds.

Basic studies of the chemical quality of a large number of streams, lakes, springs, and wells were made in 1959. These included examinations of water samples from the basins of the Colorado, Pecos, Missouri, Columbia, Connecticut, and Yadkin–Pee Dee rivers. The program also included the beginning of studies of the distribution and concentration of radioactive waste in streams through fluvial sediment.

Conservation.—The Geological Survey classified federal land as to mineral and water power resources, and supervised development and producing operations for oil, gas, and minerals from leases on federal, Indian, outer continental shelf, and naval petroleum reserve lands. During the fiscal year 1959 a total of 33,623 cases involving mineral classification of public lands were processed. Water and power investigations on public lands involved surveying some 400 miles of streams and 9 dam sites, and the publishing of maps covering 96 miles of streams and 12 dam sites. A total of 84,789 acres were added to power site reserves, and 68,388 acres were removed, resulting in a net total of 7,222,063 acres in reserve.

The Survey's mineral lease supervisory function involved all phases of exploration, development, and production of leasable minerals and oil and gas. Supervised minerals produced in the fiscal year 1959 were valued at $170,027,891, with royalties amounting to $3,177,575.

Production value of oil and gas on federally supervised leases during the fiscal year 1959 was appreciably greater than in fiscal 1958, with correspondingly greater royalty returns to the federal Treasury, the various states, and to Indian beneficiaries. Drilling for oil on the supervised leases during the year included the spudding of 3,058 wells and completion of 2,977, of which 2,048 were productive of oil and gas. Altogether, 42,534 wells, including 25,182 capable of oil or gas production, were under supervision at the end of the fiscal year. Production from these properties during the fiscal year 1959 amounted to 239,887,000 barrels of petroleum, 820,390,496,000 cubic feet of natural gas, and 491,082,700 gallons of gasoline and butane, with a total value of about $696,706,000 and royalty returns of about $102,130,000.

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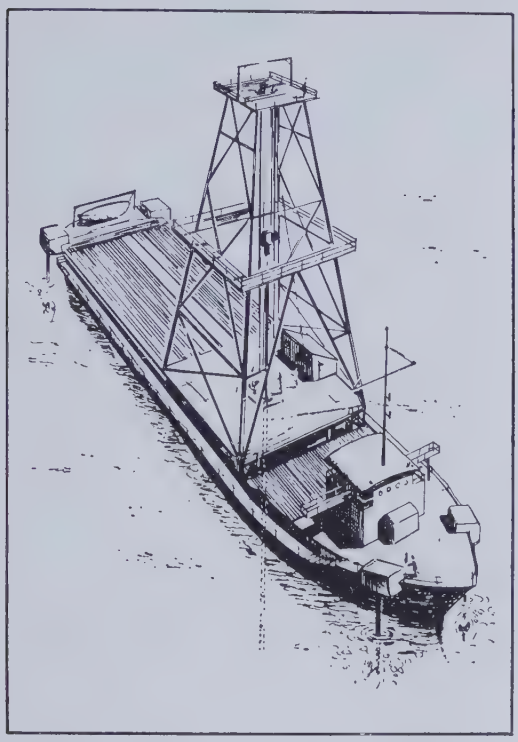
GEOLOGY. Earth History.—Absolute dating of geologic formations and events by means of carbon-14, argon, and other materials continued in 1959. Most of the newly determined dates conform to established chronology, but E. S. Larsen and associates found that the Sierra Nevada, Idaho, and other great granitic masses (batholiths) of the West are late Cretaceous—not Jurassic—in age, as has long been supposed.

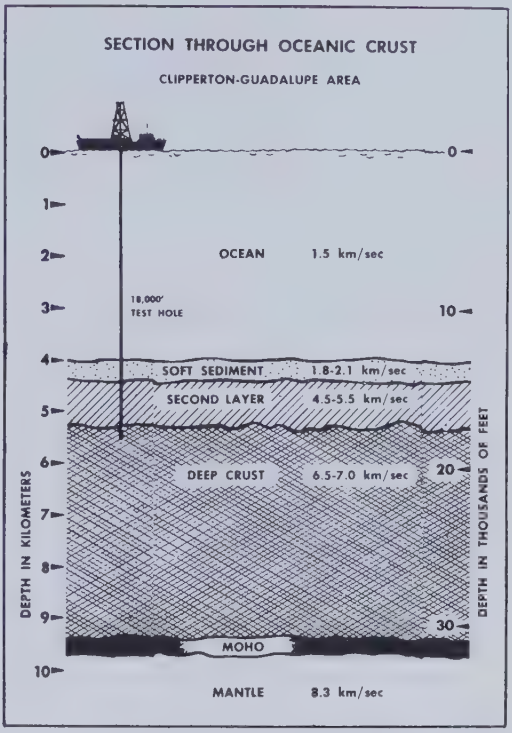
W. C. Gussow continued to map rocks of what he calls the Lipalian System in the Canadian Rockies. This system lies between the Belt and the base of the Cambrian. Gussow unites the Belt and Lipalian in the Eozoic era.

N. K. Huber found that the Animikie iron-bearing formation of the Lake Superior region accumulated in a shallow sea that spread over a lowland composed of granite and greenstone. Iron deposition was stopped by uplift. Gordon Gastil described four formations that settled in a Pre-Cambrian sea that covered Gila County, Arizona. Surrounding land was made up of volcanic rocks. P. M. Mueller found that Cross Mountain, in western Colorado, is a "fossil" mountain now being uncovered by erosion. David Hopkins traced five submergences of the land bridge that once linked Siberia and Alaska. During the late Pleistocene (Ice Age) the bridge had an arctic climate and presented tundra conditions to animals that crossed it to enter North America. Philip B. King summarized the history of the continent in *The Evolution of North America* (Princeton 1959).

Sedimentation.—J. L. Hough concluded that the banded iron deposits of Huronian age in the Lake Superior region were laid down under subtropical to warm-temperate conditions, with moderate to heavy rainfall on maturely eroded land. Silica was the principal material washed into the large freshwater lakes in which the rocks accumulated.

N. M. Strakhov decided that dolomites of various ages differ because of changes in the atmosphere and in the water under which the rocks were deposited. W. B. N. Berry traced changes in a sea that covered the Marathon district of Texas during Ordovician times, more than 360 million years ago. H. Andrew edited a symposium on *Silica in Sediments*, published by the Society of Economic Paleontologists and Mineralogists. J. M.





NATIONAL ACADEMY OF SCIENCES

Geologists have long hoped to drill a hole through the earth's crust, penetrating the Mohorovičić discontinuity (or Moho), and into the mantle which underlies the crust. Since the earth's crust averages only 5 miles in thickness under the oceans (compared with a 20-mile thickness under land masses), it is believed that the project would be feasible with presently available drilling equipment mounted on an ocean-going rig. (*Left*) This drawing shows a sea-going drilling platform proposed for the "Mohole" project. The vessel would be stabilized by four giant outboard motors. (*Right*) A proposed preliminary test boring in the Pacific would penetrate the two upper layers of the crust and reach the deep crust. The figures on the right side of the diagram show the speed of seismic waves through each of the earth's layers shown.

Weller reviewed the processes by which mud, lime ooze, and other sediments are compacted, the first step in becoming stone. P. Kuenen corrected a long-standing error by proving that sand suffers little wear as it is washed downstream by water. A. J. Carsola reported that lignite can accumulate on sea bottoms as well as in swamps.

Earthquakes and Volcanoes.—C. P. Woollard mapped three major earthquake zones in the United States and concluded that local stresses from compression or uplift cause the quakes. C. M. Duke and D. J. Leeds found that shock intensity and damage from the Mexican quake of July 28, 1957, were greatest where rocks were loose or soft, as they are under much of Mexico City. C. F. Richter prepared earthquake risk maps for the Los Angeles Basin, California, and the United States. The maps show the likelihood of earthquakes but do not predict their occurrence. D. Tocher and D. J. Miller found that the Alaskan quake of July 9–10, 1958, was caused by movement along a well-known fault. In some places the land moved horizontally as much as 21 feet 6 inches. Enormous "tidal waves" were caused by landslides. (See also SEISMOLOGY.)

The most spectacular volcanic eruptions in 1959 were those of Kilauea Iki on the island of Hawaii. Beginning on November 14, the eruptions occurred intermittently for over a month. Other volcanic eruptions during 1959 included those of Mounts Aso and Asama in Japan, Tupungatito and Gualatire in Chile, and a new volcano on Soviet-held Sakhalin island, north of Japan. M. Maldonado-Koerdell described the eruption of Barcema Volcano, Mexico, which built an island 1,200 feet high in the first 12 days of August 1952. A. R. McBirney concluded that volcanic necks rise because molten rock disrupts and engulfs older rocks above and around them, allowing the fragments to sink.

Structural Geology.—W. H. White traced six major epochs of mountain building in British Columbia. The greatest of these built the Rocky Mountains some 60 million years ago. H. J. Hsu suggested that the great basins called geosynclines developed where the crust is thin, after periods of shifting and earthquakes. W. P. Wheeler found that great blocks of rock (grabens) sink because tension has weakened the crust, not because they are forced downward by shrinking and compression. Tests in Alberta, Canada, indicate that the crust extends 43 kilometers (26.7 miles) below the surface.

Rocks and Minerals.—V. I. Kudryoshova found Russian pillow lavas associated with fresh-water fossils, showing that the molten rock erupted into lakes. V. V. Tikhomirov concluded that most granites were produced by metamorphism under conditions peculiar to the earth. Even then, granite can form only under high lands. Several new minerals were described (see MINERALOGY), and W. A. Bassett traced the changes that produced vermiculite at Libby, Mont., site of North America's largest vermiculite mine.

Ice Age and Glaciation.—Popular as well as scientific interest was aroused by a theory of glaciation advanced by M. W. Ewing and W. L. Dunn. They believe that the Pleistocene Ice Age began when the North Pole, which they claim had been in the mid-Pacific for ages, shifted to the Arctic Ocean. Its near-isolation resulted in a concentration of cold which led to excessive snowfall, and so began the cycles of glaciation and melting that

characterized the Pleistocene. Present northward warming of the Atlantic and thinning of ice on Greenland are regarded as changes that will lead to increased snowfall and another advance of continental glaciers in the Northern Hemisphere. Several geologists, including those who think the poles have not wandered greatly, object to this theory.

Paleontology.—Volume 1 of Part O, *Arthropoda,* of the *Treatise on Invertebrate Paleontology,* has been published. The work of several authors, it describes primitive animals with jointed bodies, and the trilobitomorphs.

One of the most interesting discoveries of 1959 was announced in a relatively obscure journal.[1] T. A. Ford described Pre-Cambrian fossils which seem to be highly organized algae with stalks and discoidal holdfasts. No organisms of this type were known previously from studies of very ancient strata.

The late C. E. Decker and Neal Hassenger, in a study of graptolites, described extensible tentacles, walls housing stinging cells, and structures providing for bisexual production. The authors consider this to be evidence that graptolites are coelenterates, not hemichordates. The latter interpretation was advanced by R. Kozlowski in 1948.

Publications.—For decades, bibliographies compiled by the U.S. Geological Survey, the Geological Society of America, and other organizations have listed published articles and books covering the range of the earth sciences. Since January 1959, abstracts (chiefly of publications in English and Russian) have been provided in *GeoScience Abstracts,* issued by the cooperative American Geological Institute, Washington 25, D.C.

(See also Arctic Exploration; Antarctica; Coast and Geodetic Survey; Geological Survey; International Geophysical Year; Oceanography.)

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GEOMAGNETISM. See International Geophysical Year; Space Flight—*Astronautics.*

GEOPHYSICAL YEAR, International. See International Geophysical Year.

GEORGIA. South Atlantic state, United States; one of the original 13 states. The "Cracker State" ranks 21st in area and 16th in population among the 50 states.

Area and Population.—Area: 58,876 square miles (land, 58,483; inland water, 393), divided into 159 counties. Population: (1950) 3,444,578; (est., July 1, 1958) 3,787,000. Urban places with populations above 10,000 (as estimated by the Georgia Department of Health for July 1, 1958) are:

Albany	41,500	Gainesville	14,200
Americus	13,100	Griffin	21,900
Athens	34,400	Hapeville	11,100
Atlanta (*capital*)	496,000	La Grange	28,500
Augusta	97,800	Macon	80,300
Brunswick	20,700	Marietta	31,500
Cartersville	10,200	Milledgeville	10,500
Cedartown	10,400	Moultrie	13,800
College Park	19,700	Rome	33,800
Columbus	101,300	Savannah	139,700
Cordele	10,700	Thomaston	11,100
Dalton	19,500	Thomasville	16,700
Decatur	25,900	Valdosta	28,200
Dublin	12,200	Warner Robins	17,653*
East Point	28,100	Waycross	22,700

* Special census, 1957.

Executive.—Chief state officers in 1959:
Governor: S. Ernest Vandiver (Democrat)
Lieutenant Governor: Garland T. Byrd
Secretary of State: Ben W. Fortson, Jr.
Treasurer: George B. Hamilton
Attorney General: Eugene Cook
Auditor: B. E. Thrasher, Jr.
Supt. of Public Instruction: Claude L. Purcell

[1] Ford, T. A., "Pre-Cambrian Fossils from Charnwood Forest, England," in the *Proceedings* of the Yorkshire Geological Society, vol. 31, pp. 211–217 (1958).

Constitution and Judiciary.—The present constitution went into effect in 1945. The Supreme Court comprises seven justices; chief justice in 1959 was William H. Duckworth.

Legislature.—The Georgia General Assembly comprises a 54-member Senate (in 1959, 53 Democrats, 1 Republican) and a 205-member House of Representatives (204 Democrats, 1 Republican), which meet annually commencing the second Monday in January.

In its 1959 session the assembly authorized the governor to close any public schools and state-supported colleges, or units thereof, whenever he finds that their continued operation is likely to lead to public disorders; set up a compensation arrangement for teachers in public schools closed by the governor that would permit payment for the balance of the 12-month contract period and, at the governor's discretion, for an additional 12 months; stiffened entrance requirements to the state university system for those over age 21 seeking admission to undergraduate units and for those over 25 applying for entrance to graduate schools; and allowed state income tax credit for any contributions made to any corporation, foundation, or trust organized and operated for educational purposes.

The legislature also enacted several measures leading to the elimination, through consolidation or abolishment, of some two dozen state agencies; established an Office of Legislative Counsel, a Governor's Committee on Economy and Reorganization, and an Industrial Development Administration; authorized the governor to create a crime commission; exempted from the state merit system any employee holding a policy-determining or confidential position within a state agency; wrote a code of ethics for state employees; established a per diem payment of $10 for all board of education members for whom compensation is not locally provided; and opened all state, county, and municipal records to inspection by citizens unless prohibited by law or court order.

Among miscellaneous actions the assembly passed new regulations affecting the makeup of boards of directors of banks located in the state; tightened requirements for the sale of securities; raised the maximum daytime speed limit on highways to 65 miles per hour and the nighttime limit to 55; imposed new limitations on maximum sizes of motor vehicles; barred the use of certain deceptive advertising practices by gasoline stations; and established a new fee schedule for hunting and fishing licenses for nonresidents.

Finance.—In the 1958–59 fiscal year, state revenue of $342,777,438.85 comprised $338,407,525.30 from state tax sources and $4,369,913.55 from the federal government. Tax revenue included $134,161,350.06 from a 3% general sales tax, $28,968,185.45 from individual income taxes, $20,644,844.46 from corporate income taxes, $80,494,604.32 from motor fuel taxes, $18,704,909.71 from licensing, and the remainder from other state tax sources. Expenditures of $354,666,153.87 consisted of $182,454,389.41 for education, $53,798,007.19 for health, welfare, and safety, $81,028,546.22 for highways, and $37,385,211.05 for all other purposes. The state had no long-term indebtedness.

Banking.—As of June 10, 1959, the state's 51 national banks had $1,590,420,000 in assets, $1,127,501,000 in demand deposits, and $294,771,000 in time deposits. The 311 state banks and their 27 branches had (June 30, 1959) assets of $1,366,937.73, demand deposits of $632,822,223.05, and time deposits of $394,267,672.76.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. According to National Education Association estimates, expenditures for public elementary and secondary education in the 1959–60 school year totaled $200 million ($241 per pupil), and revenue comprised $49 million from local school districts, $166 million from the state, and $16 million from the federal government. Capital outlays amounted to $60 million, and teachers' salaries averaged $3,668 (high school, $3,868; elementary, $3,568).

In the 1958–59 school year there were 1,940 public elementary and secondary schools with 708,160 elementary pupils served by 20,657 teachers, and 273,063 secondary pupils taught by 11,867 teachers. Higher education facilities included 7 junior colleges with 166 instructors and 2,991 students; 1 teachers college with 49 instructors and 1,048 students; and 11 colleges and universities with 1,337 instructors and 20,594 students.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $83,403,545, including $54,465,036 for the aged, $16,455,711 for dependent children, and $10,322,568 for the permanently and totally disabled. A monthly average of 163,724 persons received public assistance.

Labor Force.—The 996,200 salaried nonagricultural workers in July 1959 compared with 956,100 a year earlier and with an average of 981,600 for the 12 intervening months. Of those employed in July 1959, 33.2% were engaged in manufacturing and 21.6% in wholesale and retail trade. Insured unemployment of 25,378 in mid-July 1959 was less than half the 51,927 total for the previous July. The state paid $30,801,758 in unemployment compensation claims during the year ending July 31, 1959.

Manufacturing.—The 328,854 persons employed in the state's manufacturing plants in 1957 earned $1,071,892,000 in wages. Value added by manufacture totaled $2,137,662,000, and outlays for new plant and equipment amounted to $195,750,000. Production workers averaged $66.17 for an average workweek of 41.1 hours in August 1959.

MAJOR GEORGIA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Textile mill products	102,626	$283,402	$467,635
Food and kindred products	40,672	129,210	364,653
Transportation equipment	29,426	164,911	304,531
Pulp, paper, and products	16,717	78,060	226,706
Apparel and related products	41,617	98,255	163,486
Chemicals and products	11,169	40,812	120,460
Lumber and wood products	31,231	61,862	108,184
Stone, clay, glass products	8,154	26,409	57,101

* For definition, see text footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Georgia ranked 35th among the states in the value of its mineral output, with 0.38% of the national total. It continued to lead in china clay output, was second in fuller's earth (23% of domestic output) and scrap and flake mica, and third in barite.

GEORGIA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	2,942,000	$31,253,000
Coal	9,000	44,000
Iron ore, usable (long tons)	209,000	1,008,000
Mica	8	82,000
Sand and gravel	2,631,000	2,693,000
Stone	12,129,000	31,108,000
Other minerals	...	10,145,000
Total	...	$75,106,000*

* Total adjusted to eliminate duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $527,445,000 from the $540,902,000 for the corresponding period of 1958. For the full year 1958, income comprised $416,149,000 from livestock and livestock products, $304,560,000 from crops, and $48,413,000 from government payments. Principal income sources in 1958 were: broilers, $164,521,000; cattle, $69,748,000; hogs, $68,807,000; and cotton lint, $65,386,000. Forest products yielded $33,338,000.

In 1958 there were 160,000 farms in the state.

GEORGIA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Corn (1,000 bu.)	54,176	86,752	81,909
Cotton lint (1,000 bales)	655	352	525
Cottonseed (1,000 tons)	269	144	216
Hay (1,000 tons)	679	641	574
Oats (1,000 bu.)	11,412	9,108	8,832
Peanuts (1,000 lb.)	540,052	612,850	552,375
Pecans (1,000 lb.)	35,370	45,000	39,000
Soybeans (1,000 bu.)	536	1,125	1,392
Sugarcane sirup (1,000 gal.)	1,372	525	570
Sweet potatoes (1,000 cwt.)	1,137*	528	611
Tobacco (1,000 lb.)	119,353	91,074	106,548
Wheat (1,000 bu.)	2,099	1,587	2,255

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

UPI

Beneath a smoldering railroad trestle near Meldrim, Ga., workmen search for victims of a disastrous blast on June 28. Explosion of two butane tank cars killed some 23 picknickers and injured many others.

Total acreage (1954) of 24,019,000 included 6,117,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,515,000 cattle, 1,780,000 hogs, and 9,651,000 chickens (excluding commercial broilers). An average of 132,000 family workers and 47,000 hired employees worked on farms in Georgia during the period January through July 1959.

Transportation and Communications.—In the 1957–58 fiscal year, state and federal funds spent for highways totaled $95,318,945.76, and contracts for new construction covered 1,859 miles.

Highways and roads on July 1, 1958, totaled 88,511 miles (23,704 surfaced). Registered *motor vehicles* numbered 1,307,993 as of Oct. 1, 1958, including 1,038,374 passenger cars. There were (1958) 32 *railroads* operating 5,945 line miles; 5 regularly scheduled *airlines;* and 138 *airports and airfields* (98 commercial and municipal, 10 military, and 30 private).

Communications media (1958) included 125 AM and 19 FM *radio stations;* 13 VHF and 3 UHF *television stations;* 30 daily *newspapers* (circulation, 860,814) and 191 other newspapers (325,000); and (Jan. 1, 1959) 302,700 business and 743,500 residential *telephones.*

Principal Events, 1959.—The Atlanta Board of Education, under a July 9 order of U.S. District Judge Frank A. Hooper, was instructed to file a plan on or before December 1 for the desegregation of the Atlanta public school system.

The plan submitted on November 30 follows closely proposals adopted in Alabama and Virginia. Essentially it is a pupil-placement plan based on such factors as availability of transportation, suitability of the established curriculum for the particular applicant, available room and teaching capacity, scholastic aptitude, relative intelligence or ability of the pupil, and possible friction and disorder among pupils. Under the new plan, children are to be assigned "without regard to race or color" to 12th grade classes the first year and in each successive year to the next lower grade.

The proposal was forwarded to the state General Assembly, which was to convene in January 1960. The plan, as presented, was scheduled to go into effect the following September 1. Two existing state laws were expected to have a bearing on fulfillment of the plan. One provides that if any public school or state-supported college is subjected to a final integration order by the federal courts the governor is required to close the unit or units ordered integrated. The other law, passed in 1959, gives the governor authority to close any school or college if he feels that its continued operation would lead to violence or disorder.

Economic gains were reported in many fields in 1959. During the year ended July 1, 1959, Georgia farm real estate value increased 10%, compared with an average national rise of 6%. This rate of increase was second highest among Southern states.

Nearly 200 new industrial plants were located in Georgia during the first 10 months of 1959, twice the number established in the comparable period of 1958. These new plants, representing an investment of approximately $100 million, hired 8,000 new employees and added $25 million annually to the state's payrolls. Statewide employment of 1,010,900 in October 1959 was 32,400 above that of a year earlier. Nine-month figures showed department sales to be up 7% over those for the comparable period of 1958; bank deposits up 3%; and building permits up 24%.

Jekyll Island, the former home of millionaires and now owned by the state, was developed as a new state park. A causeway near Brunswick leads to the island.

On June 28, two tank cars of butane gas exploded on a railroad trestle above a recreation area at Meldrim, near Savannah. Twenty-three persons were killed and many others were injured in the inferno. The cause of the accident, although not finally determined, was thought to be a spark from the train.

At Atlanta in 1959 the dome of the State Capitol was gilded with gold mined in Lumpkin County, site of the first gold mine in the United States. Also at Atlanta, a special program held October 10 in the Municipal Auditorium, celebrated the attainment of a population of one million by the Atlanta metropolitan area.

Legislature and Principal Events by:
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GERMAN LITERATURE. **Drama.**—Over 200 West German theaters, visited annually by 30 million spectators, continued to rely heavily in 1959 on German classic and prewar plays and translations of foreign dramas. In the 1958–59 season, the *Diary of Anne Frank* was performed 3,400 times in 122 theaters. Works by Bertolt Brecht, especially *Mother Courage* and *The Good Woman of Sezuan,* were performed 962 times. Three of Brecht's plays were premièred posthumously: *Der unaufhaltsame Aufstieg des Arturo Ui,* a gangster play, at Stuttgart in the fall of 1958; *Die heilige Johanna der Schlachthöfe,* at Hamburg, and *Schweyk im Zweiten Weltkrieg,* at Frankfurt am Main, both in the spring of 1959. Karl Wittlinger's *Kennen Sie die Milchstrasse?* was performed 661 times in 35 theaters.

The Swiss dramatist Friedrich Dürrenmatt received the 1959 Mannheim Schiller Prize as the "most important living playright in German." Max Frisch, another Swiss playwright, received the Georg Büchner Prize and the Literature Prize of the City of Zurich. Jean Vauthier's *Les prodiges* was premièred at Kassel under the title *Die Wunder,* even before it was performed in Paris.

Menander's 2,300-year-old comedy, *Dyskolos,* was given its première at the Vienna Burgtheater after the Swiss collector Martin Bodmer discovered the complete text of the hitherto fragmentary work. Franz Grillparzer's 150-year-old play, *Blanka von Kastilien,* with a background of 14th century Spain, was first presented in the Vienna Volkstheater.

Poetry.—Wilhelm Lehmann (b. 1882), the Nestor of nature lyricism (*Antwort des Schweigens,* 1935; *Der Grüne Gott,* 1942; *Entzückter Staub,* 1946; *Noch nicht genug,* 1950), received the Schiller Memorial Prize for 1959 in Stuttgart. Wilhelm von Scholz (b. 1874) published a new volume of poems, *Raum über uns,* and a new selection of his many short stories, *Das Inwendige.* Nelly Sachs (b. 1891) collected her third volume of poetry under the title *Flucht und Verwandlung.* Werner Bergengrün (b. 1892) published a collection of poems, *Figur und Schatten.* Horst Lange (b. 1904) and some of the younger West German poets, among them Erich Lotz and Johannes Poethen, also published collections of their lyrics. Günter Eich (b. 1907) received the Georg Büchner Prize. *Primäre Tage,* a collection of poems and fragments, was published posthumously from the literary remains of Gottfried Benn (1886–1956). Austria is represented with volumes of poetry by Paul Celan, Christine Busta, Gerhart Fritsch, Christine Lavant, Hertha Staub, and Friedrich Torberg; and Switzerland, by Heinrich Wiesner.

Novels.—The generations born before 1900 are amply represented with new prose fiction. Agnes Miegel (b. 1879), who is considered the greatest living writer of ballads, published *Truso,* six stories from her former East Prussian home. Leonhard Frank (b. 1882) wrote a novel, *Mathilde.* Ina Seidel (b. 1885) published a 948-page novel, *Michaela.* Kasimir Edschmid (b. 1890) contributed a new novel, *Drei Häuser am Meer.* Oskar Maria Graf (b. 1894), who lives in New York, published a futuristic novel, *Die Erben des Untergangs.* Carl Zuckmayer (b. 1896), who is better known for his dramas, published a story, *Die Fastnachtsbeichte.* Some short stories were published posthumously from the literary remains of Thomas Mann (1875–1955), Ernst Penzoldt (1892–1955), and Reinhold Schneider (1903–58).

The following West German writers also contributed novels or short stories: Heinrich Böll (*Billard um halb zehn*); Rudolf Hagelstange (*Spielball der Götter,* for which he received the Julius Campe Prize in the amount of 15,000 Deutsche marks); Hans Werner Richter (*Linus Fleck* or *Der Verlust der Würde*); Stefan Andres (*Der graue Regenbogen*); Gerd Gaiser; Edzard Schaper; Luise Rinser; Hugo Schnabel; Kurt Hohoff; Wolfdietrich Schnurre; and Karlheinz Deschner.

Austria is represented with new novels by Max Brod, Robert Neumann, Rudolf Brunnengraber, Gertrud Fussenegger, Franz Tumler, Jeannie Ebner, and Milo Dor; and Switzerland, by Kurt Guggenheimer and P. H. Bonner. Otto F. Walter (b. 1928) received the international Charles-Veillon-Prize-1958 for his first novel, *Der Stumme.*

Nonfiction.—Walter Jens' book of travel descriptions and essays, *Die Götter sind sterblich,* was chosen in 1959 as the "book of the month of July." Friedrich Georg Jünger reminisces in *Spiegel der Jahre.* Hermann Kesten presents a chronicle of the literary cafés in Paris, London, New York, Rome, Berlin, Vienna, and Munich in *Dichter im Café.* The Swiss poet Erwin Jaeckle published three essays under the title *Die Elfenspur.* Earlier, in 1957, William Karl Pfeiler published *German Literature in Exile* (University of Nebraska Press).

Translations.—Among the English translations of important German fiction and nonfiction, the following should be mentioned: Ludwig Dehio, *Germany and World Politics in the Twentieth Century* (Knopf); Friedrich Dürrenmatt, *The Pledge* (Knopf); Willi Heinrich, *Mark of Shame* (Farrar, Straus & Cudahy); Hans Hellmut Kirst, *The Seventh Day* (Doubleday), a plausible futuristic story of the last days of Europe in an atomic war; Arthur Koestler, *The Sleepwalkers: A History of Man's Changing Vision of the Universe* (Macmillan); Heinz Schröter, *Stalingrad: The Battle That Changed the World* (Dutton); Herbert Wendt, *The Road to Man* (Doubleday); and Ernst Emil Wiechert, *Tidings* (Macmillan). J. C. Friedrich von Schiller's *Maiden of Orleans* (University of North Carolina Press, 1959) is an American contribution to the bicentennial celebration of the author's birth.

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GERMANY. The breakdown of inter-Allied cooperation after World War II has led to the formation of two separate German states: the Federal Republic of Germany in the west (Sept. 21, 1949), with its capital at Bonn; and the German Democratic Republic in the east (Oct. 11, 1949), with its capital at East Berlin. The City of Berlin, established in 1945 as an inter-Allied zone and the seat of the Allied Control Council, was equally divided in 1948, and in both sectors the occupying powers have retained certain governmental rights stemming from the inter-Allied agreement of 1945.

The reunification of Germany has remained not only the desire of the East and West German populations, but also the declared objective of the Big Four powers. The Western powers have insisted that reunification be brought about by democratic methods and have demanded free elections in East and West Germany as an essential step toward reunification. The USSR has refused to accept free elections and has demanded that reunification should be the result of negotiations between the existing West and East German governments. The Soviet Union also wants assurance that any future German state will be neutralized.

Area and Population.—That part of Germany occupied by the Big Four powers in 1945, including the Saarland, has a total area of 137,713 square miles, as compared with a pre-World War II (1937) Germany of 181,392 square miles, and a total population of 72,388,700 (May 31, 1959).

AREA AND POPULATION OF GERMANY

Division	Area (sq. mi.)	Population (estimated)
Federal Republic	95,733.0	52,765,000 (May 31,1959)
Democratic Republic	41,692.0	16,300,700 (Dec. 31, 1957)
West Berlin	186.0	2,213,000 (May 31, 1959)
East Berlin	155.6	1,110,000 (Dec. 31, 1957)
Total	137,766.6	72,388,700

Owing to the influx of more than 12 million Germans from eastern European countries and from provinces east of the Oder-Neisse line (belonging to Germany prior to 1937), the present area has a larger population than the Germany of 1937. The density of population in the Federal Republic was 550 persons per square mile on Jan. 1, 1959, compared with 419 in 1939. While the population of the Federal Republic has been rising steadily, the population of the Democratic Republic and East Berlin has declined to 17,310,670 in 1959, from 18,892,000 in 1949.

On June 30, 1958, ten West German cities had more than half a million inhabitants: Hamburg (1,796,700), Munich (1,016,500), Cologne (749,500), Essen (719,800), Düsseldorf (679,200), Frankfurt (643,100), Dortmund (629,500), Stuttgart (617,800), Hannover (558,100), and Bremen (535,100). The largest cities in the Democratic Republic (with population estimates as of Dec. 31, 1957) are Leipzig (598,909), Dresden (491,714), Chemnitz (Karl Marx Stadt) (286,016), Halle (280,614), Magdeburg (258,447), Erfurt (184,819), Rostock (149,301), Zwickau (129,953), and Potsdam (115,934).

Federal Republic of Germany (West Germany)

Government.—The German Federal Republic is a federal state composed of ten *Länder* (states): Baden-Württemberg, Bavaria, Bremen, Hamburg, Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, the Saarland, and Schleswig-Holstein. The constitution of May 23, 1949, divided governmental functions between the federal and *Land* (state) authorities. Public administration is mostly in the hands of the state governments, while legislative power is divided between the federal and state governments.

The Federal Republic is headed by a president elected for 5 years by a special assembly of all the members of the federal parliament and an equal number of delegates from the state parliaments. His functions are largely nominal, although he nominates the chancellor, who then must be confirmed by the parliament. The chief organ of popular representation is the Bundestag or Federal Diet, a national parliament elected by all West German citizens above the age of 21. The states participate in federal legislation through the Bundesrat or Federal Council, in which the individual states, according to their population, have from three to five votes each and are represented by members of their governments. The supreme judicial body is the Constitutional Court in Karlsruhe.

Political Developments.—The Federal Republic commemorated the tenth anniversary of its exist-

AMERICANA MAP BY DONALD T. PITCHER

GERMANY

Inset shows transportation routes leading from West Berlin to West Germany, through East German territory and air space.

ence on Sept. 21, 1959. It came into being in 1949 by agreement of the three Western occupying powers, who gave the Germans the freedom to frame a constitution of their own choice. Under this constitution the Federal Republic gained full sovereignty by 1955, became through NATO an ally of her Western wartime enemies, and managed to develop into the second biggest industrial country in the West.

Presidential Election.—The event that caused the greatest commotion in German internal politics during 1959 was the election of a new federal president. Since the inception of the Federal Republic this office had been held by Dr. Theodor Heuss, a scholar-statesman who won a popularity for which German history offers very few precedents. Although the parties urged him to continue in office and there was a parliamentary majority

large enough to pass the necessary constitutional amendment nullifying the provision restricting a president's tenure to two 5-year terms, Dr. Heuss insisted on respecting the constitution. Chancellor Konrad Adenauer, chairman of the largest German party, the Christian Democratic Union (CDU), proposed Dr. Ludwig Erhard, vice chancellor and minister of economics, for the office, but Dr. Erhard refused to be a candidate because he wished to continue as director of German economic policy.

On April 7, persuaded by other leaders of the CDU, Chancellor Adenauer declared his willingness to be the presidential candidate of his party. The 83-year-old chancellor admittedly intended to retain in the presidential office the decisive influence on foreign policy and felt that the succession as chancellor of the present minister of finance, Franz Etzel, would allow him to do so. However, when the leaders of the CDU showed their preference for Ludwig Erhard, the greatest vote-getter of the party next to Dr. Adenauer, the chancellor publicly withdrew his candidacy on June 4 and declared his intention to continue as chancellor until after the next federal elections in 1961. Many CDU members were greatly dismayed, but they felt unable to take any action against the statesman to whom West Germany owes its recovery and its voice in international councils, although there was much public recrimination about the personal regime of the "old man."

On July 1, 1959, an electoral assembly convened in West Berlin and elected Dr. Heinrich Lübke, a member of the CDU, federal president. Dr. Lübke, 65 years of age, has a strong anti-Nazi record and was a successful minister of agriculture in Dr. Adenauer's cabinet since 1953. He entered on his new duties on Sept. 15, 1959.

State Elections.—The results of the elections of state parliaments in Lower Saxony and Rhineland-Palatinate on April 19 and in Bremen on October 11 did not indicate any important shift in popular political trends. The Christian Democratic Union and the Social Democratic Party (SPD) continue to grow at the expense of the few surviving small parties without changing their relative strength. The SPD, which always has done slightly better in state elections than in federal elections, gained a full majority in the small city-state of Bremen, but remained far from having a majority on the national level. In its desire to achieve such a majority, the SPD found itself in the same dilemma as the British Labour Party. In order to win, it had to gain greater appeal among the middle classes. Therefore, at an extraordinary party convention, held on Nov. 13–15, 1959, at Bad Godesberg, the SPD dropped most of its traditional Marxist and socialist aims. Although it might lose much of its support from the working class, the SPD intends to go with this new program into the federal elections of 1961.

Saar.—On July 5, 1959, the last official event in the reintegration of the Saar region occurred. France had attempted to separate this industrial region, comprising 2,567 square miles and 1.040,000 inhabitants, from Germany after World War II. A currency and customs union with France was effected in 1947. France agreed to have the Saar residents vote on their own future in October 1955, and accepted their expressed desire for full return to Germany. A Franco-German treaty provided for the Saar's political incorporation into the Federal Republic on Jan. 1, 1957, and for its economic integration by Jan. 1, 1960. On July 5, 1959, the customs line between Germany and the Saar was abolished, and the Deutsche mark replaced the French franc. (See also SAAR.)

Armed Forces.—The building of German armed forces, which began in 1956, will be completed by the army in 1960. The navy and air force are to attain their personnel complements in 1961–62, and will complete training with modern technical equipment in 1962–63. The NATO-approved plans envisage a peacetime strength of 350,000–380,000 for all three services. The army will have 200,000 combat troops, plus a training organization; the air force, 80,000–100,000; the navy, 27,000–30,000. The remainder is to consist of cadres for the territorial organization which is designed in case of war to protect communications and deal with emergencies behind the front arising from air attacks. The territorial organization in case of war will be strengthened in each locality by reserve soldiers in the immediate neighborhood.

In July 1959 the armed forces had a strength of 218,000 men (army, 135,000; air force, 48,000; navy, 19,000; territorial organization, 16,000). Germany has a universal conscription law, but at the present stage about 50% of the armed forces consists of long-service volunteers or career soldiers. At present only 90,000 12-month draftees are in the army; their number will be increased to 150,000 in the future.

The German Army has received most favorable critiques from United States military observers. Army maneuvers in September–October 1958, in which 80,000 men participated, showed unusual achievements in military performance. It was generally noted that the new system of liberal discipline adapted for the army's citizen-soldiers—a novelty in German military history—does not seem to have interfered with effectiveness.

Nevertheless, the German Army must overcome a number of problems. The training of a sufficient number of junior officers requires more time, as does the full production of equipment. The German government does not propose to build up a self-supporting armaments industry, but intends to keep armament purchases abroad and at home at the present 50:50 ratio. Many items are produced under foreign license; some are produced jointly with other NATO countries, such as France and Italy.

The German Army will not have heavy tanks, long-range planes, or long-range missiles. The army has received Honest John missiles from the United States, and the air force has received Matadors and Nikes. West Germany is building installations for the delivery of tactical nuclear warheads. The German units will be assigned to NATO, and only the NATO supreme commander could provide them with live warheads in case of war.

Foreign Affairs.—The diplomatic activities of the Federal Republic during 1959 centered chiefly around the problem of Berlin—a problem created by the USSR's note of Nov. 27, 1958, which declared that the Soviet Union would denounce the four-power status of Berlin, demand the withdrawal of Western troops from Berlin, and require the transformation of West Berlin into a free city within the next six months. At the same time the Soviet government reiterated earlier statements that a reunification of Germany could only be achieved by direct negotiations between the governments of West and East Germany. The threat posed by the Russian announcement was intended to produce as a first result a summit conference, but the United States insisted that such a meeting could not be held before the Soviet Union discontinued pressure by ultimatum and a conference of foreign ministers had found that some common ground existed on which the heads of state might reach further agreement.

The government of the Federal Republic par-

ticipated in the discussions among the Western powers which preceded the conference of foreign ministers in Geneva on May 11–June 20 and again on July 13–Aug. 5, 1959. The Federal Republic and the East German government participated in the Geneva conference as advisers, and the Federal Republic avoided having its foreign minister, Heinrich von Brentano, attend the official sessions because it did not wish to appear to give the satellite East German government official recognition. Chancellor Adenauer exerted his influence in Western circles by recommending an uncompromising stand on Berlin and German unification, and suggesting that a relaxation of the cold war should be sought by West-East agreement on disarmament. (See also SUMMIT CONFERENCE).

The visit of President Eisenhower to Bonn on Aug. 26–27, 1959, prior to Khrushchev's visit to the United States, was the occasion for an impressive demonstration of the strong popular support for Chancellor Adenauer's policy of close cooperation with the United States. Franco-German relations, supported by the good understanding of President de Gaulle and Chancellor Adenauer, have been highly satisfactory. The visit of Chancellor Adenauer to Paris on Dec. 1–2, 1959, showed their full agreement in political cooperation, both in the European Community and in the Western European Union, in connection with the forthcoming East-West conferences. The economic reintegration of the Saar has removed the last remaining source of friction between the two nations, and the building of the European Common Market (q.v.) draws them ever more closely together. However, some concern is felt in Germany that the uncompromising attitude of French foreign economic policy vis-à-vis England might hurt Germany as well. West Germany would wish for some arrangement between the Common Market and the European Free Trade Association (q.v.), also known as the Outer Seven, because she has a large favorable payment balance with the Outer Seven and only an even balance with those of the Common Market.

Anglo-German relations suffered from the very critical attitude that many British press organs are taking of German developments, and particularly of the supposedly inflexible attitude of Chancellor Adenauer in regard to Western relations with the Soviet Union. The chancellor on his part repeatedly complained in public about the British inclination to compromise with the Soviet Union on German reunification. The visit of Chancellor Adenauer to London on Nov. 17–19, 1959, helped to lay these animosities to rest. In talks with Prime Minister Macmillan, the chancellor reportedly agreed to discuss the future of West Berlin at an East-West summit conference.

Education.—German children between the ages of six and 14 receive their school education in eight-year elementary schools, followed, for most of them, by part-time attendance at vocational schools for another three years. About 20% of the children, after four years at elementary schools, continue their training in secondary schools, which prepare them for either university study, general business careers, or specialized vocations. In 1957 the enrollment in 34,788 primary and secondary schools totaled 6,367,270 (including the Saar and West Berlin).

The Federal Republic, including West Berlin, has 18 universities and 8 technological colleges. In addition, there are a number of ecclesiastical seminaries, teachers colleges, and academies of arts. In the winter semester of 1958–59, 186,210 German students (including 37,084 women) and 14,875 foreign students were enrolled in these institutions. There are also 404 adult education schools and 721 youth hostels.

UPI

West German Chancellor Konrad Adenauer (left) and President-elect Heinrich Luebke (right) talk with President Theodor Heuss prior to a banquet given at Bonn in honor of Heuss on his retirement from office on September 12.

Religion.—The census of Sept. 30, 1950, showed that in the Federal Republic 51.2% of the population was Protestant; 45.2%, Roman Catholic; 0.1%, Jewish; 3.2%, of other faiths; and 0.3%, with no declared faith. As a result of the large immigration of East Germans, the relative number of Protestants in the Federal Republic has grown slightly since 1950.

Economic Conditions. *Currency and Banking.*—The German currency, which was devalued in 1948 by the Allied Military Government, has become one of the world's most stable currencies. On Jan. 12, 1959, the Deutsche mark was made convertible at the official rate (DM4.20 = U.S.$1) into all foreign currencies for residents and nonresidents. On Dec. 31, 1958, the gold and foreign exchanges of the German Federal Bank amounted to $6,322 million, of which $2,639 million consisted of gold and $2,046 million of United States and Canadian dollars. The exceedingly high reserves were the result of the accumulation of balance-of-payments surpluses earned since 1951.

The development of a great money liquidity enabled the German banks to refrain from bor-

Disappointed in his hope for the chancellorship, West German Finance Minister Erhard (center, rear) hears Chancellor Adenauer tell the German Parliament on June 11 that his decision to remain in office was given to Erhard in May.

WIDE WORLD

rowing large sums from the Federal Bank and thereby caused them to become irresponsive to the latter's policies. During 1959 the attempt of the Federal Bank to move part of its accumulating reserves back into the international flow of funds and to limit the liquidity of the German banks met with growing success. Beginning with a high of 5.5% in September 1956, the discount rate was lowered in stages to 2.75% as of Jan. 9, 1959—an all-time minimum in the history of the German currency since 1875. The low rate was to discourage the inflow of foreign investment money and to induce German banks and firms to keep acquired foreign assets for investment abroad rather than buying German marks from the Federal Bank. In order to meet signs of inflationary pressures arising from growing business activity, the Federal Bank raised the discount rate from 2.75% to 3% on September 4, and to 4% on Oct. 22, 1959.

Balance of Payments.—Other measures of the Federal Bank, together with natural developments, have considerably changed the general picture of high German trade and balance of payments surpluses. The reserves of the Federal Bank declined in the first seven months of 1959 by DM3.8 billion and fell to DM22.1 billion by September 1. The reason is found chiefly in the deficit of the international capital balance. While the balance of trade and services showed a surplus (Jan. 1–July 31, 1959) of DM4.5 billion, the balance of international capital movements was passive at DM7.7 billion. This deficit is the result of the large prepayments for foreign arms deliveries, premature payments of foreign debts, special payments to foreign powers, and German investments abroad. Some of these payments will not have to be made again—as, for example, DM382 million to France in connection with the Saar settlement, DM282 million as a contribution to the stationing of British troops in Germany, and DM895 million for the premature debt payment to the United States and the United Kingdom. The early payment for arms purchases (still undelivered) of DM1.8 billion may not have to be repeated in this form, but substantial purchases will continue for some time.

The balance on account of goods was relatively weaker. German exports during the first 7 months of 1959 were DM22.3 billion, or 7.6% higher than in the same period in 1958, but imports were DM19.2 billion, a rise of 8.6%; and as a consequence, the export surplus of DM3.1 billion was practically identical to that for the comparable period in 1958. The favorable balance on account of services declined in the first half of 1959 to DM1.4 billion from DM1.7 billion in the first half of 1958, owing very largely to a 30% increase in spending by German tourists abroad, while the amount spent by foreign tourists in Germany remained virtually identical.

Budget.—The federal budget for the fiscal year ending March 31, 1960, provides for expenditures of DM39,788.9 million (DM38,724 million in 1958–59). Ordinary receipts are estimated at DM32,150 million. A deficit of about DM5 billion will have to be covered by loans, though actual expenditures may again, as in recent years, be smaller than estimated owing to delays in purchasing equipment for the armed forces. The 1959–60 budget has earmarked DM11,771.7 million for defense.

National Product.—The national production index (1936 = 100) rose steadily from 154 in 1953 to 232 in 1958. The general national product reached an estimated value of DM222.3 billion in 1958, or 6.1% more than in 1957. In terms of real value the gross national product increased by only 3% in 1958, as compared with 5% in 1957, 6% in 1956, and 12% in 1955. The economic recession of 1958 took in Germany, as in Europe in general, a much milder form than in the United States and Canada. Since the spring of 1959 a considerable acceleration in the rate of economic growth occurred. The average rate of growth in national product during the first eight months of 1959 was 5%, but for August alone it was 8%, and even higher figures were predicted for the remaining months of the year.

Cost of Living and National Income.—The cost-of-living index (1950 = 100) rose from 108 in 1954 to 119 in 1958. During the first half of 1959 the index remained stationary, but it then rose 1.1% in July and 1.8% in August. The national income increased from DM76,340 million in 1950 to DM169,100 million in 1958.

Industrial Production.—Among the Western nations the Federal Republic takes third place in industrial production after the United States and Great Britain. Output of major products in 1958 (in thousands of metric tons) was as follows: hard coal, 133,000; soft coal, 93,000; pig iron, 16,659; crude steel, 22,261. The monthly average index of electric power production (1936 = 100) rose to 446 in 1958, from 436 in 1957. The automotive industry in 1958 produced 1,306,854 passenger cars, 181,395 trucks and tractors, and 7,007 buses. Of the total of 1,495,256 motor vehicles, 49% were exported in 1958.

Industrial production increased in 1959, although the labor shortage created certain limitations. The building industry could not find 61,000 additional workers needed during the summer season, and was expected to achieve only a 5% increase of production over 1958. The expansion was greatest in primary production (up 14% in August 1959 over August 1958) such as the chemical, rubber, and nonferrous metal industries, and particularly in steel production, which was 10% higher in June, 14% in July, and 20% in August 1959 than in the same months of 1958. Alone among the major industries, coal mining showed a decline of 5% in August 1959, compared with August 1958. The decline is the result of the growing use of oil and has led to the layoff of miners. To alleviate the coal crisis and finance the orderly transfer of miners to other trades, the government has imposed a temporary tax on oil.

Foreign Trade.—West Germany was again in 1958 the third largest Western trading country after the United States and Britain. In 1958, West German exports almost equaled the value of British exports, and accounted for 9.2% of total world exports; West Germany topped Britain for the first time in the export of manufactures, accounting for 18.6% of the world total. West German (without the Saar and including West Berlin) exports in 1958 amounted to DM36,998 million; imports, DM31,133 million. In the first half of 1959, exports were valued at DM19,732 million, and imports, DM16,961 million. Chief exports are metallic manufactured goods (33.2% of total 1958 exports), transportation equipment (16%), base metals and chemicals (10.8% each), fuel (6.7%), and textiles (3.4%). Principal imports include raw materials (26.1% of 1958 imports), foodstuffs (26%), fuel (10.4%), base metals (9.9%), chemicals (3.6%), and transportation equipment (2.3%).

In 1958 the principal markets and sources of supply (with percentage of total imports quoted first, followed by exports in parentheses) were as follows: European Common Market (France, Italy, Benelux countries), 27.1% (28.1%); European Free Trade Association, or Outer Seven (Britain, Norway, Denmark, Sweden, Switzerland, Austria, Portugal), 26.7% (32.3%); eastern Europe, 3.8% (3.1%); other European countries, 3.5% (3.5%); United States, 13.6% (7.3%); the sterling area (excluding Britain), 6.7% (8.2%); Canada, 3.1% (1.2%); Latin America, 10.2% (8%); and the rest of the world, 5.3% (8.3%). The United States is the largest single supplier and has a large export-import balance in its favor.

Agriculture.—In spite of the high urbanization, about 87% of the land is used for agriculture and forestry. West German agriculture produces about three quarters of the nationally needed food. Agriculture and forestry contributed DM13.5 billion to the national income in 1958, or 0.7 billion more than in 1957. The agricultural program, or so-called "Green Plan," for 1959–60—the fourth passed by the Bundestag for the implementation of a long-range project for the improvement of the structure of agriculture and of its income level—provided for an expenditure of DM1,341 million, the same amount as in 1958–59.

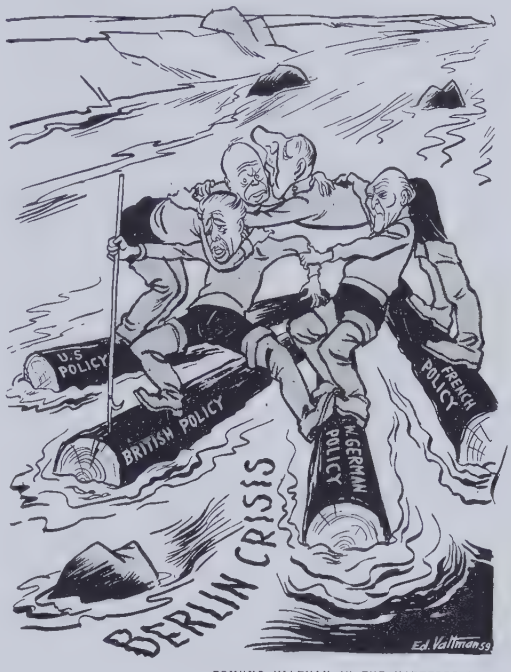
Employment and Wages.—The total number of gainfully employed persons rose from 19,673,024 on Sept. 30, 1957, to 20,034,512 on Sept. 30, 1958,

and to 20,198,800 on Sept. 30, 1959. The number of unemployed had fallen by Aug. 31, 1959, to 196,349, or less than 1% of the national labor force. This figure must contain a large percentage of unemployables and workers on short intermission between jobs. The demand for many categories of skilled workers cannot be filled. In August 1959, 350,400 job vacancies (in 1958, 264,400) were reported to the labor offices. By June 1959 about 14 million wage and salary workers worked less than 48 hours a week; three fourths of them were on a 5-day schedule, and about 4 million workers worked less than 45 hours per week. Average wage earnings rose from DM1.63 per hour in 1953 to DM2.32 per hour in 1958. The Federation of German Trade Unions, the largest labor organization, had by Sept. 30, 1958, a membership of 6,331,735, of whom 1,089,527 were women. The second largest labor organization is the German Union of Office Employees, with 438,142 members, among them 152,238 women.

Transportation and Communications.—West Germany has 24,607 miles of railroads, of which 19,263 are operated by the federal government. There are 81,733 miles of highways and roads, including 15,160 miles of superhighways (*Autobahnen*) and 1,398 miles of federal roads. There are 2,736 miles of navigable inland waterways. The German merchant fleet consisted at the end of 1958 of 2,736 merchant vessels totaling 4.44 million registered tons, a 14.3% increase over 1957. The German Lufthansa in 1958 transported 3.5 million persons, or 16.7% more than in 1957. (See also AERONAUTICS.) On Jan. 1, 1959, the number of registered motor vehicles (excluding the Saar and West Berlin) included 3.2 million passenger cars, 2 million motorcycles, 650,000 trucks, and 30,000 buses. At the same time there were registered in West Germany and West Berlin 15.5 million radio and 2.7 million television sets, as well as 5 million telephones.

WEST BERLIN

Political Events.—The Soviet note of Nov. 27, 1958, which declared that the USSR would not tolerate the presence of Western troops in West Berlin for more than another six months, and proposed to establish West Berlin as a "free city," was received with extraordinary calm by the population. Very few people have moved since then to West Germany, and the withdrawal of savings from the banks has been negligible.



EDMUND VALTMAN IN THE HARTFORD TIMES

"IN UNITY THERE IS STRENGTH"

On Dec. 7, 1958, 93.7% of all eligible voters went to the polls to elect a new West Berlin Parliament. The Social Democratic Party (SPD) received 52.29% of the total vote; the Christian Democratic Union (CDU), 37.9%; the Free Democratic Party (FDP), 3.8%; the German Party (DP), 3.36%; and the Socialist Union Party (SED; the cover name of the East German Communist Party), 1.96%. A coalition of SPD and CDU members under Mayor Willy Brandt (SPD) continued in office as the city government.

In February 1959, Mayor Brandt visited Washington for conversations with President Eisenhower and members of the State Department. He subsequently gave the main address at the Lincoln Sesquicentennial Memorial banquet at Springfield, Ill., on February 12. The mayor also visited Canada, Japan, and India.

(*Left*) Soviet Premier Nikita Khrushchev samples food at a dinner given in his honor at East Berlin's City Hall on March 8; Otto Grotewohl, East German premier, is at left, and Walter Ulbricht, head of East German Communist Party, at right. (*Right*) Soviet and East German Communist leaders address a rally in East Berlin celebrating East Germany's 10th anniversary on October 7. Behind the stand is the new East German flag, with hammer and calipers superimposed on the state colors.

WIDE WORLD

The people of West Berlin received assurances of support from the free world on many occasions in 1959. On the tenth anniversary of the ending of the Russian blockade of Berlin on May 12, 1959, Lucius D. Clay, United States military governor at the time of the blockade, spoke and brought a message from former President Truman. General Tunner, the commander of the Allied task force that operated the Berlin airlift, and former pilots of the force were present, as were France's Robert Schumann and Britain's Lord Attlee. On July 25, Secretary of State Christian Herter flew from Geneva to Berlin to name a street in memory of John Foster Dulles. He was received with tremendous popular enthusiasm. In a speech at the city hall he gave assurances that the United States and the two other Western nations responsible for West Berlin would not allow their clear rights in Berlin to be terminated by unilateral Russian action. At the Western summit meeting held in Paris on Dec. 19–21, 1959, the presidents of the United States and of the French Republic, the prime minister of the United Kingdom, and Chancellor Adenauer reaffirmed the principles set forth in the Four Power communiqué of Dec. 14, 1958, and in the NATO Council declaration of Dec. 16, 1958.

Economy.—The postwar recovery and development of West Berlin has been slower and more limited than that of West Germany. The city's industrial production index (1936 = 100) was 32 in 1950 (as compared with 109 in West Germany), 119 in 1958 (237), and 127 in the first half of 1959 (243). West Berlin has received (originally from the United States and in recent years chiefly from the Federal Republic) considerable funds to overcome high transportation costs resulting from the city's location 100 miles within the territory of East Germany.

West German industrialists took the initiative in late 1958 to raise the turnover of Berlin industries by DM500 million. By the placement of orders, which was later facilitated by special turnover tax exemptions and delivery guaranties of the Bonn government, four fifths of the desired result was actually achieved within the first half of 1959. The real impact of the long-term orders, however, will not be apparent for several months. Altogether, the industries of West Berlin achieved a turnover of DM3.31 billion in the first half of 1959, a 12% increase over 1958. In June 1959 there were 894,000 gainfully employed workers, and by the end of July there were 17,000 fewer unemployed workers than in July 1958. Unemployment dropped to a low of 4.6% of the available labor force for the first time in West Berlin's postwar history.

German Democratic Republic (East Germany)

Political Developments.—The German Democratic Republic (DDR), created by the Soviet military government in 1949 without democratic consultation or confirmation, follows the general pattern of a Communist people's democracy. Walter Ulbricht, the secretary of the Central Committee of the East German Socialist Unity (Communist) Party (SED) and deputy prime minister, has been the actual ruler of the state in the ten years of its existence, and has managed to maintain himself in the good graces of Khrushchev as much as of Stalin. It is obvious that this totalitarian police state would collapse if the Soviet support in the form of 20 Russian divisions were to be withdrawn. The steady flight of East Germans to the West can be taken as "a plebiscite by feet"; during its ten years' existence the country has lost 2,300,000 citizens to the West, including 204,000 in 1958 and 74,337 in the first half of 1959.

West Berlin, a "show window of the West" in the center of the DDR, constitutes a serious annoyance to the East German Communists. The removal of the Western powers from Berlin, the recognition of the DDR by the West, and an opportunity for Communist infiltration of West Germany have been the major aims of Soviet policy. Recognition of the East German state was demanded by Soviet Foreign Minister Andrei Gromyko at the Geneva conference of the Big Four foreign ministers in May 1959, and although the western ministers kept the East German delegation, led by Foreign Minister Lothar Bolz, away from the conference table, its presence in the conference room as an advisory group was considered a gain in prestige for the DDR.

The international activities of the German Democratic Republic, although greatly increased in 1958–59, failed to win its official recognition by any state outside the Eastern bloc. Contacts were established with Arab and African states, largely through offers of industrial deliveries. Great efforts to achieve diplomatic recognition from the Scandinavian states did not succeed.

The policy of full communization within the DDR and of the isolation of its people from Western influences led in 1959 to ever-growing pressure on the Christian churches and the clergy.

Economy.—Comparisons of East and West German economic developments are meaningless so long as they are based on money values, because a planned economy has no pricing system comparable to that of free economies. The budget (in East German Deutsche marks) for 1959 foresaw total revenues of DM45.88 billion (42.06 in 1958) and total expenditures of 42.90 billion (39.43). The figures contained, in contrast to those of the Federal Republic, the whole budget of the nationalized industries, as well as of social insurance, while the major part of military expenditures was hidden. Moreover, the value of the East German Deutsche mark, which is officially quoted as equal to the West German Deutsche mark, is sold on the free exchange at a quarter of the latter's value.

It is more meaningful to compare the quantitative output of East and West Germany. Largely due to the huge reparations taken by the Soviet Union, the general index of national productivity (1936 = 100) of the Democratic Republic in 1950 was only 78.5, compared with 110.3 for the Federal Republic. In 1954 the index figure of 105.9 (Federal Republic, 161.5) was for the first time slightly better than in the prewar period, and in 1957 it reached 121.7 (Federal Republic, 206.4). The differences in individual branches of production have been very considerable. Agricultural output is still behind 1936 production, but industrial production has risen sharply since 1950. In mining and power production the rate of increase has been relatively greater than in the West. The building industry reached prewar production only in 1956, when it was 100% greater than in 1936 in the Federal Republic. Production of consumer goods per capita in 1957 was about 25% under the 1936 level.

The value of industrial production in 1958 increased by 10.7%, to DM60 billion. According to official statistics, exports rose in 1958 to 7,562 million rubles (1957: 7,243 million); imports, to 6,740 million (1957: 6,462 million). The plan for 1959 called for exports valued at 8,400 rubles and for imports totaling 7,400 rubles. Trade between East and West Germany increased by 4% in 1958, but much greater was the increase in exports to Africa (54%) and the United Arab Republic (62%). East Germany's major trading partner is the Soviet Union, which in 1958 received East German exports totaling 5,600 million rubles.

As the second largest industrial member of the Soviet bloc's Council for Mutual Economic Assistance, East Germany is supposed to make important contributions to the coordinated economic planning of the European Communist countries.

On the eve of the tenth anniversary of the Democratic Republic, Walter Ulbricht announced (Oct. 7, 1959) the new Seven-Year Plan for 1959–65. The chief goal is to catch up and outdo West Germany in the productivity of labor. The per capita use of most consumer goods is supposed to top that of West Germany by 1961. East Germany's economy is capable of expansion, but probably not to the extent of the new plan. One of the bottlenecks of East German development lies in the labor shortage, which is enhanced by the continuing flight of its citizens to West Germany, among them an unusually high percentage of professional people and skilled workers.

Armed Forces.—The strength of the East German Army in 1959 was estimated at 110,000 men; in addition, there are about 70,000 members of frontier and special police, and 250,000 in so-called workers' combat groups. However, the real military power in East Germany consists of about 400,000 Soviet soldiers. As of Jan. 1, 1959, the Democratic Republic was no longer required to contribute to the maintenance of Soviet troops on its territory.

(For further references, see the Index entry, *Germany.*)

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GERONTOLOGY. See OLD AGE.

GHANA. The first self-governing African nation within the Commonwealth of Nations (since March 6, 1957), this former British colony (the Gold Coast) and United Nations trusteeship (British Togoland) is situated on the Gulf of Guinea and is bordered by the republics of Ivory Coast and Upper Volta, and French Togoland. Area, 91,843 square miles. The population (mid-1958 est.) of 4,836,000 is predominantly Negro, and the Akan is the largest of numerous tribes. The capital is Accra (pop. est., 200,000); other principal towns are Kumasi (78,000), Takoradi (45,000), and Cape Coast (23,100).

Government.—The governor general of Ghana is the Earl of Listowel (appointed in 1957). Political power is held by Prime Minister Kwame Nkrumah, head of the Convention People's Party. In 1959 this party controlled 86 seats in the 104-member National Assembly, which is elected on the basis of universal adult suffrage and the secret ballot, and represents 97 rural and 7 municipal electoral districts. The cabinet was reorganized in 1959 to include the new ministries of Education and Information, Health and Social Welfare, and Commerce and Industry. Advisory powers on the local government level are exercised by a House of Chiefs and a Regional Assembly in each of 5 regions (Eastern, Western, Northern, Ashanti, and Trans-Volta Togoland).

Education and Religion.—Ghana's educational system in 1957 included 3,571 primary schools (with 467,961 pupils); 1,131 middle schools (127,517); and 60 secondary schools (12,119). There were also 30 teacher-training schools (3,873 students), 4 government technical institutes and 4 government trade schools (aggregating 2,710 students), and 38 private technical and trade schools. Mission schools in the Volta region, taken over by the government in 1958, were returned to church control in December 1959. The University College of Ghana enrolled 317 students, and the Kumasi College of Technology, 610. The first school of journalism in Africa was opened at Accra in 1959, and a new Academy of Learning was inaugurated at Accra on Nov. 27, 1959. The prevailing religion is fetishism, but there are large numbers of Christians.

Finance.—Government revenues for 1958–59 were estimated at G£48.5 million; expenditures, G£47.0 million. The Ghana pound is equal to the British pound, and G£1 equals U.S.$2.80. The new Ghana currency in circulation by the end of 1958 totaled G£27,568,140, and the old currency issued by the West African Currency Board was withdrawn as legal tender on July 1, 1959. Expenditure under the government's Second Five-Year Development Plan for 1959–64 was estimated at G£342 million, including G£100 million for hydroelectric power; G£28 million for communications; G£19 million for health, sanitation, and water supply; G£14 million each for education and for industry and trade; and G£10 million for agriculture and natural resources.

Transportation.—The road system aggregates about 15,000 miles, including 1,360 miles of bitumen-surfaced highways and 8,000 miles of secondary roads. The important 285-mile coastal highway from Takoradi, the chief port, to the Togoland border is being improved, and a hard-surfaced highway connecting southern Ghana with the Trans-Volta Togoland region was completed in 1958. Railways total only 767 miles. Ghana Airways, inaugurated in 1958, supplies both domestic and international air services. Construction continued in 1959 on the new harbor at Tema, 15 miles east of Accra.

Economy.—Ghana's average per capita annual income of G£57 ($160) is considered high for western Africa. The economy is largely dependent on the production of cocoa, and Ghana is the world's largest cocoa producer. The 1958–59 cocoa crop was estimated at over 250,000 tons, as compared with 264,375 tons in 1957–58. However, depressed cocoa prices during 1959 adversely affected the economy. Other crops include palm kernels (8,100 metric tons exported in 1958), rice, tobacco, coffee, bananas, and rubber.

Mineral production is second in economic importance. Exportable output of gold in 1958 was valued at G£10.6 million, a record high; diamonds, G£8.6 million; manganese, G£8.6 million; and bauxite, G£95,808. Timber exports totaled G£7.9 million in 1958. Livestock raising and fishing are important for subsistence. Manufacturing is a minor industry, but the government is fostering industrial development through the Second Five-Year Development Plan (see below, *Principal Events*).

Foreign Trade.—In 1958, Ghana's exports totaled G£104.6 million (up 14% over 1957); imports, G£84.6 million (down 14% from 1957). Cocoa accounts for over half of all export value, and minerals supply one fourth of the total. Chief imports are textiles, foods, machinery, fuels, and vehicles. Ghana's principal trading partner is the United Kingdom, which in 1958 accounted for about 35% of total foreign trade; the United States followed with about 14%.

Principal Events, 1959.—During the year the government continued to enforce strong measures against alleged subversion. New treason and subversion laws promulgated in June included a provision for sentencing anyone who makes a false statement about Ghana or the government to a jail sentence of up to 15 years. Under this law, libel proceedings were instituted against a leader of the opposition United Party, Dr. K. A. Busia, who reportedly said in London on June 29 that Ghana "was rapidly becoming a dictatorship." Dr. Busia's parliamentary seat was taken from him in July. Two other opposition members were unseated in April for having been arrested in December 1958 and charged with conspiracy to assassinate the prime minister and to overthrow the government. Under the Preventive Detention Act of 1958 which permits the government to jail for five years without trial anyone suspected of endangering the security of the state, 45 persons had been imprisoned by November 1959.

The government began work on constitutional changes in preparation for the conversion of Ghana to a republican system of government in early 1960. The Ministers of Ghana Bill, approved by the National Assembly on November 4, granted the prime minister greater powers in regard to cabinet administration.

Prime Minister Nkrumah and President Sékou Touré of Guinea signed an agreement on May 1 at Conakry, Guinea, to enlarge the Ghana-Guinea federal union (first projected in November 1958) into a Union of Independent African States. Other African nations or federations "adhering to the principles on which the union is based" were invited to join. Nkrumah and Touré met with Liberian President Tubman at Sanoquelli, Liberia, on July 16–19, and agreed to invite all independent African nations and those scheduled to receive independence to a conference in 1960 aimed at establishing a "Community of African States."

During an official visit on August 10–14 to the United Kingdom, Dr. Nkrumah was appointed a privy councillor by Queen Elizabeth II. The queen postponed a tour of Ghana scheduled for the fall, but Prince Philip paid a week's visit to the country in late November.

Preliminary work began in April on the long-projected Volta River Dam and hydroelectric plant, which is intended to play a large part in the industrialization of Ghana under the Second Five-Year Development Plan. Ghana has sought partial financing from the United States and its special lending agencies for this project, which will cost an estimated $300 million and produce over 1 million kilowatts annually. The first stage of the 5-year construction project involves the building of a multipurpose dam and power plant at Kosombo (60 miles northeast of Accra), and of a smelter at Tema for processing treated bauxite into aluminum.

W. R. F.

GIBRALTAR. Commanding the western entrance to the Mediterranean Sea, Gibraltar consists prin-

cipally of a long, high mountain called the Rock, rising 1,408 feet above sea level, with a deep Admiralty harbor of 440 acres at the base. A crown colony (Britain's smallest), it is connected to Spain on the north by a narrow peninsula; the total area is 2¼ square miles. The net tonnage of vessels calling in 1958 was 9,741,250. Since 1955 the fortress has been a subcommand of North Atlantic Treaty Organization naval and air forces. The civilian population was estimated at 25,637 in 1958.

A governor (from 1958, Gen. Sir Charles F. Keightley) is assisted by an 8-member Executive Council, and there is a 12-member Legislative Council presided over by an independent speaker. Revenue in 1958 totaled £1,463,236; expenditure, £1,452,853. In 1958 there were 7 secondary schools (1,608 students) and 18 kindergarten and primary schools (2,977 pupils).

Private industry is confined to fish and fruit canning and the processing of tobacco, coffee, macaroni, and confectionery for local consumption. Besides 6,000 British workers, the labor force in 1959 included 7,847 men and 3,549 women employed in the dockyards, factories, business houses, and private households, who enter and leave Gibraltar daily from Spain. Exports (including reexports) were valued at £2,829,292 in 1958; imports (principally from the United Kingdom), at £9,925,482. Highways aggregate 17 miles. British European Airways provides daily services to Tangier and London. The annual trade turnover from passing ships and visitors (225,000 in 1958) is equivalent to about $112 million.

GILBERT AND ELLICE ISLANDS. See WESTERN PACIFIC ISLANDS, BRITISH.

GLACIOLOGY. See ARCTIC EXPLORATION; GEOLOGY; INTERNATIONAL GEOPHYSICAL YEAR.

GLAND DISEASES. See ENDOCRINOLOGY.

GLASS. See CERAMICS; CHEMISTRY; and the Index entry, *Glass Industry*.

GLYCERINE. See SOAP AND SYNTHETIC DETERGENTS.

GOLD. World production of gold increased for the fifth successive year in 1958, to a total of 40.4 million fine (troy) ounces valued at $1.41 billion, according to the U.S. Bureau of Mines. The gain in production over 1957 amounted to 2%.

Output of gold in the United States totaled 1,759,000 fine ounces in 1958, compared with 1,793,597 in 1957. South Dakota, Utah, Alaska, and California produced about 72% of domestic production. Except for the war years 1944–46, this was the lowest output since 1895. Although domestic output from straight gold mines increased, the gain was more than offset by the drop in the output of byproduct gold from copper and other base metal mines. In the first nine months of 1959, gold output was 1,391,095 ounces, an increase as compared with the 1,223,135 ounces produced in the same period of 1958.

Canada.—Production of gold in Canada in the first seven months of 1959 was 2,606,777 ounces, compared with 2,650,237 ounces in the corresponding 1958 period.

Union of South Africa.—In the first nine months of 1959, gold output was 14,894,979 ounces valued at $519,818,576.

(See MINERAL PRODUCTION for output of other major countries.)

GOLD COAST. See GHANA.

GOLF. See SPORTS, GAMES, AND SHOWS.

GOVERNMENT DEPARTMENTS AND AGENCIES. See UNITED STATES; also articles on the major government agencies and bureaus.

GOVERNMENT PRINTING OFFICE. The largest and best-equipped printing plant in the world, the Government Printing Office produces printing and binding for Congress and the departments, independent establishments, and agencies of the federal government; furnishes blank paper, inks, and similar supplies to all governmental agencies; distributes government publications as required by law; and prints, for sale to the public, such documents as are not of a confidential nature.

During the fiscal year 1959, the Government Printing Office employed 6,565 persons and had a payroll amounting to $36,066,952.29. The office made charges in that fiscal year for 663,639,645 copies of publications of all classes, including 6,141,528 copies of the *Congressional Record;* 3,527,214 copies of the *Federal Register;* 8,082,188 copies of specifications of patents, trademarks, designs, etc.; and 360,830 copies of the *Patent Office Official Gazette*. The number of postal cards printed amounted to 3,098,864,000. The Division of Public Documents mailed approximately 141,400,000 publications; receipts from the sale of government publications were approximately $6,886,000. Total charges to Congress and government agencies during the fiscal year 1959 were $90,728,052.47.

RAYMOND BLATTENBERGER,
Public Printer.

GRAINS. Feed grain production in the United States continued its record-breaking trend in 1959, but output of food grains dropped a fifth below the 1958 peak. A huge corn crop, a record output by a large margin, was responsible for the increase in feed grain production. The barley and grain sorghum crops, though far above average, fell short of 1958 production, and the oats crop was the smallest in 20 years. Total output of the four feed grains was estimated by the Agricultural Marketing Service of the U.S. Department of Agriculture at 165.6 million tons, 5% above 1958.

The 1959 wheat crop declined about a fourth from 1958. Rye was down a third, but near average, and the buckwheat crop dropped a fourth. Rice production rose a fifth above 1958. Total output of the food grains was 37.1 million tons.

Large carry-over stocks from preceding crops boosted the total wheat supply for the 1959–60 marketing year to a new record, despite lower production. The 1959 carry-over of 1,277 million bushels was 396 million above 1958, and it exceeded the 1959 crop. Although livestock numbers increased and feeding was at a high rate, stocks of feed grains increased 8 million tons over 1958 to a record 67.4 million tons in 1959. Rice stocks, on the other hand, were reduced by large exports—to 15.7 million cwt.—compared with 18.2 million in 1958 and the record 34.6 million in 1956.

Most of the grain stocks accumulated in recent years have been acquired by the Commodity Credit Corporation under the price-support program. On Oct. 31, 1959, the corporation's inventory included 1,125 million bushels of wheat, 1,235 million bushels of corn, 77 million bushels of barley, 25.5 million bushels of oats, and 272.5 million bushels of grain sorghum. Additional quantities were under loan.

World grain production in 1959 generally declined from 1958, but remained high as compared with other years. Corn set a new record but production of barley, oats, rice, wheat, and rye declined.

Wheat.—United States production was 1,128,151,000 bushels in 1959, a fourth below the record 1958 crop but 5% above the 1948–57 average.

WORLD PRODUCTION OF GRAINS
BY LEADING COUNTRIES
(In thousands of bushels)

	Average 1950–54	1958	1959[1]
Wheat:			
USSR	1,240,000	2,300,000	...
United States	1,094,183	1,461,714	1,128,151
Canada	537,632	371,730	421,080
France	315,244	353,000	405,000
Italy	288,080	360,000	315,000
India	253,950	290,000	362,000
Argentina	216,204	246,920	...
Turkey	213,598	240,000	190,000
Australia	181,150	213,700	180,000
Spain	155,000	163,000	190,000
Pakistan	129,800	140,000	145,000
Germany, West	110,228	135,000	145,000
United Kingdom	94,646	101,200	96,000
Yugoslavia	80,000	90,000	148,000
Iran	75,100	99,210	114,000
Corn:			
United States	3,112,091	3,800,863	4,361,170
USSR	190,000	600,000	...
Brazil	247,000	300,000	...
Argentina	120,098	215,000	...
Mexico	141,390	202,744	216,500
Yugoslavia	130,000	155,500	265,000
Rumania	125,000	144,000	...
Italy	112,232	142,000	150,000
Union of South Africa	115,450	140,000	...
India	99,892	120,000	126,000
Hungary	86,200	115,000	...
Oats:			
United States	1,285,417	1,415,570	1,073,982
USSR	835,000	890,000	...
Canada	417,429	400,951	423,827
France	242,298	181,670	197,000
Poland	148,000	183,000	...
United Kingdom	186,774	149,660	154,560
Germany, West	180,322	149,640	136,065
Australia	42,252	90,000	...
China	70,000	...	...
Germany, East	76,600	67,500	...
Czechoslovakia	61,000	62,000	...
Argentina	56,284	58,500	...
Sweden	53,124	63,880	54,630
Barley:			
United States	283,026	475,196	420,191
USSR	350,000	440,000	...
China	325,000	...	...
Canada	228,400	244,764	228,589
France	89,372	178,750	228,000
United Kingdom	100,326	147,930	179,200
India	118,280	104,440	123,200
Germany, West	82,320	111,300	131,000
Denmark	89,450	114,180	105,360
Japan	90,439	86,310	96,200
Spain	88,830	81,620	94,160
Rye:			
USSR	690,000	650,000	...
Poland	235,000	290,000	...
Germany, West	131,400	146,750	149 500
Germany, East	83,300	80,000	...
Czechoslovakia	41,100	36,200	...
United States	20,779	32,186	21,495
Argentina	26,000	32,160	...
Turkey	22,700	30,700	...
Spain	19,390	20,980	25,000
Rice[2]:			
China, Mainland	133,730	175,000	160,000
India	82,150	100,200	102,000
Japan	26,317	33,050	34,000
Pakistan	28,024	28,087	28,100
Indonesia	23,118	26,800	...
Burma	15,500	17,900	18,800
Thailand	15,281	15,704	16,500
Brazil	7,183	9,080	...
Philippine Republic	6,603	8,123	...
South Korea	6,500	7,174	7,500
Taiwan	4,565	5,417	...

[1] Preliminary estimates for Northern Hemisphere countries; for Southern Hemisphere, preliminary forecasts based largely on acreage and weather conditions. Years shown refer to years of harvest in Northern Hemisphere; harvests of Northern Hemisphere are combined with those of the Southern Hemisphere which follow. [2] Average is for the crop years 1950–51 to 1954–55; figures are in million pounds. (Source: Foreign Agricultural Service, U.S. Department of Agriculture.)

Grain was harvested from 53,024,000 acres, which was slightly less than in 1958 and 13% less than the 1948–57 average. Although the average yield of 21.3 bushels per acre was below the 1958 peak of 27.4 bushels, it was the third highest yield on record. The 1959 crop comprised 923,449,000 bushels of winter wheat and 204,702,000 bushels of spring wheat, including 20,682,000 bushels of durum wheat.

The 1959–60 world crop was estimated by the Foreign Agricultural Service at 8,065 million bushels, down from 8,705 million in 1958–59, but well above the 1950–54 average of 6,980 million.

Rice.—United States output in 1959 rose a fifth above 1950 and 11% above the 1948–57 average to 53,122,000 cwt. Acreage increased as the result of the end of the acreage reserve program of the soil bank, though the crop was grown under acreage allotments. The 1,586,100 acres harvested was 12% more than in 1958. Yields averaged a record 3,349 pounds per acre.

The world rice crop in 1959–60 was reduced by a drop in production in China, which usually accounts for a third of the total, to 471 billion pounds, compared with 480 billion in 1958–59 and the average 396 billion in 1950–54.

Rye.—A below-average crop was harvested in the United States in 1959. Production of 21,495,000 bushels was 10.6 million less than in 1958 and 1 million below average. Fewer acres were harvested than in 1958 and the average yield of 15.1 bushels per acre represented a decline of 3 bushels.

World production in 1959–60 was estimated at 1,405 million bushels, or 55 million less than in 1958–59, and 50 million below the 1950–54 average.

Buckwheat.—This crop has been rapidly declining in importance in the United States. The 1959 output of 1,368,000 bushels was 23% less than in 1958 and 59% less than the 1948–57 average.

Corn.—Production in the United States rose 15% above the 1958 record to 4,361,170,000 bushels in 1959. The gain was due to an 11 million-acre increase in acreage to 84,609,000, mainly because of the removal of acreage allotments in the commercial corn area. Yields were high, with the average of 51.5 bushels per acre slightly below the 1958 record but 27% above average. The 1959 crop included 3,989 million bushels of grain and 59.7 million tons of silage.

The United States produced well over half of the record world crop totaling 7,710 million bushels in 1959–60, or 5% more than in the preceding year. Record crops were harvested in Yugoslavia and Rumania, but the crop in the Soviet Union was down sharply from the 1958 peak.

Oats.—The smallest crop since 1939 was harvested in the United States in 1959. Production was 1,073,982,000 bushels, or 24% below 1959. The 28,496,000 acres harvested was the fewest since 1892, and the average yield of 37.7 bushels per acre was 7 bushels below the 1958 record.

World oats production in 1959–60 dropped 13% from 1958–59 and 11% from the 1950–54 average to 3,700 million bushels. Most of the decrease occurred in the United States.

Barley.—The 1959 crop in the United States was 420,191,000 bushels—a decline of 12% below the 1958 record but 32% above the average output. Acreage harvested totaled 15,074,000 acres, slightly above 1958, but the average yield of 27.9 bushels per acre was 3.9 bushels lower.

World barley production of 3,240 million bushels in 1959–60 was 2% below the preceding year but a fifth above the 1950–54 average.

Sorghum Grain.—This crop has been increasing recently in importance in the United States, and the 1959 crop of 579,178,000 bushels was the third to exceed half a billion. Average yields rose slightly over 1958 to a record 37.2 bushels per acre, but the 15,575,000 acres harvested for grain

was 7% less than in 1958. (See also AGRICULTURE.)

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GRAPEFRUIT. See FRUITS.
GRAPES. See FRUITS; WINE.

GRAPHIC ARTS. An important milestone in graphic arts in 1959 was the Seventh Educational Graphic Arts Exposition, held September 6–12, in the Coliseum, New York City. Here in actual operation were the various phototypesetters, the small multicolor offset and letterpresses, the electronic engravers, the powderless etching machines, bindery equipment, and many types of miscellaneous equipment. Especially noticeable were the new names among exhibitors and equipment which have appeared since the 1950 exposition. Japanese imports, particularly photomechanical items, will now be competing with the more familiar products from Germany and other countries.

Concurrently, another exhibition under private management, called SPECTRA, was held in the New York Trade Show building, and many companies which were unable to obtain space at the Coliseum exhibited there.

The most unusual product of 1959 was the "talking-printing process" from Japan. This process prints conventional type and halftones on one side of the sheet, and magnetic recordings on the reverse side. It is reported that one of these printed sheets, placed in an electronic reading device, will reproduce voice or sound. When perfected, the process should be helpful to students of language and to blind people.

A long-talked-about method for letterpress printing was introduced in 1959 by Harris-Intertype Corporation. This is a rotary letterpress using relatively thin, wrap-around plates, having a shallow relief etch. Plates are .024 to .034 inch thick, with a relief depth of .010 to .012 inch. Powderless etching processes can be used on zinc, magnesium, or copper plates. The first model is a single-color, 23-by-30-inch sheet-fed press with speeds up to 7,500 sheets per hour, which is 50% to 100% faster than flat-bed presses. A similar rotary press for wrap-around plates was introduced by Miehle-Goss-Dexter, Inc.

Numerous advantages are claimed for plastic-backed electrotypes, which were developed further in 1959. Such plates use a standard electrotype shell with backing of special plastic instead of the usual lead, providing an 85% reduction in weight. Fewer operations are required to process a plate, and the backing material may be shaved, beveled, or routed as easily as lead.

Magnetic ink character printing has been approved by the American Bankers Association as standard for automatic check processing. The adoption of magnetic ink character printing by the association permits banks to sort and post checks automatically with electronic equipment. The digits and symbols have been designed to be read visually or by special reading devices. The inks used are capable of being magnetized so that each character will provide the proper impulse for the "reader."

The new photopolymer plate, introduced in 1957 by Du Pont, has been named Dycril and was being offered in 1959 on a commercial basis to a limited extent. A Dycril plate is formed from a light-sensitive plastic, a bonding layer, and a metal support. Exposed to ultraviolet light through a high-contrast photographic negative, the exposed plastic becomes relatively insoluble. Unexposed plastic is then removed by pressurized spray of alkaline solution, leaving printing areas in relief. No acid or etching in the ordinary sense is used. With a high-contrast negative in hand, a Dycril plate may be produced in approximately 20 minutes.

Another answer to the perennial problem of dampening plates on offset presses is the Dahlgren Dampening System. Based on an old principle of feeding water into the inking unit (contrary to conventional practice), some basic improvements have been made by Dahlgren. Molleton-covered rollers in the normal dampening system are eliminated, and water is applied to the first ink roller rather than to the offset plate. Advantages of the system are claimed to be: less lint and "hickies," no roller covers necessary, no change of dampener rollers for different colors, fewer adjustments, less water required, less emulsification of ink, better color, and faster "getaways."

Packless mats for sterotype plates are comparatively new for newspapers, but successful experiments in 1959 seem to indicate their wider use in the future.

A typographic roller named Koraltone, made from a new plastic material, is practical and economical for corrugated box presses. The roller is coral in color, tough, and bonded with the core to assure stability for a long period.

A new process known as FluoroColor is an economical method of preparing and reproducing full-color art work. Applicable to all the processes, it eliminates color separation and re-etching, cutting costs by 50% for some types of work. It is similar to the earlier fluorescence process of the Eastman Kodak Company, in that special art materials are used by the artist in preparing material. Colors are preseparated by the artist on three transparent overlays of Du Pont's Mylar. The fluorescent paints under ultraviolet light automatically drop out halftone dots in highlights and background.

From France comes a new method of producing colorful retail cartons from poor grades of boxboard whose printing surface would normally be unacceptable. In this method, the carton design is printed on the underside of transparent material, usually glassine, which is then laminated to the cardboard. The whole operation is performed on a special press, with paper and cardboard fed from a roll; printing, gluing, and laminating are continuous. Similar processes are in use in the United States.

An item of interest to large-edition book printers is an auxiliary device for large sheet-fed rotaries, known as a Websheet feeder. It consists of a roll stand which automatically cuts sheets to exact size and feeds them into the stream feed of the press. Since the mechanism does not interfere with the regular sheet feeder on the press, the printer can use either sheets or less costly rolls.

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GRAPHITE. See MINERAL PRODUCTION.
GRAVITY STUDIES. See INTERNATIONAL GEOPHYSICAL YEAR.

GREAT BRITAIN or **UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND.** A group of islands separated in the south by the English Channel from the northwest coast of Europe, the United Kingdom (94,504 square miles in area) is bounded on the north and west by the Atlantic Ocean and on the east by the North Sea. The main island, Great Britain, consists of England (50,337 square

EUROPEAN

Gloucestershire farmers gather bales of straw in the shadow of Britain's giant nuclear power station under construction since 1957 at Berkeley. Reactor at left is scheduled for operation early in 1961; the one at right, later that year.

miles), Wales (8,006 square miles), and Scotland (30,410 square miles). Northern Ireland (5,449 square miles), the Channel Islands (75 square miles), the Isle of Man (227 square miles), and about 500 lesser islands make up the remainder of the country.

Population.—The home population of the United Kingdom was estimated on June 30, 1958, at 51,680,000, including 45,109,000 in England and Wales, 5,169,000 in Scotland, and 1,402,000 in Northern Ireland. Estimated populations of principal cities at the same date were as follows: Greater London 8,222,340, including 3,225,000 in the County of London and 4,997,340 in the Outer Ring; Birmingham, 1,095,000; Glasgow (Jan. 1, 1958), 1,085,100; Liverpool, 762,400; Manchester, 676,900; Leeds, 510,600; and Sheffield, 498,800. The principal ports, in addition to London, Liverpool, Manchester, and Glasgow, are Bristol, 438,000; Belfast, 436,200; Hull, 301,100; Newcastle-upon-Tyne, 272,400; Cardiff, 253,300; and Southampton, 199,400.

Government.—The United Kingdom is a constitutional monarchy with an executive drawn from Parliament. Queen Elizabeth II (q.v.), the sovereign, acceded on Feb. 6, 1952. The heir apparent is Charles, Prince of Wales, son of the queen and her husband, Prince Philip, Duke of Edinburgh.

The executive consists of a cabinet led by a prime minister, which sits in and is responsible to the bicameral Parliament. The prime minister, who with his cabinet must command a majority in the 630-member elected House of Commons, conducts business in the sovereign's name. The normal life of Parliament is five years, but it may be dissolved at any time by the sovereign on the advice of the prime minister. Except for money bills, which must originate in the House of Commons, legislation may be initiated in either house. The House of Lords may delay any bills except money bills.

Chiefly a revisionary body, the basically hereditary House of Lords consisted of 893 members on Oct. 1, 1959, including the 2 archbishops and 24 of the bishops of the Church of England, 22 dukes, 27 marquesses, 132 earls, 105 viscounts, 560 barons and baronesses (including 10 life barons and 4 life baronesses), 16 representative peers for Scotland, 1 Irish representative peer, and judges given life peerages to carry out the House's function as the final court of appeal.

After the general election of Oct. 8, 1959, the House of Commons consisted of 365 Conservatives and supporters, 258 Labour and Cooperative Party members, 6 Liberals and 1 independent, a Conservative majority of 100 over all other parties, compared with a Conservative majority of 56 at the dissolution of Parliament on September 18. Harold Macmillan (q.v.) continued as prime minister, Selwyn Lloyd (q.v.) as foreign secretary, Richard Austen Butler as home secretary, and Derick Heathcoat Amory as chancellor of the exchequer after the election, but Harold Watkinson replaced Duncan Sandys as minister of defense, and Iain Macleod became colonial secretary; two new ministries, Science and Aviation, were established.

Finance.—In the financial year 1958–59 revenue amounted to £5,480 million (£1=U.S. $2.80), and expenditure to £5,103 million, giving a surplus of £377 million. Estimated revenue in the 1959–60 budget totaled £5,325 million and expenditure £5,223 million, including £1,514 million for defense; £219 million for education and broadcasting; £1,186 million for health, housing, and local government; £584 million for other social services; and £600 million for interest on the national debt.

In the first half of 1959, Great Britain's balance of payments showed a surplus of £142 million, and, as a result, British gold reserves rose by $103.6 million. A further rise of $112 million in the third quarter brought them to $3,284 million by October 1. There was, however, a decline of $260.4 million in October, due mainly to the repayment of $250 million, plus $5.5 million interest, drawn in October 1957 against an Export-Import Bank of Washington credit of $500 million granted in December 1956. This full repayment was made a year before the first semiannual repayment installment was due.

The balance-of-payments surplus of £142 million in the first half of 1959 compared with a revised figure of £237 million for the first half of 1958 and £23 million for the second half. The improvement over the second half of 1958 was due to a recovery in exports to the nonsterling world. The fall of £95 million in the current balance for the first half of 1959, compared with the first half of 1958, resulted from favorable factors being outweighed by others, including a rise in imports of £99 million. As a result of the improved financial position, a relaxation of the control of imports of processed foodstuffs and consumer goods from the dollar area was announced on May 28, 1959. On November 4, the ending of the system of import controls which had governed overseas supplies since the outbreak of war in 1939 was announced. As a result, the overwhelming majority of imports from all sources other than Japan, the Soviet bloc, and Communist China were freed from restrictions beginning November 9. Similarly, starting November 1, British travelers going abroad were allowed to purchase unlimited foreign currency.

Taxation.—The standard rate of income tax was reduced from 42½% to 38¾% in the 1959–60 budget. Two ninths of the first £4,005 of earned income and one ninth of the balance up to £9,945 are tax free. Single persons receive an exemption

of £140; a married couple, £240; and children, £100 to £150, according to age. Among other exemptions are incapacitated relatives, housekeepers, and persons over 65. Rates on the income taxed vary from 8¾% on the first £60 to the standard rate on income over £360. Surtax is levied at a rate rising from 10% on income over £2,000 (£2,100 for a married couple) to 50% on income over £15,000.

Corporations pay the standard rate on all income, plus a 10% profits tax. Other taxes include purchase taxes (lowered in the 1959–60 budget), stamp and estate duties, and entertainment taxes.

Defense.—A further report on the progress of the five-year defense plan, announced in April 1957, was contained in the annual defense white paper published on Feb. 10, 1959. Modernization of the Royal Navy included 4 guided missile ships, 3 new cruisers, and 44 frigates (half of them completed). Progress in the building of a nuclear submarine is being accelerated by the purchase of a propulsion unit from the United States. The strategic bomber force is being equipped with new and advanced aircraft, and rockets and ground-to-air missiles are being developed. By April 1, half of the planned reduction of 300,000 men in the strength of the armed forces had been achieved.

Compulsory military service, now between the ages of 18 and 26, which has been maintained in Britain since 1939, will cease in 1962. The estimated active strength of the armed forces on April 1, 1959, was as follows: Royal Navy, 101,500; army, 303,900; and Royal Air Force (RAF), 173,400. Included in these figures were 152,800 National Service men and 14,300 women.

In January 1959, the Royal Navy had 7 aircraft carriers, 1 battleship, 12 cruisers, 56 destroyers, 105 frigates, 48 submarines, 200 minesweepers, and 155 other vessels, including a guided missile experimental ship. A total of 3 carriers, 6 cruisers, 55 destroyers and frigates, and 36 submarines were to be kept fully operational in 1959–60.

Britain was to keep 55,000 men in Germany, including an army brigade group and a small RAF force in Berlin, until 1960, when a reduction to 45,000 was scheduled. Within Britain the army is divided into five commands and two districts; overseas commands include Middle East Land Forces, East Africa Command, Far East Land Forces, and the British Army of the Rhine. The RAF is organized into 8 home commands, and forces overseas include the 2d Tactical Air Force in Germany, the Middle East Air Force (headquarters, Cyprus), the Aden Command, and the Far East Air Force (headquarters, Changi, Singapore).

Atomic Energy.—Since Aug. 1, 1954, atomic research and development have been the responsibility of the United Kingdom Atomic Energy Authority (UKAEA). The authority is divided into three main groups: the Research Group, operating a research station at Harwell, Berkshire, and a radiochemical center at Amersham, Buckinghamshire; the Industrial Group, concerned with the production of atomic materials, centered at Risley, Lancashire, and with factories at Capenhurst, Cheshire; Windscale, Cumberland; and Calder Hall, Cumberland; an experimental station at Dounreay, Caithness; and laboratories at Springfields, Lancashire; Windscale; Capenhurst; Culcheth, Cheshire; and Dounreay; and the Weapons Group, with a research center at Aldermaston, Berkshire. A second research center for the Research Group at Winfrith Heath, Dorset, and a reactor center for the Industrial Group at Chapelcross, near Annan, Dumfriesshire, are under construction. In addition to the UKAEA stations at Calder Hall, Chapelcross, and Dounreay, which feed power into the national electricity grid, an electric power program, designed to produce 5 million to 6 million kw. of power by 1966–67 is under way, with nuclear stations being built at Bradwell, Essex; Berkeley, Gloucestershire; Hunterston, Ayrshire (all to be completed in 1961); Hinkley Point, Somerset (1962); and Trawsfynydd, Merioneth (1964).

On July 1, 1959, the Industrial Group was subdivided into a development and engineering group and a production group, responsible for the atomic factories, both with headquarters at Risley.

On February 4, an agreement providing for the opening of the markets of the members of the European Atomic Energy Agency (Euratom) to reactors developed in Britain was signed in London between Great Britain and Euratom. An amendment of the Anglo-American agreement of July 1958 on the uses of atomic energy for mutual defense purposes was signed on May 7.

Education.—All children between the ages of 5 and 15 in Great Britain and Northern Ireland must attend school. Direct expenditure from central government funds on education in 1959–60 was estimated at £122.6 million, to which must be added part of the general grant to local authorities of £448 million for England and Wales and £54.7 million for Scotland. Local authority expenditure was expected to be about £600 million.

There are 16 universities and 1 university college in England, 1 university in Wales, 4 universities in Scotland, and 1 in Northern Ireland. Government grants to universities in 1959–60 were estimated at £57,711,650. In 1957–58 university income totaled £49,418,302, of which £36,355,578 came from public funds. There were at British universities 95,442 full-time students, 79.2% of whom were assisted by scholarships or grants, and 16,486 part-time students. Included in the totals were 6,180 full-time and 2,208 part-time students from the Commonwealth and 3,982 full-time and 1,904 part-time students from foreign countries.

There were 7,532,326 pupils in 35,197 schools, with 301,283 teachers, in England and Wales on Jan. 1, 1958; 884,855 pupils in 3,293 schools, with 36,240 teachers, in Scotland in 1958; and 271,074 pupils in 1,785 schools, with 9,363 teachers, in Northern Ireland in 1957–58. A further 434,672 students in England and Wales and 242,634 in Scotland were undergoing part-time education in 1957–58.

A new building program for technical education, costing £54 million over the period 1961–64, was published on April 15, 1959.

Religion.—The established church is the Church of England, though it receives no payment except for services rendered. Its two provinces, Canterbury (29 dioceses) and York (14 dioceses), are headed by archbishops. Archbishops, bishops, and deans are appointed by the crown on the advice of the prime minister. The Church Assembly, set up in 1919, is the church's legislative body. While two thirds of the population are nominally Anglican, the estimated number on parish rolls in 1959 was 3,250,000. In 1958 the unestablished Church of Ireland had 354,000 members; the Episcopal Church in Scotland, 108,000; and the church in Wales, 200,000.

The established (Presbyterian) Church of Scotland had 1,320,000 members in 1958. There were 740,000 Methodists, 340,000 Congregationalists, 328,000 Baptists, and 4,500,000 Roman Catholics in the United Kingdom in 1958. The Jewish community (400,000) is the largest in Europe.

Social Services.—The state provides education and health services, housing, unemployment benefits, care of the aged and the handicapped, nutritional services for mothers and children, sickness and industrial injury benefits, old-age and widows' pensions, subsistence for the needy, and children's allowances. The funds by which these services are financed are derived from weekly contributions by employers and employees and local and national taxation. Expenditure on social services from the national budget in 1959–60 was expected to total £1,306 million, plus a proportion of the general grant to local authorities.

The National Health Service in England and Wales included 44,632,784 patients and 21,838 doctors on July 1, 1958. In Scotland there were 2,859 doctors at the end of 1958. Included also on Dec. 31, 1958, were 10,274 dentists and 8,059 opticians in England and Wales and 1,344 dentists and 900 opticians in Scotland. At the same

date there were 505,523 hospital beds and 193,685 nurses and midwives in England and Wales and 63,950 hospital beds in Scotland. Prescriptions dispensed in Great Britain in 1958 totaled approximately 223,785,000.

There were 3,480,000 families with approximately 9 million children receiving family allowances in Great Britain on June 1, 1959. On March 31, there were 5,340,000 retirement pensioners, 194,000 noncontributory old-age pensioners, 495,000 widows' pensioners, and 1,664,000 persons receiving national assistance grants. In 1958, 7,886,500 new claims for sickness benefits, 784,000 claims for injury benefits, and 3,364,800 claims for unemployment benefits were made.

Agriculture.—Because of bad weather, production in 1958–59 was slightly lower than in 1957–58, though still about 60% above the average for the pre-World War II period. A drought in the summer of 1959 made it unlikely that there would be any large improvement in 1959–60. Acreage and production figures are shown in Table 1.

Table 1—AGRICULTURAL PRODUCTION
(Years beginning June 1)

Crop	1957–58	1958–59
Acreages (thousands):		
Wheat and rye	2,139	2,231
Other grains	5,306	5,259
Potatoes	811	822
Sugar beets	430	439
All tillage	11,176	11,172
Production (thousand long tons):		
Wheat and rye	2,707	2,731
Other grains	5,427	5,593
Potatoes	5,691	5,556
Sugar beets	4,539	5,602
Milk (million gallons)	2,392	2,252
Eggs[1]	660	695
Beef and veal	887	783
Mutton and lamb	208	200
Pig meat[1]	690	726
Net agricultural output (1936–39 = 100):		
Agricultural holdings[2]	160	159
Total[1]	162	161

[1] Includes production from units under 1 acre. [2] Holdings of over 1 acre only.

Minerals.—The nationalized coal industry has been managed since 1947 by the National Coal Board. Coal production totaled 215.8 million long tons in 1958 and 134.4 million tons in the first 8 months of 1959. The average output per man-shift in 1958 was 1.26 tons overall and 3.52 tons at the coal face. In August 1959, 659,000 persons were employed in the coal industry. British refineries processed 32,932,800 long tons of crude and shale oil in 1958 and 22,664,500 tons in the first 7 months of 1959. Production of iron ore in 1958 amounted to 14,612,000 long tons.

Industrial Production.—Recovery in the fourth quarter of 1958 raised production for the year to about 1% below the 1957 level. This trend continued, and by June 1959 the index of industrial production was seven points higher than a year before. Though production of pig iron and steel were both lower than in 1958, when 19,750,000 and 13,000,000 long tons, respectively, had been produced, the output of both passenger cars, at a record figure of 573,796 units in the first 6 months, and aircraft were higher. In June 1959, the working population totaled 23,968,000, or 105,000 fewer than a year earlier. Of the total, 565,000 were in the armed forces and 23,020,000 in civilian employment. Wholly unemployed numbered 394,000 in June 1959, compared with 370,000 in June 1958. The output of selected industries is shown in Table 2.

Table 2—OUTPUT OF SELECTED INDUSTRIES

Commodity	1957	1958
Synthetic fibers:		
Staple fibers (million lbs.)	263.2	230.6
Continuous filament yarn (million lbs.)	232.6	191.5
Cotton and cotton waste yarn (million lbs.)	727.3	631.3
Spun rayon and mixture yarn (million lbs.)	149.3	151.5
Woven cotton cloth (million linear yards)	1,628.0	1,429.0
Woven synthetic fiber and mixture cloth (million linear yards)	659.5	601.0
Woolen and worsted yarn (million lbs.)	537.8	494.2
Woven woolen and worsted cloth (million square yards)	394.1	349.0
Merchant ships completed (thousand gross tons)	1,442	1,441
Metalworking machine tools (£ million)	95.3	83.9
Radio and television sets (thousands)	3,703.2	3,769.0
Passenger cars and chassis (thousands)	860.8	1,051.6
Commercial vehicles and chassis (thousands)	275.3	297.8

EUROPEAN

President Eisenhower, visiting Britain in August, meets Queen Elizabeth at Balmoral Castle, her summer residence.

External Trade.—Great Britain's balance of trade in 1958 showed a considerable improvement over 1957, mainly because of the fall in world commodity prices. The volume of imports was almost the same as in 1957, but their value (c.i.f.) decreased from £3,573 million to £3,309 million. Exports also fell, from £3,515 million (f.o.b.) to £3,429 million, but the result was a favorable balance of £120 million on visible exports, compared with a deficit of £58 million in 1957.

Exports to the dollar area were 3% higher in 1958 than in 1957, and those to the United States alone 15% higher. Exports to western Europe, on the other hand, were 7% lower, and those to the rest of the sterling area 3% lower. Imports from the dollar area fell by about £180 million, of which £60 million was attributable to a decline in petroleum imports. Imports from the rest of the nonsterling area were about the same, increased imports of manufactured goods offsetting a decline in imports of primary and semifinished products.

Exports of engineering products again rose in 1958, to form 43.6% of the total. Textile exports dropped to below 10% of the total, exports of chemicals declined by 2%, and those of iron and steel by 12%. Whiskey exports reached an all-time high of £56 million. Food imports were 1% higher in 1958 than in 1957; crude petroleum imports increased to £276 million, but refined petroleum decreased by £23 million to £130 million. Imports of basic materials declined by 22%, to £988 million, and imports of semimanufactures, at £587 million, were lower by £54 million. Imports of finished manufactures in 1958 increased by £35 million, to £322 million.

Exports in the first 9 months of 1959, at £2,421 million, were about 3% higher than in the same period of 1958, while imports, at £2,907 million, were 5% higher in value and 7% higher in volume. Re-exports were valued at £99 million, compared with £108 million in the corresponding period of 1958. Exports to the sterling area in the 9-month period were lower than in 1958, but, be-

cause of increases to western Europe and North America, those to nonsterling countries were higher by 5% in the first quarter and by 11% in the second and third quarters. Imports from the sterling area during the 9-month period were higher than in 1958, and imports from other areas increased by 4.5%. Imports of manufactures and fuel both increased by 13%, food imports rose by 2.5%, and those of basic materials were 5% higher in volume, though about the same in value. (See also INTERNATIONAL TRADE.)

Statistics of British trade in 1957 and 1958 are shown in Table 3.

Table 3—BRITAIN'S IMPORTS AND EXPORTS, 1957 AND 1958

	1957	1958
Principal Imports	(£ million, c.i.f.)	
Foods, beverages, and tobacco:		
Cereals and cereal preparations	211.4	225.7
Meat and meat preparations	308.3	314.5
Dairy produce	139.9	136.1
Sugar and sugar preparations	155.1	100.4
Fruits and vegetables	228.8	262.4
Tobacco	85.5	86.9
Materials and manufactures:		
Wood and cork	173.5	140.5
Raw cotton	108.4	71.6
Raw wool and other animal hair	205.2	145.4
Rubber (including synthetic and reclaimed)	84.6	76.2
Petroleum and petroleum products	440.1	433.7
Iron and steel manufactures	79.1	46.6
Nonferrous base metals and manufactures	191.8	174.9
Machinery (nonelectric)	124.9	136.8
Textile yarns and manufactures	89.1	84.9
Chemicals	114.3	119.8
Exports of British Products	(£ million, f.o.b.)	
Iron and steel	213.2	187.6
Nonferrous base metals	95.8	93.4
Road vehicles and aircraft	403.5	457.0
Machinery (nonelectric)	560.9	567.2
Electrical machinery, apparatus, and appliances	227.3	223.7
Chemicals	267.4	263.1
Textile yarns and manufactures	301.6	255.1
Metal manufactures	167.9	150.8
Ships and boats	79.3	63.1
Food, beverages, and tobacco	206.2	193.7
Coal, coke, etc.	61.8	32.7
Petroleum and petroleum products	90.9	100.5
Basic materials	123.0	109.0

Communications.—British railroads have been operated through the British Transport Commission, a public authority, since 1948. On Jan. 1, 1959, there were 50,942 miles of track in operation, and the commission owned 17,396 locomotives (16,108 steam), 46,040 passenger cars, and 1,020,197 freight cars. During 1958 the railroads carried 1,089,831,000 passengers and 242,873,000 tons of freight. British Road Services, a division of the commission operating long-distance road hauling services, owned 15,976 vehicles on Jan. 1, 1959, and there were 1.3 million privately owned trucks and 99,000 privately owned passenger-carrying vehicles in operation. In 1958 the railroads operated at a deficit of £48.1 million, while the operations of the commission as a whole showed a deficit of £89 million on gross receipts of £674,311,967.

British Overseas Airways Corporation, which has operated Britain's long-range air services since 1946, carried 495,170 passengers and 8,788 tons of freight in 1958–59. Revenue for the year totaled £58,401,855, giving an operating profit of £843,123. Services to Europe, operated by British European Airways Corporation, carried 2,828,715 passengers and 28,020 tons of freight in 1958–59, producing a revenue of £31,761,313 and a profit of £232,695. (See also AERONAUTICS.)

The British Broadcasting Corporation (BBC), a chartered public corporation that has a monopoly on sound broadcasting in the United Kingdom, employed 1 long-wave, 57 medium-wave, and 18 VHF radio transmitting stations and 22 television transmitters in 1959. In 1958–59 its income totaled £28,614,697, including £27,323,115 from license fees and £1,144,578 from publications. The Independent Television Authority (ITA), which telecasts programs under controlled sponsorship, operated 10 transmitters in 1959. Its income, derived from payments for programming, totaled £2,917,038 in 1958–59. On Sept. 1, 1959, there were 9,628,000 broadcast receiving licenses for television and 5,282,000 for sound only.

Overseas telecommunications services, operated by Cable and Wireless, Ltd., a public company indirectly controlled by the postmaster general, transmitted 423 million words and sold 2,103,000 minutes of radiotelephone time in 1958–59. The company's revenue amounted to £15,791,766, showing a profit of £3,366,981.

The British merchant fleet consisted of 19,693,000 tons of shipping, including 6,430,000 tons of tankers, on Sept. 1, 1959. In 1958, 100,764,000 tons of shipping in the foreign trade entered British ports, and 101,052,000 tons cleared them.

Principal Events, 1959.—Politically, the most important event of 1959 was the general election on October 8, which, after a series of opinion polls that showed decreasing Conservative sentiment, resulted in a victory for the Conservatives which almost doubled their majority in the House of Commons (see above *Government*). Among the most important legislation of the year were a Factories Act (July 29), which improved health, safety, and welfare provisions; and a Cotton Industry Act (July 9), which was intended to assist in the reorganization and re-equipment of the industry, with the aim of recapturing lost markets. The only major strike was a printing industry dispute (June 17–July 31). The Committee on the Working of the Monetary System, appointed in May 1957 with Baron Radcliffe of Werneth as chairman, reported on August 19. The report included no list of recommendations, but gave a detailed account of the day-to-day workings of the City of London, and advanced ideas on credit and monetary policy which aroused worldwide interest in financial circles.

Anglo-Soviet relations were dominated by the visit of Prime Minister Harold Macmillan and Foreign Secretary Selwyn Lloyd to the USSR from February 21 to March 3, when they discussed trade and cultural relations, disarmament, nuclear weapons tests, and Germany with Premier Nikita S. Khrushchev. Hugh Gaitskell, leader of the Labour Party, accompanied by Aneurin Bevan and Denis Healey, visited the Soviet Union from August 30 to September 9. An Anglo-Soviet trade agreement, providing for an exchange of consumer goods on a quota basis, was signed in Moscow on May 24, and an agreement on cultural exchanges was signed in London on December 1.

No solution was reached, however, at the foreign ministers' conference held in Geneva (May 11–June 20 and July 13–August 5), at which Foreign Secretary Lloyd represented Britain, to the problems of Germany and Berlin, and little progress was made on disarmament or on the banning of nuclear weapons tests either as a result of the meetings which continued throughout the year, or as a result of Lloyd's proposals to the U.N. General Assembly on September 17. (See also DISARMAMENT.) There was, however, general agreement on the desirability of a summit meeting, and Britain showed some sympathy with the French attitude and President Charles de Gaulle's wish to see Premier Khrushchev before such a meeting took place. Prime Minister Macmillan attended the Western meetings in Paris and Rambouillet on December 19–21, at which it was decided to invite Khrushchev to a summit meeting

UPI; UPI; EUROPEAN

Intensive campaigning marked Britain's general election in October. (*Left*) Prime Minister Macmillan, victorious Conservative leader, rides through London crowd with Lady Macmillan. (*Center*) Labour leader Hugh Gaitskell addresses gathering at Braintree. (*Right*) Londoners fill Trafalgar Square on October 8, as election returns are announced.

in Paris in 1960. (See also SUMMIT CONFERENCE.)

Relations with the United States remained good throughout 1959. The overwhelmingly friendly reception accorded President Dwight D. Eisenhower on his visit to Britain from August 27 to September 2, accompanied by Secretary of State Christian A. Herter, demonstrated the solidarity of Anglo-American friendship. In addition to discussions with the British prime minister, with whom he stayed at Chequers (August 29–31), the president stayed with the royal family at Balmoral Castle (August 28–29), joined Macmillan in a nationwide radio and television discussion (August 31), and stayed on September 4–7 (after his visit to Paris) at Culzean Castle, Scotland, in the apartment presented to him after World War II by the National Trust for Scotland. Following their visit to Moscow, Prime Minister Macmillan and Foreign Secretary Lloyd arrived in Washington on March 19, spent March 20–23 in discussions with President Eisenhower at Camp David, and returned to London on March 24. The United States visit was the culmination of a series of visits to Paris (March 9–10), Bonn (March 12–13), and Ottawa (March 18–19).

An agreement between Britain and the United Arab Republic, providing for £27.5 million in compensation for British property which had been Egyptianized, was signed in Cairo on February 28, and diplomatic relations between the two countries were restored on December 1. The Cyprus question was settled by an agreement signed on February 19. After negotiations with Britain, Iraq left the sterling area on June 23. No solution to the fisheries dispute with Iceland was reached, but an agreement, signed in Copenhagen on April 27, was reached with the Danish government on a six-mile fishing limit round the Faeroe Islands. Britain's position on Laos was summarized by a Foreign Office spokesman on July 30, who said that the United Kingdom government was "deeply concerned about the maintenance of peace in Laos," and a government statement on May 4 made it clear that Britain felt that "Tibet should be autonomous, and hoped that a solution could be reached by peaceful means."

In conjunction with the governments of Denmark, Sweden, Norway, Austria, Portugal, and Switzerland, the United Kingdom government participated in meetings at Stockholm which culminated in the initialing of a treaty forming the European Free Trade Association (q.v.) on November 20. The purpose of the new organization was to facilitate negotiations between the seven governments, the European Economic Community (EEC), and other European governments looking toward freer trade in Europe and the reduction of tariffs and quotas. Steps toward this end, beginning with a 20% tariff reduction on July 1, 1960, were embodied in the treaty.

Relations with western Europe were complicated by misunderstandings with both France and Germany, which threatened to become relatively serious toward the end of the year. A visit to Paris (November 11–12) by Foreign Secretary Lloyd, and discussions with President de Gaulle, Foreign Minister Maurice Couve de Murville, and Premier Michel Debré, primarily on East-West relations and the implications of the EEC, removed the misunderstandings with France. Those with Germany were similarly removed by a visit to London (November 17–19) by Chancellor Konrad Adenauer, accompanied by Heinrich von Brentano and other ministers.

Among the many other visitors to Britain during the year were Shah Mohammed Riza Pahlavi of Iran, on a state visit (May 5–8), which was followed by discussions with Prime Minister Macmillan on May 10; Foreign Minister Subandrio of Indonesia, on an informal visit, during which discussions with the minister of state for foreign affairs, John D. Profumo, took place on June 8; Nobusuke Kishi, the Japanese prime minister, on an official visit (July 13–16); President Sékou Touré of Guinea (November 10–15); and Premier Antonio Segni and Foreign Minister Giuseppe Pella of Italy (December 1–3).

Queen Elizabeth, accompanied by the Duke of Edinburgh, made a royal tour of Canada from June 18 to August 1, during which she participated in ceremonies opening the St. Lawrence Seaway on June 26–27, in company with President Eisenhower, and visited Chicago on July 6. A projected royal tour of Ghana in November was postponed on August 7, when it was announced that the queen was expecting her third child early in 1960. The Duke of Edinburgh, however, visited Ghana on November 23–28.

On May 12, Prime Minister Macmillan announced a space research program under which Britain would design and construct instruments, ask the United States about its offer to consider flying other countries' equipment in its satellites, and study the development of British rockets for space research purposes. A further announcement, on July 29, said that, following the visit to Wash-

ington of a group of experts, British instruments would be in satellites placed in orbit by the Scout, which was being developed by the National Aeronautics and Space Administration.

(For further references, see the Index entry, *Great Britain.*)

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GREECE. A kingdom in the Balkan Peninsula, Greece is bounded on the north by Albania, Yugoslavia, and Bulgaria; on the east by Turkey; and on the southeast, south, and west by the Aegean, Mediterranean, and Ionian seas, respectively. The area of Greece, including the islands, is 51,182 square miles.

Population.—The population of Greece is officially estimated (1959) at 8.3 million (1951 census, 7,632,801). According to the 1951 census, 47.7% of the people live in villages with less than 2,000 inhabitants and 36.8% in towns of 10,000 or more. Athens, the capital and largest city, has an estimated population of over 600,000 (1951 census, 565,084). Greater Athens, with its seaport Piraeus, Nikaia, and other suburbs, has an estimated population of 1,500,000. Other major cities, with their 1951 populations, are Salonika, 217,049; Patras, 79,014; Volos, 51,144; and Candia, 51,144. Greek is the mother tongue of 94% of the people and the official language of the kingdom. Minority groups include Turks, Bulgarians, Armenians, Macedonian Slavs, Vlachs, Albanians, and Jews.

Government.—The king, Paul I, ascended the throne on April 1, 1947. The constitution, amended in 1951, provides for a unicameral Parliament, consisting of 300 members elected by universal suffrage for 4-year terms. Women acquired full political rights in 1951. The party in power is the National Radical Union (ERE), a conservative group, headed by Constantine Karamanlis, who is premier and minister of defense. In the last elections, held on May 11, 1958, Karamanlis won 172 seats. The largest party in the opposition is the United Democratic Left (EDA), which won 78 seats.

Finance.—The budget for the fiscal year 1958–59 provides for revenues of 15.3 billion drachmas (30 drachmas = U.S.$1) from Greek sources and an expenditure of 18.1 billion. The balance is covered by United States aid, NATO expenditures, the proceeds of the Economic Development Fund, national bonds, and a loan from the West German government.

Religion.—Of the people of Greece, 98% belong to the Eastern Orthodox Church, which is the established or official church. The remainder are, in order of numerical significance, Moslems, Roman Catholics, Protestants, Jews, and Armenians. His Holiness Theoklitos, metropolitan of Patras, is archbishop of Athens and all Greece. The patriarch of Constantinople has jurisdiction over the churches of Crete and the Dodecanese and over the monasteries of Mount Athos.

Education.—In 1957–58 there were 9,026 elementary schools with 884,021 pupils (1959 est., 940,000) and 19,011 teachers, and 701 secondary schools with about 195,000 pupils and 4,775 teachers. All children between the ages of 6 and 14 must attend school. Higher education comprises the University of Athens and the University of Salonica, the polytechnic institutes located in these two cities, and half a dozen other schools of the same level. Total enrollment in higher education is about 20,000. Several thousand additional Greek students go abroad to study, especially to Italy, Austria, and the United States. Government sources estimate that 19.7% of the population between the ages of 12 and 60 is illiterate.

Transportation and Communication.—Greece has approximately 1,683 miles of railways. At the end of 1956, serviceable roads totaled 20,680 miles; a road-building program calls for the construction of 6,414 miles of new roads. As of January 1959 there were 36,363 passenger cars in Greece, 31,866 buses and trucks, and 19,500 motorcycles. Twenty-two scheduled international airlines serve the country's main airport, near Athens. In 1958 there were 151,466 telephones and 17,160 miles of telephone and telegraph lines. The Greek merchant marine numbered 1,860 vessels as of Dec. 31, 1958, with a gross tonnage of 1,040,000, but only one seventh of this is under the Greek flag. The government is making every effort to persuade shipowners to register their ships in Greece.

Economic Conditions.—Greece's gross national product—82,510 million drachma in 1957—was reported to have risen slightly in 1958. Unemployment and underemployment continued to be the main problems in the economy. Per capita income, however, stood at about $280 in 1958, as compared with $215 in 1955, and the government's five-year, 31.5 billion drachma economic development program, announced in late April 1959, is aimed at achieving further improvement. Through expansions in agriculture, industry, public utilities, education, health and welfare, and the tourist trade, it is hoped to raise the per capita income to $360 by 1963. In September 1959 the government announced its plan for an Industrial Development Corporation, to include leading banks and private businessmen, which will participate in the capital of industrial enterprises and the establishment of basic industries as part of the five-year plan.

Agriculture and Industry.—Agriculture, including forestry and fishing, is the mainstay of the Greek economy. Approximately half of the country's labor force (est. 1958, 4,175,000) is engaged in agricultural work, and nearly 85% of the country's exports consist of unprocessed and processed farm products. The net contribution of manufacturing and processing to the national income averages under 20%. Agricultural production in 1958 included the following, in thousands of metric tons (figures for 1957 in parentheses): wheat, 1,787 (1,727); barley, 267 (254); oats, 168 (186); rye, 41 (49); corn, 224 (266); milled rice, 42 (37); tobacco, 84 (102); cotton, 63 (63); currants, 83 (86); raisins, 44 (63); dried figs, 22 (22); olive oil, 99 (164); edible olives, 41 (29); citrus fruits, 263 (228); table grapes, 128 (115); deciduous fruits, 243 (266); vegetables, 1,472 (1,511); potatoes, 438 (460). Fish production, as in 1957, totaled 75,000 tons.

Construction will be begun in 1960 on a nitrogen fertilizer plant partly financed by $12 million from the U.S. Development Loan Fund. Of the government's planned investment in economic development over the next five years, 7.9 billion drachmas have been allocated to agriculture and land reclamation. Government and private investments in industry and mining are aimed at achieving an average annual increase of 9% in industrial production in that period.

Foreign Trade.—During the seven-month period from January to July 1959 the deficit in the trade balance rose to 7,272.9 million drachmas, as compared with 6,799.4 million during the same period in 1958. Exports amounted to $221.4 million from July 1, 1958, to June 30, 1959, as compared with $218.3 million during the same period of the previous year. The main exports in the 1958–59 period, in millions of dollars, were: tobacco ($79.3), cotton ($26.6), currants ($18.5), sultanas ($14.5), metals ($15.6), wines ($13), hides ($8), olives ($4.5), citrus fruits ($4.4), dried figs ($2.8), fresh grapes ($2), and olive oil ($1.1). Greece's products in 1958 went chiefly to western Europe (47%), eastern Europe (15.5%), the United States (15%), and Great Britain (8.2%). Chief suppliers were western Europe (51%), the United States (15.6%), Great Britain (13%), and eastern Europe (7.2%).

Principal Events, 1959. *Cyprus Settlement.*—The topic of general interest in Greece during the year was the solution of the Cyprus question, pending since 1950. Premier Constantine Karamanlis met his Turkish colleague, Adnan Menderes, in Zurich, Switzerland, and on February 11 concluded the agreement whereby Cyprus will be organized as an independent republic under the guarantee of Greece and Turkey. Later in the month, at a conference in London, the prime ministers and foreign ministers of Greece, Turkey, and Great Britain, and representatives of the Greek Cypriotes (Archbishop Makarios) and the Turkish Cypriotes (Dr. Fazil Kütchük) formulated the treaties and conventions regarding the future of Cyprus.

A section of the Greek press and the opposition parties criticized the agreement as unduly favor-

able to Turkey. The focal points in the criticism were the clauses that provided for the presence of Greek and Turkish troops on the island, the veto powers of the Turkish vice president, the three ministerial portfolios to the Turkish Cypriotes, and the allocation of 30% of the seats in the House of Representatives and 30% of the civil service to the local Turks, who constitute less than 20% of the total population. The Greek press followed with keen interest the negotiations that were conducted at Nicosia, Cyprus, during the remainder of the year, between the representatives of Greece and Turkey and the leaders of the Greek and Turkish Cypriotes. (See also CYPRUS; TURKEY.)

Domestic Affairs.—The various phases of the Cyprus question had direct repercussions in Athens. An important domestic affair was the emergence of Colonel (later General) George Grivas as the most popular critic of the Karamanlis cabinet. The former leader of EOKA (the Greek National Organization of Cypriote Fighters) spoke of his readiness to lead the country to reconstruction if the Greek people elected him. However, he took no steps to organize a party.

Among the political parties there was more than usual activity as the government became a target of criticism. Panayotis Kanellopoulos, joint leader of the Populist Party, joined the government as deputy prime minister on January 5. George Papandreou abandoned the Liberal Party and moved toward the organization of a party of his own, with a middle-of-the-road liberal program. Spyros Markezinis, leader of the Progressive Party, discussed possibilities of merging his organization with the Liberal Party of Sophocles Venizelos, and also of cooperating politically with General Grivas. The opposition in Parliament repeatedly asked for new elections, but the government was able to stay in power.

Foreign Affairs.—Relations with Albania and Bulgaria remained cool during the year, with tendencies to deteriorate as a result of a bloody incident along the Albanian frontier and Bulgarian intransigence regarding the payment of reparations ($45 million) from World War II. The Greek and Bulgarian governments exchanged notes in May, and on June 3 the Greek government accused Bulgaria of bad faith. The Bulgarian government, on the other hand, accused Greece of "belligerent" intentions.

Late in April the Greek government announced that the United States was going to provide Greece with tactical ballistic missiles of the Honest John and Nike types. (It was reported in October, however, that these negotiations had been abandoned.) To the protests of the USSR that such an event would be regarded as a hostile action, and to the Soviet note of May 13, the Greek Foreign Office answered, on June 4, that Greece would take all feasible measures for her legitimate self-defense, which is connected with the security of the West. In the same spirit, the Greek government answered the Bulgarian note of May 20, and complained that Greece's peaceful intentions were not reciprocated by Bulgaria. After Nikita Khrushchev's visit to Albania (q.v.) and his warnings to Greece and Italy regarding missile bases, the Greek prime minister stated on June 13 that the notes from the USSR and Bulgaria contained "threats against the Greek nation which cannot be accepted."

Relations with the Western powers became even closer as a result of the agreement on Cyprus. Greece and the United Kingdom are no longer divided on the Cyprus question, and the Greeks have consented to the maintenance of British bases on the island. The United States continued aiding Greece, though to a lesser extent than the

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King Paul and Queen Frederika visit Salonika on October 27 to observe 19th anniversary of Greek defiance of Italy's ultimatum for unconditional surrender of Greek territories.

Greek government desired; and President Eisenhower was greeted by King Paul and a crowd estimated at 500,000 when he visited Athens on December 14–15 in the course of his 11-nation goodwill tour. The president addressed the Greek Parliament and conferred with Premier Karamanlis on Greece's "special situation" in the Balkans and other matters of concern to the two nations.

Vice Chancellor Ludwig Erhard of the German Federal Republic visited Athens from August 22 to August 25, and on September 19 it was announced in Bonn that the West German government had decided to lend Greece 300 million Deutsche marks ($71.3 million), a sum that will be spent on productive enterprises of an industrial and commercial nature.

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GREEN, Howard Charles, Canadian public official: b. Kaslo, British Columbia, Nov. 5, 1895. A longtime political associate of Prime Minister John Diefenbaker (q.v.), Green was appointed Cana-

CAPITAL PRESS SERVICE

Howard C. Green, named Canadian minister of state for external affairs, June 4.

dian secretary of state for external affairs on June 4, 1959, following the death of Sidney Earle Smith (q.v.). His appointment capped a quarter-century of public service that began in 1935 when he was elected to Canada's House of Commons as representative of British Columbia's Vancouver South constituency.

Green received his B.A. (1915) from the University of Toronto, served as an infantry officer during World War I, took his law degree (1920) at Toronto's Osgoode Hall, and entered law prac-

tice in Vancouver. After his successful venture into politics in 1935 as a Progressive Conservative, he was re-elected in every subsequent general election (in a 1949 redistribution most of his former district was redesignated as Vaucouver-Quadra). He became Conservative floor leader following his party's victory in the June 1957 elections.

Green was appointed minister of public works in Diefenbaker's first cabinet and, until May 1958, he also served as acting minister of defense production. After his elevation to the external affairs post in June 1959, he continued to hold the public works portfolio until August, when David Walker was appointed to that ministry.

As head of his country's delegation to the Ministerial Committee on the Joint Defense of the United States and Canada, Green went in November 1959 to Washington, D.C., for two days of discussions with U.S. Secretary of State Christian A. Herter and defense officials. Green, as a spokesman for North Atlantic Treaty Organization ministers, urged more consultation among NATO Council members on negotiations with the Soviet Union.

GREENLAND. A department of Denmark in the North Atlantic. Estimated area, 840,000 square miles (143,500 ice-free); pop. (est. 1958), 28,000, mostly of Eskimo and Eskimo-Scandinavian descent. Godthaab (1,021) is the capital and chief city. Under a 1951 agreement with Denmark, the United States maintains a large military airbase at Thule, in the northwest. Greenland sends 2 representatives to the Danish Parliament, and also has its own 13-member Council elected every 4 years.

Chief occupations are fishing and the processing of fish products, sheep raising, hunting and trapping, and mining. The 1957 fish catch totaled 31,500 metric tons. Greenland is an important source of cryolite, an aluminiferous ore; other minerals include coal and lead and zinc concentrates. Greenland's exports in 1957 totaled 62.7 million kroner; imports, 91.0 million. In 1959 a law was passed by the Danish Parliament authorizing the minister of Greenland to invest a total of 57 million kroner (about $8,265,000) over the period 1959–65 for the expansion of fish-processing plants, harbors, housing, and other facilities in Greenland.

GRENADA. See WEST INDIES FEDERATION.

GROMYKO, Andrei Andreyevich, Soviet foreign minister: b. Starye Gromyki, near Minsk, Russia, July 6, 1909. Trained as an economist, Gromyko in 1939 entered the Moscow foreign affairs office as chief of its American division, and was soon sent to Washington, D.C., as a counselor to the Soviet embassy. In 1943, at the age of 34, he was made ambassador to the United States. He headed the Soviet delegation to the U.N. Conference on International Organization in San Francisco in 1945 and in 1946 moved to New York to become his government's chief delegate to the United Nations and permanent representative on the Security Council. Recalled to Moscow as deputy foreign minister in 1948, he became first deputy foreign minister in 1949, served briefly in 1952–53 as ambassador to Great Britain, and in 1953 reassumed his role at the United Nations. He was advanced to chief deputy foreign minister in 1953, and in 1957 succeeded Dimitri T. Shepilov as foreign minister.

A rigidly trained bureaucrat and adept diplomat, Gromyko reflects faithfully and unbendingly Soviet positions on international matters. At the United Nations the austere Gromyko was known as his government's "*nyet* man" in the iciest days of the cold war. It was he who delivered to the Supreme Soviet in Moscow, on Dec. 25, 1958, the fiery speech warning the Western powers that West Berlin, for which "free city" status had been demanded the previous November, might become a "second Sarajevo" and precipitate a "big war." By May 1959, however, when the Soviet line had become more conciliatory, he appeared smilingly in a debonair gray homburg at the foreign ministers' conference in Geneva, and was notably more tractable in talks with the Western representatives. He surprised the world by volunteering to attend the funeral of John Foster Dulles in Washington, D.C., on May 27. And he appeared again in a friendlier mood when he accompanied Premier Khrushchev to the United States in the fall of 1959.

GROSZ, George (65), German-American artist: b. Berlin, Germany, July 26, 1893; d. Berlin, July 6, 1959. Caricaturist of the horrors of war and of man's depravity, Grosz drew and painted a tortured image of the 20th century in styles ranging from the abstract to the representational.

Of a middle-class Lutheran family, Grosz studied art at the Royal Saxon Academy of the Fine Arts in Dresden (1909–10) and at the Berlin Royal Arts and Crafts School (1911). After serving in the German Army from 1914 to 1916, and again in 1917, he employed his skill at caricature against the Prussian militarist—whom he had admired as a boy—and against the civilian war profiteer. At first horrified by war, later disgusted by the callousness, hypocrisy, and selfishness of the bourgeoisie of the Weimar Republic, Grosz produced from 1919 to 1924 his greatest satirical drawings: in 1920 the series *Gott mit Uns* was published and in 1923, the series *Ecce Homo.* Although the Dadaists attracted him for a time, his more rational artistic approach led him to develop independently of it, moving from a semi-abstract style in the early twenties to the realism reflected in his portrait of the poet Max Hermann-Neisse (oil, 1927, Museum of Modern Art, N.Y.).

Arrested three times for "offending public sensibilities" with his mordant drawings, and fearful of the rising Nazi Party, Grosz accepted an invitation to New York's Art Students League in 1932, where he subsequently taught for more than 20 years. He became an American citizen in 1938, a year after his works had been included by the Nazis in the "Degenerate Art" exhibition in Munich. He lived near New York with his wife until shortly before his death.

From 1932 to 1936 he worked in water color and gouache, assuming a milder, more optimistic manner as he explored the country of his adoption in sketches and paintings like *Central Park at Night* (water color and gouache, 1936, Art Institute of Chicago). He then turned to oils, and to the traditional still life, the nude, and landscape. He even tried his hand at illustration in his search for the simple and peaceful. With the outbreak of war in Europe in 1939, violence began to reappear in Grosz's canvases. This time, however, the Daumier quality of his earlier satire was replaced by the nightmare worlds of Hieronymus Bosch and Matthias Grunewald and the novelist Franz Kafka. With great technical facility he built up his visions of ruin and futility with garish colors, as in *The Pit* (oil, 1946, Wichita Art Museum, Kansas) and the *Painter of the Hole* (oil, 1948, Associated American Artists Galleries, N.Y.), sometimes almost seeming to revel in the diabolic. In the last decade of his life, Grosz returned to the quieter mood of the 1930's, his need for vitriolic comment spent for the time.

In 1959 he was awarded the Gold Medal for Graphic Arts by the National Institute of Arts and Letters. His works are in permanent collections in New York, Newark, Chicago, Los Angeles, Dallas, and many other American cities.

Consult his autobiography, *A Little Yes and a Big No* (1946); Baur, John I. H., *George Grosz* (1954).

GROUP INSURANCE. See INSURANCE.

GUADELOUPE. An overseas department of France, in the Lesser Antilles islands of the Caribbean Sea. Area, 687 square miles; pop. (est. Dec. 31, 1958), 260,000. The people are predominantly colored and speak a French creole dialect. The department consists of two larger islands (Basse-Terre or Guadeloupe proper, and Grande Terre; combined area, 583 sq. mi.; pop., 219,395), and six small outlying islands and island groups (Désirade, Les Saintes, Marie Galante, Petite Terre, St. Barthélemy, and part of St. Martin). The city of Basse-Terre (12,381) is the capital; and Pointe-à-Pitre (30,078), on Grande Terre, is the chief port. The departmental prefect is aided by an elected General Council of 36 members. In 1957 there were 43,380 pupils in elementary schools, and 5,000 in secondary schools.

Agriculture is the principal occupation, and sugar and related products are of major importance. Sugar output in 1958–59 totaled 159,000 short tons (131,000 in 1957–58). Other cash crops are bananas, coffee, cocoa beans, vanilla, and pineapples. Chief industries are sugar refining, rum distilling, molasses production, and pineapple canning. Exports in 1958 totaled 14,236 million francs; imports, 20,092 million. Principal exports were: sugar, 113,661 metric tons (value, 6,829 million francs); bananas, 94,097 (5,587 million); and rum, 8,558. Trade is mostly with France. Guadeloupe has 464 miles of national and departmental roads. Four international lines provide air services.

GUAM. An organized but unincorporated territory of the United States, Guam is the largest and most populous of the western Pacific islands known as the Marianas. It lies 13° north of the equator and is situated approximately 6,000 miles southwest of San Francisco, Calif. Guam is 30 miles in length, varies from 4 to 8½ miles in width, and covers 209 square miles.

Population.—The officially estimated population of 65,000, as of June 30, 1959, is almost evenly divided between local civilians, mostly Guamanians, and transient United States civil and military personnel and their families. The present Guamanians are a mixture of native Chamorro stock with outside strains and are predominantly Roman Catholic in religion. Although English is the official tongue, the Chamorro dialect is widely used.

Populations of principal villages in 1959 were as follows: Agaña Heights, 2,557; Agat, 2,958; Barrigada, 3,708; Dededo, 2,323; Sinajana, 4,756; Tamuning, 4,192; and Yona, 2,082. Agaña (1,344) is the capital.

Government.—Guam is administered under the Organic Act of 1950, as amended. The island's relationship with the United States government comes under the general supervision of the U.S. Department of the Interior. Guamanians are citizens of the United States without the right to vote in United States elections and with no representation in the U.S. Congress.

The local government comprises executive, legislative, and judicial branches, with the executive branch of 14 departments headed by a civilian governor appointed by the president of the United States. Richard Barrett Lowe, governor since late 1956, resigned effective Nov. 14, 1959. In the absence of the governor, the presidentially appointed secretary of Guam (in 1959, Marcellus G. Boss) serves as acting governor.

A 21-member unicameral legislature, biennially elected at large, is empowered to pass laws on local matters, including taxation and appropriations measures. Enactments in 1959 of the 5th Guam Legislature, controlled by the Popular Party as the result of elections of November 1958, included a Uniform Reciprocal Enforcement of Support Act and a financial responsibility law for automobile owners. Among others were measures that authorized the Territorial Planning Commission to undertake urban planning and to accept federal grants; established daylight saving time; and provided scholarships and loans for students. A bill pertaining to the tenure of officials requiring confirmation of the legislature was vetoed by the governor.

The District Court of Guam, whose judge in 1959 was Eugene R. Gilmartin, has jurisdiction in all federal cases and in many others arising under the laws of Guam. Its decisions may be appealed to higher United States courts. The Island Court, the Police Court, and the Juvenile Court have jurisdiction in certain cases arising under the laws of Guam.

Finances.—The operating budget for Guam is derived largely from taxes on personal income, specific sales, and business gross receipts. Banking facilities are provided by a branch of the Bank of America and by the Guam Savings and Loan Association.

Education and Social Welfare.—School attendance is compulsory for all between the ages of 6 and 16, inclusive. Enrollment in the public and private elementary and secondary schools was nearly 18,000 in 1958–59, and at the Territorial College of Guam in Agaña, over 800. The government also maintains a vocational school.

Hospital facilities include a 160-bed tuberculosis hospital, a 161-bed general hospital, and 16 village health centers.

Transportation and Communications.—Guam is a port of call for two major shipping lines—the American President Lines, with an average of 18 arrivals a year, and the Pacific Far East Lines, with an average of six arrivals per month—and is the home port of the Pacific Micronesian Lines. The island is a regular stop for Pan American World Airways, with 10 flights weekly, and Transocean Airlines, with four weekly flights.

Local transportation consists mainly of taxicabs, private automobiles, and buses. There are 147.8 miles of paved and 67.1 miles of improved roads. The Radio Corporation of America provides overseas telephone and radio dispatch facilities and, at Agaña, the Guam government operates a telephone exchange serving 1,200 telephones. In 1958–59, telephone lines were extended to the last five unserved villages.

News media include the *Guam Daily News* and a local radio-television station.

Economy.—Relatively poor in natural resources, Guam is nevertheless one of the important military bases of the United States in the Pacific, thereby furnishing an important wage and service economy for local residents.

Agriculture is the other principal element in the economy, although ready employment by the armed forces and the civil government has continued to hamper agriculture with a manpower shortage. A 1957 census showed only 700 persons engaged in full-time farming. Egg production is the greatest source of farm income.

Nonfarming production activities are largely limited to fisheries (376,556 pounds for the 1957–58 fiscal year), quarrying (692,128 short tons of sand and gravel and crushed stone in the calendar year 1958, valued at $774,465), and light manufacturing (mainly food and beverage processing).

Foreign Trade.—In the fiscal year 1957–58, the commercial port of Guam handled 202,507 revenue tons of commercial imports and exports valued at $28,418,603. Principal imports, mainly from the United States, included foods, vehicles, petroleum products, construction supplies, and alcoholic beverages. The leading export is scrap metal. The commercial port, which occupies 24.5 acres, has 2,400 linear feet frontage of deep-water docking space—sufficient for the berthing of three large cargo vessels—and 110,400 square feet of warehouse space.

Principal Events, 1959.—The year's major political developments included the resignation, effective November 14, of Richard Barrett Lowe as governor of Guam; the annual session of the Guam Legislature (see above, *Legislature*); and the establishment of a District Governmental Council to promote local governmental efficiency and a closer relationship between the citizens and the executive branch.

Economic conditions were good in 1959, with retail sales, military, commercial, and private construction, bank clearances, and port receipts at expected levels. The economy expanded as a new cement-packaging plant and several construction companies began operations, and as military contracts were let for new facilities and for increased purchases from farmers.

MARCELLUS G. BOSS,
Secretary of Guam and Acting Governor.

GUATEMALA. This northernmost of the Central American republics is bounded on the west and north by Mexico, on the east by British Honduras and the Caribbean Sea, on the southeast by Honduras and El Salvador, and on the south and southwest by the Pacific Ocean. Most of the 3,546,000 people (est. mid-1958) who live in its 42,042 square miles of territory are either pure Indian (53.5%) or the sturdy Ladino descendants of Indian and Spaniard. Guatemala City, the capital, has a population (est., December 1957) of 374,000. Other towns, with their 1950 census populations, are Quezaltenango (27,696), Puerto Barrios (15,332), Mazatenango (11,032), and Antigua (10,744).

Government.—Executive power in this federal republic of 23 departments is headed by a president who appoints the governors of the departments and each March submits to Congress the list of those from whom it selects designates to take over in the event of the president's absence or death. Legislative power is vested in a unicameral Congress of 66 deputies elected for 4-year terms, with half the membership renewed at 2-year intervals. The judiciary consists of a Supreme Court of Justice, a Court of Appeals, and the usual lower courts. President Miguel Ydígoras Fuentes began his 6-year term of office on March 2, 1958; the designates elected to serve until March 1960 are Manuel Ralda Ochoa and Alberto Urrutia Vasconcelos.

Religion and Education.—Although many of the people still worship the old Indian gods, Roman Catholicism is the prevailing faith. A 1959 presidential decree recognized bishops of the Roman Catholic Church as its legal representatives, thus making it possible for the church to own property through them, for the first time since 1879.

Guatemala's exceptional educational problem is caused by the fact that so much of the work is in rural areas where so many of the people do not understand Spanish and few who know the native languages are trained to teach. On June 30, 1957, among the 644,420 children in the 7–14 age group, only 203,448 were enrolled in either public or private schools. Enrollment of all age groups in kindergartens, primary schools, and secondary schools of all types totaled 305,430 in the 1957–58 school year. The Ministry of Education, with the aid of funds provided by the U.S. International Cooperation Administration (ICA), is constructing schools in rural areas where the community furnishes labor and sometimes materials. On the secondary level each department has a prevocational institute in which the student can complete the first part of the course near his home; many who wish to continue for the final 2 years must go to Guatemala City. There a new $3 million industrial vocational training school was under construction in 1959, while a new campus for the University of San Carlos was also being built on the outskirts of the city.

Finance.—The budget for the fiscal year 1958–59 was originally set, in millions of quetzales (1 quetzal = U.S.$1), at 113.1, with 26.6 allocated for general administrative expenses; 9.2 for defense; 23.0 for social services, including education; 10.1 to service the public debt; 2.2 for government retirement pensions; and 42.0 for economic development. By the end of the fiscal year, however, the budget had been increased to 120.3 million. Budget expenditures for 1959–60 were estimated at 114.9 million.

Due to a continued rise of imports over exports and to a decline in coffee revenue, official gold and foreign exchange holdings decreased to $35.7 million by Sept. 30, 1959. In contrast, business and industrial sales in the first quarter of 1959 were $9 million higher than in the same quarter of 1958.

Transportation and Communications.—Of Guatemala's 719 miles of track, 510 miles belong to the Guatemalan section of the International Railways of Central America, controlled by the United Fruit Company, although the company is under court order to divest itself of its railway holdings by June 30, 1966.

Guatemala has approximately 5,000 miles of roads. In addition to the 73-mile Western Highway from the northern highlands to the Pacific port of Champerico, there are three trunk highways: the 239-mile Pacific Highway along the coastal plain and the 317-mile Inter-American Highway in the highlands, both extending from Mexico to El Salvador; and the 186-mile Atlantic Highway connecting the Atlantic ports with Guatemala City and with the road to the Pacific port of San José. During 1959, 115 miles of the Inter-American Highway were paved, and all bridges were completed on the Atlantic Highway. Nonofficial motor vehicles numbered 28,812 in 1957.

The government-owned national airline, AVIATECA, inaugurated new flights to New Orleans and Houston on May 22, 1959. Five foreign lines also serve Guatemala's international traffic, and La Aurora Airport at Guatemala City is being extended so that it can handle jet planes.

Plans for an $8 million telephone expansion program were approved, and part of the new system—15,000 lines in Guatemala City—was formally inaugurated on July 3, 1959.

Agriculture.—In the 1958–59 season coffee production amounted to 1,345,000 bags (132.276 pounds each), but prices were down, as were those for the 1958 cotton crop, which totaled 60,000 bales. Farm production in 1958 was generally good, especially for the corn (19 million bushels) and beans (65.9 million pounds) needed for domestic consumption. The output of sugar reached a record 120,000 short tons. Cattle herds, rebuilding since 1955, when the ban against the exportation of beef was lifted, numbered 1,333,000 head. Bananas were adversely affected by a windstorm (March 1, 1959) that caused the destruction of 700,000 stems and forced a downward revision of estimated 1959 sales to 5.3 million. United States aid to Guatemalan agriculture in 1959 included a $5 million credit for rubber production.

Industry.—The industrial production index (1953 = 100) rose from 128 in 1957 to 140 in 1958. In that year production was valued, in millions of quetzales, at 110.1, including shoes and clothing, 19.1; food products, 17.9; chemicals, 9.1; beverages, 6.2; nonmetallic minerals, 6.9; printing and publishing, 1.9; and tobacco products, 2.7. According to preliminary figures from Guatemala's first commercial census (February 1959), 23,106 small stores employed a total of 35,007 persons and did over $40 million worth of business. As the result of progress toward Central American economic integration, facilities of a Guatemalan paper plant and match factory are being expanded, while a tire plant and a paint factory are already exporting their products throughout the area. Among other industrial ventures in 1959 were a kenaf bag manufacturing plant, which received $400,000 from the U.S. Development Loan Fund, and a $1.4 million flour mill.

The 1958 electric power output was estimated at 150 million kw.-hr. On July 25, 1959, the Empresa Eléctrica de Guatemala opened the 12,650-kw. third generating unit of its Laguna thermoelectric plant at Lake Amatitlán, thereby increasing power output in the central zone of the country by 43%.

Mineral Products.—Lead, zinc concentrates, silver, antimony, and chromite are mined. The gross metal value runs to $3 million a year, and the industry gives employment to about 800 persons, not including those employed in the search for oil. That search continues with disappointing results despite the exploration concessions granted (58 as of March 1959), drilling operations underway, and the 50,000 quetzal prize offered by President Ydígoras Fuentes for distribution to the first crew to bring in a well producing in commercial quantities. As of September 1959, no such well had been discovered, although the Ohio Oil Company had found a show of oil at Chinajá, Alta Verapaz, and the Atlantic Oil Company at San Francisco, Petén.

Foreign Trade.—In 1958, Guatemala exported goods valued at $107.4 million, as compared with imports worth $134 million. Coffee sales ($77,502,000) accounted for 75% of the export value, with bananas ($8,808,000), cotton ($5,624,000), essential oils ($1,295,000), and chicle ($928,000) among other leading exports. Imports from the

United States, which totaled $78,523,000, included machinery, vehicles, metals and metal products ($33,264,000); textiles, fibers, and fiber manufactures ($10,489,000); chemical products ($9,577,000); and food products ($6,421,000). In the first 6 months of 1959, Guatemala's exports totaled $61.7 million; imports, $60.3 million.

Principal Events, 1959.—On Jan. 23, 1959, Mexico severed its diplomatic relations with Guatemala as the result of the strafing (Dec. 31, 1958) of three Mexican shrimp boats fishing in waters claimed by Guatemala, and of a charge (denied by Mexico) that a conspiracy to overthrow the Guatemalan government was based in that country. Despite new rumors in March of an invasion plot from Mexico headed by Guatemalan exiles, diplomatic relations between the two countries were resumed on September 15 after months of quiet negotiations. Other rumors of invasion, this time from Cuba, came in April, when Guatemala sent guerrillas to aid Panama in repelling invaders from its soil. On May 20 a state of alert was declared in Guatemala itself after four armed schooners from Cuba had been spotted off British Honduras. Ministers of the five Central American republics and Panama met in Guatemala City on June 4–6 to discuss regional means of checking Communist activities in the area.

July and August were marked by the election of Luis Fernando Galich as mayor of Guatemala City and by renewed leftist contention. Dr. Galich had already won the election on Dec. 7, 1958, only to have it annulled on a legal technicality. On July 5, 1959, he won again, with almost 8,000 votes more than those of his only real rival, the right-wing candidate, Carlos Enrique Guillén Rodas, and was sworn in to office on August 5. On July 21, came the first of a series of bombings when home-made bombs were exploded at the archbishop's palace and the United States embassy. Government investigations led to arrests of left-wing individuals.

On October 9, the government announced the resumption of diplomatic relations with West Germany, ending the state of war that had existed since World War II.

On December 5, in a formal notification presented at a special meeting of the Council of the Organization of American States, the government of Guatemala warned of Cuban support of "Communist and pro-Communist" groups preparing an armed invasion of Guatemala from a Cuban base. Similar uneasiness over mounting leftist influence in Guatemala was evidenced in the December 6 congressional elections. Of the 9 political parties which nominated a total of 185 candidates for the 33 seats at stake, 5 were rightist; the others ranged from moderate leftist to Communist infiltrated. The ruling National Democratic Reconciliation Party won 17 seats; right-wing parties, 9; the leftist Revolutionary Party, 5; and others, 2.

MADALINE W. NICHOLS,
Specialist in Latin American Affairs.

GUEST, Edgar Albert (77), American journalist and writer of verse: b. Birmingham, England, Aug. 20, 1881; d. Detroit, Mich., Aug. 5, 1959. Edgar A. Guest, known in his later years as the "poet of the plain people," was taken from England to the United States in 1891 by his parents, who settled in Detroit. In 1895, after attending public schools in that city, young Edgar was employed by the Detroit *Free Press* as an office boy and, subsequently, as a member of its editorial staff.

Guest's homey verse, published in the *Free Press*, gained wide popularity, and he was soon given a column of his own, first entitled "Chaff,"

WORLD BANK

Straddling the Las Vacas River canyon at Guatemala City, this bridge is part of Guatemala's new Atlantic Highway system, connecting the capital with the Caribbean coast.

then "Blue Monday," and finally "Edgar A. Guest's Breakfast Table Chat." Through these columns, which at the height of their popularity were syndicated in hundreds of newspapers, Guest circulated his homespun philosophy and sentimental rhymes, extolling favorite commonplace verities—the virtues of motherhood, friendship, humility, honest labor, and the like. Few readers doubted his sincerity, but critics were for the most part scornful of the literary merit of his work.

Adding to Guest's income, which at its peak was estimated to be as high as $130,000 a year, were radio and television programs and royalties from numerous collections of his cheerful verses, under such titles as *When Day Is Done* (1921), *Harbor Lights of Home* (1928), and *Life's Highway* (1933).

GUIANA. See BRITISH GUIANA; FRENCH GUIANA; SURINAM.

GUIDED MISSILES. See MISSILES and the Index entry, *Missiles.*

GUINEA. An independent republic on the west coast of Africa. Estimated area, 94,925 square miles; pop. (est. Dec. 31, 1957), 2,504,000, consisting chiefly of the Fullah, Malinké, and Soussou ethnic groups. French is the official language. Chief cities are Conakry (49,200), the capital and main port; and Kankan (24,600) in the eastern interior.

Visiting the United States, Guinea's President Sékou Touré (right) is greeted on Nov. 5, 1959, at U.N. Headquarters in New York City by U.N. Secretary General Hammarskjöld.

WIDE WORLD

Government.—Formerly French Guinea, a territory of French West Africa (q.v.), Guinea was the only French territory to reject the new French Constitution in the referendum of Sept. 28, 1958. By this action, Guinea dissociated herself from the newly emerging French Community (q.v.). The Territorial Assembly (elected in 1957) proclaimed Guinea an independent republic on Oct. 2, 1958, constituted itself a Constituent Assembly, and chose Sékou Touré (leader of the dominant Democratic Party) as head of the first government. The assembly adopted a draft constitution on November 12, terming the government a republic of the presidential type. The president, who is invested with considerable power as head of the state and the armed forces, is elected for a seven-year term by universal suffrage. On November 23, Guinea and Ghana signed an agreement for confederation.

Education and Religion.—In 1958 there were 315 schools with a total of 45,389 pupils (11.5% of the school-age population). Expenditure on education totaled 1,082 million francs CFA, or about 15.6% of the territorial budget. The majority of the population are Moslems.

Finance.—The ordinary budget for the territory totaled 6,328 million francs CFA; the extraordinary budget, 635 million (the franc CFA equals 2 metropolitan French francs). In the period 1947–57, French aid granted under the Economic and Social Investment Development Fund (FIDES) was equivalent to $78.7 million. Following Guinea's withdrawal from the French Community, France announced the cessation of aid. In November 1958, Ghana extended to Guinea a low-interest loan of £10 million.

Transportation.—Guinea's railway extends 414 miles from the port of Conakry to Kankan. The road network totals 4,745 miles (1956), including 1,842 miles of highways and 1,341 of other surfaced roads. The principal airports are at Conakry (of international class) and Kankan.

Production.—Guinea's economy is mainly agricultural and pastoral. Rice, millet, peanuts, bananas, and tropical fruits and vegetables are the principal subsistence crops. Cash crops, which provide a large share of exports, include coffee, bananas, palm kernels and palm oil, pineapples, copal gum, kola nuts, sesame, and tobacco. Cattle raising is important in the elevated Fouta Djallon region. Guinea is Africa's largest producer of bauxite (1957 output: 366,000 metric tons). Rich deposits were recently discovered at Boké and in the Fouta Djallon region, and an international consortium, known as FRIA, has been formed to develop a $133 million project for the mining of bauxite and the production of alumina. Output of iron ore (1,089,000 metric tons in 1957) is as yet relatively small, in comparison with Guinea's vast reserves. Diamonds are also mined.

Foreign Trade.—Guinea's exports totaled 4,875 million francs CFA in 1958; imports, 12,999 million. Chief exports were: green coffee, 10,264 metric tons (1,748 million francs CFA); bananas, 64,908 (1,067 million); palm kernels, 19,371 (502 million); bauxite, 263,667 (337 million); and iron ore, 333,821 (244 million). France purchased 69% of exports and provided 72% of imports.

Principal Events, 1959.—The abrupt cessation of French aid following Guinea's opting for independence, and the unwillingness of other Western powers to vex France by rushing in to fill the gap, gave the Soviet bloc a chance to enhance its prestige in Guinea. As early as late 1958, Communist-bloc technicians and advisers were reported in Guinea, and in March and April 1959 three Communist-bloc ships unloaded cargoes of light arms and agricultural equipment at Conakry. Following a visit to the Soviet Union by a Guinea delegation, an agreement was concluded in Moscow on August 24 for a low-interest Soviet loan of 140 million rubles for technical assistance and economic development.

Guinea's leaders, however, denied that these developments meant Guinea's gravitation toward the Soviet bloc. President Sékou Touré declared that Communist arms aid had been accepted only after a request for aid from the United States had remained unanswered. Touré defined Guinea's attitude as one of "positive neutralism," meaning that Guinea would welcome the friendship of all nations, but would be guided specifically by the principle of emancipation of the peoples of Africa. On January 7, technical and cultural accords were signed in Paris, whereby Guinea continued in the franc zone and retained French as the official language. France granted formal recognition to Guinea on January 15. Later in the year, Guinea accepted gift shipments of rice and wheat from the United States, and on October 26, President Touré arrived in the United States on a two-week official visit. Touré followed his visit to the United States with a tour in November of several European countries, including the USSR, which he visited from November 19 to 27.

In the course of a visit to Guinea by Prime Minister Kwame Nkrumah of Ghana, April 23–May 12, Nkrumah and Touré concluded an agreement on May 1, in Conakry, designed to lay the foundation of a Union of Independent African States. The two leaders envisioned a union whose members would have a common defense policy and a common aim of promoting African self-determination, although each member would retain its own army and conduct its own foreign relations. The agreement also provided for the establishment of a Union Economic Council and a Union Bank.

(See also AFRICA.)

M. J. G.

GUINEA, Portuguese. See PORTUGUESE TERRITORIES.

GUINEA, Spanish. See SPANISH COLONIES.

GYMNASTICS. See SPORTS, GAMES, AND SHOWS.

GYPSUM. See MINERAL PRODUCTION.

HAITI. A republic comprising the western third of the Caribbean island of Hispaniola. Area, 10,714 square miles; pop. (est. July 1, 1958), 3,424,000. Chief cities and populations (1950 census): Port-au-Prince, the capital, 134,117; Cap Haïtien, 24,423; and Gonaïves, 13,634. The population is Negro, with a mulatto minority forming a social elite. Over four fifths of the population is rural. French, the official language, is spoken by a minority, chiefly in the capital. A Creole French is the popular tongue.

Government.—Following the ouster of President Paul Magloire on Dec. 12, 1956, several provisional governments succeeded one another under conditions verging on civil war. On June 14, 1957, a 3-man military junta seized power. Elections held under the junta on Sept. 22, 1957, resulted in the victory of Dr. François Duvalier, the junta-sponsored candidate. A 21-member Senate was elected for a 6-year term, and a 37-member Chamber of Deputies for a 4-year term. Duvalier took office as president on Oct. 22, 1957, the junta relinquishing its power. Leaders of opposi-

tion parties, charging Duvalier's victory was rigged by the army, have gone into hiding or exile. The Duvalier administration dominates the legislature and permits no criticism. Plots against the regime, government counterterrorism, and rule by decree and under states of siege have been the principal features of Haitian political life since 1957.

Education and Religion.—About 89% of the population over 15 years of age was illiterate in 1950. In 1957, urban primary schools had 96,619 pupils; rural schools, 99,639. On the secondary level there were 15 national *lycées*, 20 private schools, and several professional, technical, and vocational schools. The University of Haiti had 982 students in 1957. Many schools are conducted by Roman Catholic teaching orders and Catholicism is the chief religion. Voodoo is widely practiced in rural areas.

Finance.—The 1958–59 budget passed by the legislature in 1958 called for expenditures of about 192 million gourdes (the Haitian gourde equals U.S.$0.20). The economic depression resulting from the poor 1958–59 coffee crop and the fall in world coffee prices made it clear by January 1959 that revenue would be far below even the 1957–58 total of 140.5 million gourdes. The Duvalier government cut government salaries, reduced public works outlays, and undertook other economy measures, but it was largely United States aid which staved off complete bankruptcy in 1959. (See below, *Principal Events.*)

Transportation and Communications.—The National Railroad Company of Haiti operates a 112-mile line from Port-au-Prince to Verrettes; there is also a narrow-gauge line of 75 miles. Roads suitable for motor traffic totaled 1,862 miles (including 225 miles asphalted) in 1954. The Haitian Aviation Corps provides internal air services; foreign lines operate out of Bowen Field, at Port-au-Prince. Telephones number 4,200 (1958); passenger cars, 5,642 (1958); radios, 19,000 (1956); and daily newspapers, 7 (1958; total circulation: 12,000).

Production.—The great majority of the population are impoverished peasants, subsisting on small, primitively tilled farms. Maize (corn), rice, peas and beans, manioc, yams, mangoes, and avocados are the main food crops. Coffee is the chief cash crop, and yearly variations in yield and price levels exert a decisive effect on the economy as a whole. Exportable coffee output in 1958–59 totaled 300,000 bags (132.3 pounds each), far below the 550,000 of 1957–58. Sugar production in 1958–59 was estimated at 60,000 short tons (prelim.), about half of which was for export; cocoa beans, 4 million pounds (1958–59); sisal, 60 million pounds (est. 1958). Minor cash crops include castor beans, essential oils, bananas, and cotton.

Manufactures are on a small scale and include cement, cotton goods, edible oils, lard, soap, flour, kitchenware, pharmaceuticals, and sisal and straw products. Bauxite is mined by an American firm, and copper ore by a Canadian company. American tourist spending, an important source of income, approximated $7,114,000 in the year ending Sept. 30, 1958, down about 8% from the preceding year.

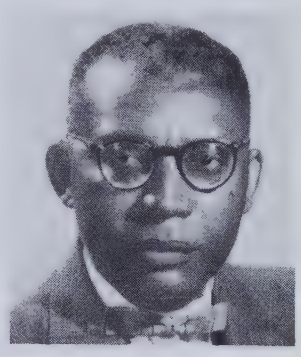
Foreign Trade.—Exports in 1958 totaled 197.1 million gourdes; imports, 202.5 million. Chief exports and values were: coffee, 145.5 million gourdes; sisal, 26.6 million; and sugar, 4.0 million. Over 60% of Haiti's imports come from the United States. Haiti's principal customers are the United States, Belgium, France, and Italy.

Principal Events, 1959.—The extremely poor 1958–59 coffee crop, the fall in world prices of coffee and sisal, and the decline in income from tourism resulted in a severe economic depression beginning in late 1958. Drought cut sugar and sisal output in 1959, and in some areas—as at Jean-Rabel, on the northwest coast—meant famine and death for hundreds of persons. Special food shipments were sent to distressed areas by the Catholic Welfare Service and the Church World Service. To help meet Haiti's budget and balance-of-payments deficits for the period February–September, the United States made available up to $6 million in Mutual Security funds. On May 28, Haiti signed an agreement to receive $4.3 million from the U.S. Development Loan Fund for the completion of the Artibonite Valley project, and on September 23 a $3 million loan was approved by the fund for the completion of a sugar mill project near Cap Haïtien.

Conditions of political insecurity were aggravated by the economic crisis and the general Caribbean unrest. Following the success of the Cuban revolution under Fidel Castro, Haitian leaders in exile, particularly former Senator Louis Dejoie, began broadcasts from Cuba against the Duvalier regime. On April 11, Clément Jumelle, an opposition leader in hiding from Duvalier, died in asylum at the Cuban embassy in Port-au-Prince, and Haitian police seized the body to prevent an antigovernment demonstration at the funeral. Duvalier suffered a near-fatal coronary occlusion on May 25 and was unable to resume his duties until July 6. During this time, rumors were rife of an impending uprising or invasion. The bombing of a government-run gambling casino on June 14 was followed by widespread arrests and the redoubling of the administration's watchdog efforts.

The anticipated invasion came on August 13, when a group of 31 armed men landed at Les Irois, on the southwest peninsula. The rallying of the population against Duvalier, which the sponsors of the invasion apparently counted on, failed to materialize, and the small band was wiped out by Haitian Army forces within a few days. The Haitian government, charging that the invaders had come from Cuba and were mostly members of the Cuban revolutionary army, called for an investigation by the Organization of American States (q.v.).

One of the results of the government's repressive policy was a rift with the church. On August 18 the government ordered the deportation of two French Roman Catholic priests for alleged antigovernment activities. A mass prayer on behalf of the priests in Notre Dame Cathedral was dispersed with considerable brutality by the police. On August 20, Msgr. François Poirier, archbishop of Port-au-Prince, was ordered arrested for having criticized the government in the matter of the priests' expulsion. The arrest order was suspended, however, on August 21.



François Duvalier, president of Haiti, whose regime was subjected to new pressures in 1959.

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President Duvalier on October 9 ousted six senators critical of his regime on charges of plotting to overthrow the government. Elections to fill the vacant seats were held on November 15.

M. J. G.

HALIFAX, Earl of (Edward Frederick Lindley Wood) (78), British statesman: b. Powderham Castle, near Exeter, England, April 16, 1881; d. Garrowby Hall, near York, England, Dec. 23, 1959. The first Earl of Halifax served his country for 36 years under seven prime ministers. He was Britain's foreign secretary in the explosive years 1938–40 and ambassador to the United States from January 1941 through World War II until May 1946.

A graduate of Eton and of Oxford University's Christ Church College (B.A. 1903) and All Souls College (M.A. 1906), he was elected in 1910 to the House of Commons, where he served until 1925. During these years he also held posts in the ministry of national service and the colonial service and was president of the Board of Education (1922–24) and minister of agriculture (1924–25). From 1926 to 1931, as the first Baron Irwin of Kirby Underdale, he was viceroy and governor general of India. Thereafter he was again president of the Board of Education (1932–35), secre-

tary of state for war (1935), and lord privy seal (1935–37). He became the third Viscount Halifax in 1934, on his father's death.

In February 1938, on the resignation of Anthony Eden as foreign secretary, Halifax was named to that post by Prime Minister Neville Chamberlain. He worked with Chamberlain in the vain attempt to prevent war, then became an equally ardent supporter of Britain's war effort. Winston Churchill, who succeeded Chamberlain as prime minister, named Halifax ambassador to the United States in January 1941. In the months before Pearl Harbor, he had to conduct delicate negotiations for United States aid to the British war effort in an atmosphere of uncertainty and occasional hostility. By the end of his ambassadorial service, during which he visited every state in the Union, he was a widely respected friend. His services were recognized by King George VI with the earldom of Halifax in 1944 and the Order of Merit in 1946.

Lord Halifax stepped out of public life in 1946. He toured the United States once more in 1951, in behalf of the Commonwealth Fund. His memoirs, *The Fullness of Days,* appeared in 1957.

HALLECK, Charles Abraham, U.S. congressman: b. Demotte, Ind., Aug. 22, 1900. On Jan. 6, 1959, Indiana's Republican representative was elected minority leader of the House of Representatives in the 86th Congress. Taking over leadership of a Republican contingent badly outnumbered (283–152) by the largest Democratic majority in 20 years, Halleck led House Republicans in a strong minority performance. Summing up the first session as it closed, on Sept. 13, 1959, New York *Times* correspondent John Morris wrote: "Particularly in the House of Representatives, the depleted Republican minorities fought [Eisenhower's] causes with an effectiveness far beyond their numerical potential." He attributed their success largely to Halleck's "rise . . . as Republican leader of the House and as a powerful voice in White House councils."

There was a solid background for this successful performance. Both of Halleck's parents were lawyers, and his father served two terms in the Indiana Senate. A Phi Beta Kappa graduate of the University of Indiana (B.A. 1922) and top man in his law school class there (LL.B. 1924), Halleck served 10 years as a state prosecuting attorney before being elected, in 1935, to the House of Representatives. In his 24-year career in the House, he was twice floor leader under Speaker Joseph W. Martin, Jr., of Massachusetts, whom he succeeded as Republican House leader. He developed a single-minded devotion to the Republican Party that enabled him to move without losing stride from a pre-World War II isolationism to his subsequent position as a stanch supporter of the "liberal Republican" policies of President Eisenhower.

HALSEY, William Frederick, Jr. (76), American naval officer: b. Elizabeth, N.J., Oct. 30, 1882; d. Fishers Island, N.Y., Aug. 16, 1959. As commander of powerful naval forces in the Pacific during World War II, he unleashed a series of far-ranging strikes against the Japanese which exacted an enormous toll in enemy personnel, ships, and planes. His great contribution to the science of naval warfare was in the development of the carrier task force, a weapon he used with imagination and daring.

The son of a naval officer, Halsey attended the University of Virginia before entering the Naval Academy in 1900. While at Annapolis he distinguished himself primarily as a football player. (Some say the nickname "Bull" originated here; at any rate, it was an epithet which Halsey disliked.) After graduation in 1904, he rose steadily through the ranks. In World War I he commanded a destroyer force based in Ireland, and he later served in the Pacific, in the Office of Naval Intelligence, and as naval attaché in European posts. In 1926 he became executive officer of the battleship *Wyoming,* and from 1932 to 1934 studied at the Naval War College and the Army War College. A firm believer in naval airpower, he qualified as a naval aviator at the age of 52 and subsequently was given commands of the carrier *Saratoga* and the Pensacola (Fla.) Naval Air Station. Becoming a rear admiral in 1938, he was appointed vice admiral two years later and placed in command of a carrier division.

When the Japanese struck Pearl Harbor on Dec. 7, 1941, Halsey was returning from Wake Island at the head of a carrier task force, the only naval unit operating under battle conditions at that time. Two months later Halsey, in his beloved flagship, the carrier *Enterprise,* launched the first

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William F. Halsey (1882–1959)

counterattack against the Japanese when he led a task force against enemy-held islands in the Marshalls and the Gilberts. In October 1942 he became tactical commander of the South Pacific theater, and in the following month he engaged a Japanese fleet in a major sea battle off Guadalcanal, sinking at least 23 ships and breaking the enemy's momentum in the Solomons. He was promoted to full admiral on Nov. 18, 1942.

For the next two years Halsey mounted a bold and aggressive campaign against the Japanese Navy. His plan of battle was direct and characteristic: "Hit hard, hit fast, and hit often." By the time of his appointment as head of the powerful Third Fleet on June 17, 1944, the tide of battle in the Pacific had turned, due in large measure to the staggering losses his daring forays had inflicted upon the adversary. (In the last five months of 1944 alone, the Third Fleet destroyed 7,315 planes, 90 warships, and 2 million tons of merchant and transport vessels.) The most notable of the late-1944 exploits were the admiral's decimating attacks on the Japanese in the Battle for Leyte Gulf (October 22–27) and an engagement off Cape Engaño (October 25), both in support of the recapture of the Philippines. As the enemy weakened, Halsey pressed the offensive relentlessly, delivering powerful blows in the Ryukyus, Taiwan (Formosa), South China, and other areas leading to and finally including the enemy homeland. On Sept. 2, 1945, the World War II hero witnessed the formal surrender of Japan aboard his flagship, the battleship *Missouri.*

Raised to the five-star rank of fleet admiral on Dec. 11, 1945, Halsey retired from the Navy on April 1, 1947, and the following year entered a

business career. He served as an officer in a number of firms, including subsidiaries of the International Telephone & Telegraph Corporation.

HAMMARSKJÖLD, Dag Hjalmar Agne Carl, secretary general of the United Nations: b. Jönköping, Sweden, July 29, 1905. Although the international scene in 1959 proved to be relatively free of explosive incidents, such as the Lebanon and Quemoy crises of the previous year, Hammarskjöld traveled widely for discussions with world leaders on a number of serious problems, including Germany, the Middle East, and Laos (qq.v.).

The son of Sweden's World War I premier, Knut Hjalmar Hammarskjöld, he was educated at the universities of Uppsala and Stockholm and subsequently held financial posts in the Swedish government. He took part in various post-World War II international conferences, and in 1949 became undersecretary of state in Sweden's Ministry of Foreign Affairs. While serving as deputy foreign minister and as head of the Swedish delegation to the United Nations, he was appointed in 1953 as secretary general of the United Nations. He began his second five-year term in that post on April 10, 1958.

Hammarskjöld started the year 1959 on a January tour of the Middle East, aimed at reducing tensions between Israel and her Arab neighbors. The continued refusal of the UAR to permit Israeli ships or cargoes through the Suez Canal, and Jerusalem's vehement protests, prompted Hammarskjöld to return to the area for a conference in Cairo with President Nasser on July 1. The secretary general failed to persuade Nasser to relax the ban against Israeli shipping, and his later compromise plan, which would have opened Suez to Israeli cargoes carried in foreign-owned vessels, was summarily rejected by the Ben-Gurion government on August 13.

Returning from a four-week tour of nine Asian capitals (in Burma, Thailand, Laos, Cambodia, Malaya, India, Pakistan, Nepal, and Afghanistan), the secretary general stopped off in the Soviet Union to meet with Premier Khrushchev on March 27 at the Black Sea resort of Sochi. It was assumed that their discussions included the Berlin dispute which then held the center of world attention. Before convening the meeting of the Big Four foreign ministers in Geneva on May 11, he offered the U.N. Security Council as a forum for the negotiators, should the conference fail to reach accord on the Berlin issue and on the larger question of German reunification. Hammarskjöld announced (May 21) his opposition to the stationing of a United Nations military garrison in the divided city, but said (July 23) that he was prepared to dispatch an observer group there if so requested by the occupying powers.

Despite Soviet objections, Hammarskjöld visited Laos on November 12–19, where a United Nations subcommittee earlier had investigated Laotian charges that Communist rebels from North Vietnam had invaded her territory. He named a personal representative to survey the situation and to advise him on what assistance the United Nations might extend to that country.

In the introduction to his annual report to the General Assembly, made public on September 2, Hammarskjöld presented his views on the growing tendency of nations to conduct negotiations outside United Nations auspices. Although he approved the principle of private diplomacy without the fanfare of public debate, he advised the major powers against reaching bilateral agreements which might be prejudicial to the smaller nations. The United Nations, he asserted, must continue to hold "primary responsibility" for dealing with situations which threaten world peace. (See also UNITED NATIONS.)

HANDBALL. See SPORTS, GAMES, AND SHOWS.

HARNESS RACING. See SPORTS, GAMES, AND SHOWS.

HAWAII. Admitted to the Union on Aug. 21, 1959, Hawaii is a large archipelago of volcanic origin lying in the Pacific Ocean 2,090 nautical miles southwest of San Francisco. The "Aloha State" constitutes the newest and southernmost of the United States and ranks 44th in population (597,910 civilians as of July 1, 1959, and approximately 43,000 military personnel) and 47th in area (6,406 square miles of land and 16 of inland water). Honolulu (pop., 321,583), on Oahu, is the capital, largest city, and principal port.

Area and Population.—The eight major islands of the state and their areas and populations are as follows:

Island	Land area (sq. mi.)	Population (July 1, 1959)
Hawaii	4,021	59,996
Maui	728	35,364
Oahu	589	466,402
Kauai	551	27,725
Molokai	259	5,909
Lanai	141	2,267
Niihau	72	247
Kahoolawe	45	0

The population is of diverse racial extraction and is characterized by a high ratio (about one third) of intermarriages between the various ethnic stocks. Persons of Japanese and Caucasian origin constitute the two largest groups; others include full-blooded Hawaiians, Chinese, Filipinos, Koreans, Puerto Ricans, and Samoans. Approximately 97% of the entire population are United States citizens.

In addition to the 8 major islands listed above, the state includes the Leeward Islands (except Midway), a chain of small islands, shoals, and reefs extending some 1,250 miles northwestward from Niihau and forming the Hawaiian Islands Bird Reservation, almost uninhabited (except for a few Coast Guard and other official personnel). The Leeward group includes the following: Nihoa, Necker, French Frigate Shoal, Gardner Pinnacles, Maro Reef, Laysan, Lisianski, Pearl and Hermes Reef, and Kure (or Ocean) Island. Other small bodies of land within the archipelago which may be exposed at low tide are deemed part of the state.

Palmyra Island (area about 1 square mile), formerly part of the Territory of Hawaii, was excluded from the jurisdiction of the state under the statehood act.

Government Structure.—The governor and lieutenant governor (not necessarily of the same political party) are elected for four-year terms. The only major units of local government are the three counties of Maui, Kauai, and Hawaii, and the city-county of Honolulu, each governed by an elected board (and, in Honolulu, by a mayor). Most major functions of government, including education, are exercised by the state.

Chief state officers in 1959 were:
Governor: William F. Quinn (Republican)
Lieutenant Governor: James K. Kealoha
Attorney General: Shiro Kashiwa
Superintendent of Public Instruction: Walton M. Gordon
Budget Director: Paul J. Thurston
Chief Justice, Supreme Court: Wilfred Tsukiyama

Constitution and Judiciary.—Hawaii's constitution was drafted in 1950 and ratified by the people twice—on Nov. 7, 1950, by a ratio of 3 to 1 and on June 27, 1959, by 17 to 1. It is relatively brief (11,400 words) and, within an overall spirit of conservatism, incorporates the better provisions of recent constitutional formulations. For example, it is a "short ballot" constitution, limiting elective offices to the governor, lieutenant governor, and legislators; all other officials are appointed either by the governor or, as in the case of the University of Hawaii president, by a governing board appointed by the governor. Decennial reapportionment of the legislature is required, and any citizen may seek a court injunction to compel the governor to fulfill this constitutional duty. Revision of the constitution must also be considered every 10 years. The right to organize is guaranteed to persons in public and private employment.

An anomaly of the constitution, expanded upon in the statehood act, denies the state power to make basic changes in the Hawaiian Homes Commission Act without approval by the U.S. Congress. This measure, enacted by Congress in 1920, makes homesteads available to Hawaiians (50% or more Polynesian blood) at $1 annual

rentals under 99-year leases, and provides for low-cost loans.

The state's judiciary is headed by a 5-member Supreme Court and also includes 11 Circuit Court judges and a tax appeal court, all appointed by the governor, and district court magistrates, appointed by the chief justice of the Supreme Court. As a state, Hawaii continues in the ninth district of the federal court system, but with the jurisdiction of its own Supreme Court considerably enlarged by virtue of statehood.

Legislature.—The first state legislature was elected on July 28, 1959, according to the schedule set by the congressional act admitting Hawaii to statehood. To the state House of Representatives were elected 33 Democrats and 18 Republicans (identical to the division of the last territorial legislature), but the Republicans gained control of the Senate, 14 to 11. At the same time, Hawaii elected Oren E. Long (Democrat) and Hiram L. Fong (Republican) to the U.S. Senate and Daniel K. Inouye (Democrat) to the U.S. House of Representatives. After the 1960 apportionment of Congress, Hawaii is expected to receive a second seat.

The last territorial legislature, which met in February through May 1959, prepared for statehood by making necessary changes in the election laws, setting the salaries of the governor, judges, and other state officers, adopting a state seal, and taking other actions. It also created an interim committee to recommend an administrative structure whereby more than 80 territorial agencies would be reorganized under no more than 20 principal departments, as required by the state constitution.

A reorganization plan was submitted to the state legislature, which met in special session on Aug. 31, 1959. After amendment, it was unanimously approved by the lower house, but rejected by the Senate, and the legislature adjourned on October 31 without having effected reorganization. The governor thereupon called the legislature back into a second special session, beginning November 9, again to attempt reorganization. On November 14 the legislature successfully completed action on the reorganization bill, which creates 18 departments instead of the former 80.

Finance.—Hawaii has a centralized system, wider in scope than most mainland states. Chief revenue sources are the general excise (a comprehensive turnover) tax; personal and corporate income taxes; gasoline, liquor, and tobacco taxes; and a real property tax collected by the state for the counties. The net assessed valuation of real property for the calendar year 1959 was $1,152 million. The average property tax was $15.45 per $1,000 of assessed value.

During the fiscal year ended June 30, 1959, state receipts (general and special funds) totaled $199,468,000; payments totaled $164,046,000. State bonded indebtedness was $97,595,000 on June 30, 1959; the General Fund then had a balance of $18,630,000.

Banking.—Six banks, operating 70 branches, had total deposits of $616,510,000 and total assets of $666,138,000 on June 30, 1959.

Education.—Compulsory education for children between 6 and 16 years of age, inclusive, is centrally administered by the state Department of Public Instruction. Expenditures for public instruction during the fiscal year 1958–59 approximated $40 million for a program administering to 208 public schools with an enrollment of 135,088 and a teaching staff of 5,900. Ninety-five private schools, with classes ranging from kindergarten to 12th grade, enrolled 28,699 pupils.

Five colleges were in operation in 1959, four on Oahu and one on the island of Maui. The University of Hawaii, a land-grant college (founded 1907), with campuses at Honolulu and Hilo, had a student enrollment of 7,505 and a professional staff of 663 during the academic year 1958–59.

Social Welfare.—During the fiscal year 1958–59 the state Department of Public Welfare expended $6,500,000, exclusive of administrative costs, for public assistance programs. Slightly less than half of these costs were borne by the federal government under national social welfare laws.

Transportation and Communications.—Honolulu is a regular port of call for several steamship lines, connecting the islands with the United States mainland and with Canada, Australia, the Philippines, China, and Japan. During the year ended June 30, 1959, 1,243 overseas vessels entered the port of Honolulu with 3,677,000 tons of cargo and cleared with 2,422,000 tons. Freighters, barges, and a limited ferry service provide transportation between the islands, but almost all passenger travel (696,000 interisland trips in 1958) is by air, with 4 airlines and 13 airports serving the state. Seven major and 4 supplemental airlines connect Hawaii with the United States west coast, Canada, Australia, and the Far East, carrying 456,000 overseas passengers in 1958. Late in 1959, jet air travel was begun, which reduced flying time between Hawaii and California to 4½ hours. Earlier in the year, ground was broken at Honolulu International Airport for a $23 million jet airfield.

In 1959 approximately 180,000 passenger motor cars were locally registered. Interisland communications, as well as communications with the continental United States, are facilitated by radiotelephone service. Wireless telegraph service is maintained between the 6 largest Hawaiian is-

(*Left*) President Eisenhower, flanked by Vice President Nixon (left) and House Speaker Sam Rayburn, reaches for one of 12 pens which he used to sign proclamation admitting Hawaii to the Union as the 50th state, August 21. Other witnesses are (from left) Lorrin P. Thurston, Hawaii Statehood Commission chairman; Edward E. Johnston, former secretary of the territory; Interior Secretary Fred A. Seaton; David W. Kendall, special counsel to the president; Senator-elect Oren E. Long and Representative-elect Daniel K. Inouye, both of the new state. (*Right*) Gov. William F. Quinn, who was sworn in the same day, signs Hawaiian statehood documents in Honolulu. Observing the ceremony are Senator-elect Hiram L. Fong (left) and Lt. Gov. James K. Kealoha. Hawaii and Alaska are the first new states since New Mexico and Arizona entered the Union in 1912.

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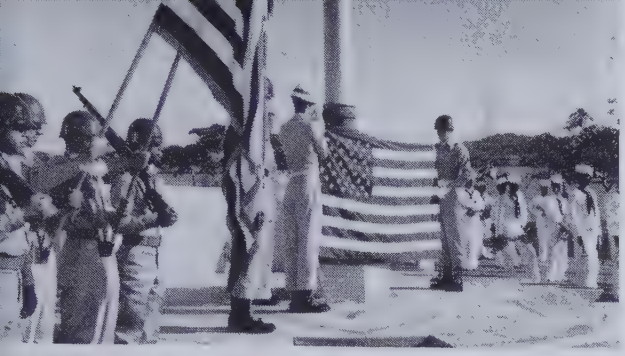

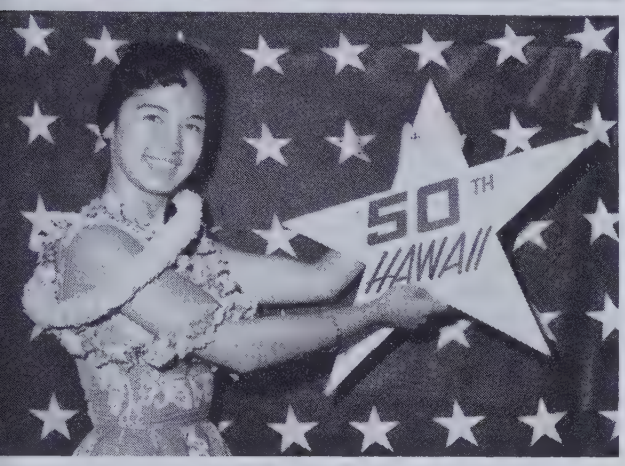

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(*Top left*) New 50-star flag is unfurled at national cemetery in Honolulu, August 21, the day Hawaii became a state. (*Lower left*) Miss Hawaii of 1959, Gordean Leilehua Lee, celebrates the new state's admission to the Union. (*Above*) Banner headline of Honolulu newspaper proclaims congressional approval of the Hawaiian statehood bill, March 12.

lands, and underseas cables connecting Point Reyes, Calif., and Oahu provide telephone connections to the mainland of North America.

Other communications facilities in 1959 included 185,000 telephones; 15 commercial and 1 noncommercial radio stations; and 3 television stations in Honolulu, with 4 satellite stations on other islands. Six daily newspapers are published in Honolulu (2 in English, 2 in Chinese, 2 in Japanese and English); the other three counties are each served by one English newspaper. Twelve other newspapers and 10 magazines were published in the state in 1959.

Industry.—The production of cane sugar and the production and processing of pineapple, both highly mechanized, are the two most important industries in Hawaii. The combined value of these two crops for 1958 ($106 million for sugar, $124 million for pineapple) constituted about 83% of total agricultural income. In 1958 (all sugar plantations were on strike for 4 months during that year), 221,683 acres of sugarcane were cultivated, producing 765,000 short tons. During 1959, 27 plantations and about 2,000 independent planters employed 15,200 workers (September). For the crop year ending May 1958, pineapple products totaled 27,270,000 cases of canned fruit and juices. The industry employed 12,620 persons (September 1959). Coffee production for 1958 was estimated at 7,248 tons, valued at $7.2 million. Animal products for 1958 had a value of approximately $31 million, and the fish catch for the year was estimated at almost $3 million.

An expanding tourist industry in 1958 brought to Hawaii 171,588 visitors who spent about $82 million in the state.

Construction in 1958 continued at a peacetime high, the value of completed buildings and other improvements aggregating $175 million.

Labor.—The labor force for all industries in September 1959 was estimated to be 224,000. Aside from workers on sugar and pineapple plantations, agriculture employed 12,990 persons. Manufacturing of food, textiles, chemicals, and miscellaneous commodities gave employment to 25,310. Wholesale and retail trade employed 38,960. The largest union is the International Longshoremen's and Warehousemen's Union, which has organized the sugar and pineapple industries, as well as longshore operations. There are also locals of the AFL-CIO and of independent unions in the state.

The largest single employer in the state, the federal government, employed 26,050 civilians plus approximately 43,000 military personnel as of September 1959. In the same month 19,930 persons were employed by state and county governments. In all, government jobs comprised about one fourth of total employment.

Unemployment in 1959 averaged about 3.2% of the labor force. Unemployment benefit payments in the fiscal year 1959 aggregated $3,800,000. Since 1957, and uniquely among the states, Hawaii's employment security program has included agricultural workers.

Economic Level and Balance of Payments.—Hawaii's gross product (aggregate value of all goods produced and services rendered) in 1958 was estimated at $1,400 million. Personal income totaled $1,154 million, with per capita income during 1958 amounting to $1,852—an average which ranked Hawaii 29th among the states, excluding Alaska.

The state's balance of payments for 1958 showed, for the seventh consecutive year, an excess of income from the mainland and other areas ($857 million) over expenditures going outside the state ($822 million). Federal expenditures, mostly military, amounted to $421 million, or almost half of the mainland dollars received by the state's economy; payments (tax and other) to the federal government totaled $191 million.

Principal Events, 1959.—The achievement of statehood distinguished 1959 in Hawaii's history. For more than a century, Hawaii had sought en-

trance into the Union as a state, particularly after 1898, when the Republic of Hawaii voluntarily brought about its annexation to the United States as an organized territory, with an elective legislature but under a governor and judiciary appointed by the president. Beginning in 1919, statehood bills were introduced before the U.S. Congress. Twenty-two times congressional committees held hearings on Hawaiian statehood in Washington or Honolulu.

Despite overwhelming evidence of Hawaii's political maturity and economic development, a variety of obstacles delayed admission. One was reluctance to give statehood to an area noncontiguous with the other states. There was a disinclination to expand the membership of the U.S. Senate, particularly for a tiny area with a small population. Despite its recent voting record, Hawaii was sometimes stereotyped as being Republican, and therefore its statehood aspirations were linked with those of Alaska's, since that territory had been typed as Democratic. Combining in a single bill statehood for both territories, as in 1954 and 1955, joined the opponents of statehood for either. Underneath many voiced objections to Hawaii probably lay unvoiced apprehension about admitting into the Union a state of such mixed ethnic composition.

The way for Hawaiian statehood was cleared in 1958 when Congress voted to admit Alaska. Hawaii leaders, particularly Delegate Jack Burns, worked diligently for Alaskan statehood, understanding that its admission would in itself answer most of the objections to Hawaiian statehood.

The effect was expected; the remarkable speed was not. On March 11, 1959, the U.S. Senate voted (76–15) to admit Hawaii, and the next day the House passed the bill (323–89). President Eisenhower on March 18 signed the measure which granted statehood to Hawaii under its 1950 constitution, modified by Congress in only a few minor respects.

The first state elections were held on June 27 (primaries) and July 28 (general). At the primary election, by a vote of 132,938 to 7,854, voters approved the state constitution and the conditions of admission; the latter related to exclusion of Palmyra Island and the disposition to the state of federally held land. Statehood became official on August 21, when the president signed a proclamation admitting Hawaii as the 50th state. William F. Quinn, the state's first governor, was formally inaugurated on August 29, five days after Hawaii's representatives in the U.S. Congress (see above, *Legislature*) took the oath of office in Washington.

Nature added to the year's excitement. Eruptions of Kilauea Iki, some 30 miles from Hilo on the island of Hawaii, began on November 14 and continued for weeks. (See also GEOLOGY.) Earlier, on August 6, another natural phenomenon, Hurricane Dot, battered the island of Kauai.

Even during the first months of statehood, its stimulus was felt in many ways. At the 1959 elections some 95% of registered persons voted, compared with ratios of 80% to 85% in recent years. During August and September alone, as many persons were naturalized in Hawaii as during the entire preceding year. The tempo of tourism, of business investment, and of economic development generally, was markedly increased. With statehood, a boom was on in Hawaii during 1959.

ROBERT M. KAMINS,
Administrative Assistant to U.S. Sen. Oren E. Long of Hawaii.

HAY. The crop of hay harvested in the United States in 1959 totaled 112.8 million tons, according to the U.S. Department of Agriculture. This yield was 7% less than the record 1958 crop of 121.8 million tons but still 5% above the 1948–57 average. Production by kinds in 1959, in millions of tons, was estimated as follows: alfalfa and alfalfa mixtures, 64.7; clover, timothy, and clover mixtures, 22.1; wild, 8.9; grain, 4.4; lespedeza, 4.4; soybean, peanut, and cowpea, 1.1; and other varieties, 7.1. The 1959 crop was cut from 69.4 million acres yielding an average of 1.62 tons per acre.

HAYWARD, Susan (real name EDYTHE MARRENER), American motion picture actress: b. Brooklyn, N.Y., June 30, 1919. She received the best actress award of the Academy of Motion Picture Arts and Sciences on April 6, 1959, for her highly emotional performance in *I Want to Live!*, a film based on the life of Barbara Graham, who was condemned for murder and executed in California in 1955. Similar recognition was bestowed on Miss Hayward by the New York Film Critics Circle in 1958, and she also won the best actress award at the 1956 Cannes International Film Festival for her portrayal of Lillian Roth in *I'll Cry Tomorrow*.

After attending high school in Brooklyn, she became a photographer's model. Her picture on the cover of a national magazine in 1939 attracted the attention of movie talent scouts, and she was called to Hollywood. She played minor roles in a number of films, beginning with *Beau Geste* in 1939, and first won critical acclaim for her portrayal of a vixen in *Adam Had Four Sons* (1941). Her later films included *I Married a Witch* (1942), *Reap the Wild Wind* (1942), *And Now Tomorrow* (1944), *The Hairy Ape* (1944), *The Saxon Charm* (1948), *Tap Roots* (1948), *David and Bathsheba* (1951), *The Snows of Kilimanjaro* (1952), *The President's Lady* (1953), *Demetrius and the Gladiators* (1954), and *Thunder in the Sun* (1959).

Susan Hayward, in the role of Barbara Graham in *I Want to Live*, for which she won the 1959 Academy Award for best actress.

UNITED ARTISTS

Her portrayal of Barbara Graham was the fifth of Miss Hayward's roles to be considered formally for Hollywood's highest accolade. She had received Academy Award nominations for *Smash-Up* (1947), *My Foolish Heart* (1949), *With a Song in My Heart* (1952), and *I'll Cry Tomorrow* (1955).

In 1944, Susan Hayward was married to actor Jeffrey (Jess) Barker, by whom she had twin sons and from whom she was divorced in 1954. On April 26 of the following year she was found suffering from an overdose of sleeping pills—an apparent suicide attempt, according to the police. She was married to Floyd Eaton Chalkley in 1957.

HEALTH, Public. See PUBLIC HEALTH.
HEALTH INSURANCE. See INSURANCE.
HEARING. See DEAFNESS.

HEART DISEASE. Cardiovascular Surgery.—It has been shown in recent years that strokes may be caused by obstruction in the chest or neck of the large arteries which supply blood to the brain. A major breakthrough in the treatment of strokes due to this cause has been made by Michael E. DeBakey and associates at the Baylor University College of Medicine, Houston, Texas. They have been able to relieve paralysis in many of these patients by removal of the obstructing clot or by insertion of grafts to bypass the obstruction.

According to C. E. Drew and Ian M. Anderson, of London, England, profound body cooling with bypass of blood around the heart may permit surgical correction of heart defects that are otherwise virtually inoperable. In one case, the patient's mouth temperature was lowered to 15°C. (59°F.) by cooling the blood in a circuit outside the body. Hypothermia (body cooling) has also been used to prevent brain damage after resuscitation from cardiac arrest. Cooling lowers the brain requirement for oxygen, thus minimizing injury due to impaired blood supply.

Andrew Thevenet, Paul C. Hodges, and C. Walton Lillehei of Minneapolis, Minn., have been able to control Stokes-Adams syndrome (recurrent loss of consciousness due to cardiac stand-still) by electrical stimulation of a wire electrode inserted through the chest wall into the muscular wall of the heart. Since the electrode needs only very low voltage, the disadvantages of an external pacemaker—such as muscular twitching of the chest, chest pain, and skin ulceration—are avoided, and stimulation may be maintained for weeks or months if necessary. A small (1 by 2 by 4 inches) lightweight transistorized pacemaker with a self-contained battery may be worn by the patient.

Hypertension-Arteriosclerosis.—Great interest continues in the prevention and treatment of arteriosclerosis, the chief cause of coronary thrombosis with myocardial infarction and of strokes. Vigorous differences of opinion still exist as to the influence of diets with a high content of fat of animal origin. Continued studies of the effects of unsaturated fats in the diet have shown that these substances tend to lower high levels of blood cholesterol, especially if they are used to replace saturated fats. Several commercial preparations of margarine containing principally unsaturated fat are now available and can be used in place of butter and other foods containing principally saturated fats.

Vigorous research is progressing in the use of drugs which reduce cholesterol blood levels, probably by interfering with the formation of an intermediate substance within the liver. Such a drug (laboratory code MER-29) is under investigation, as to its value and toxicity, by the Wm. S. Merrell Company.

Irvine H. Page and Harriet P. Dustan, of the Cleveland (Ohio) Clinic, have studied a new antihypertensive drug, guanethidine, which differs from other blood pressure-lowering drugs in chemical structure and mechanisms of action. Tested in a small group of patients, it appeared to be an effective agent, with mild diarrhea as the principal untoward effect.

Several new drugs have become available for the treatment of high blood pressure and dropsy. These compounds are chemical modifications of chlorothiazide, the very valuable drug introduced in 1958. Early studies suggest that the newer drugs have certain advantages over the parent compound, but more extensive trials will be needed to establish their value.

Jerome W. Conn and coworkers at the University of Michigan reported that a synthetic steroidal spiralactone (SC 8109) was helpful in treatment of swelling associated with heart failure. It apparently acts in part by blocking the water- and salt-retaining action of aldosterone, an adrenal hormone which is produced in excessive amounts in congestive heart failure.

An exciting new approach to the treatment of clots in arteries and veins has been suggested by clot-dissolving substances (fibrinolysin). A fibrinolysin (plasmin) prepared from human blood has been made commercially available. It is said to be useful in the treatment of phlebitis (blood clots forming in veins), and in pulmonary embolism caused by detachment of these clots. Experimental studies in animals suggest that fibrinolysin may be effective in treating occlusion of coronary arteries by blood clots, but clinical application awaits further study in coronary occlusion in man. (See also SURGERY.)

Other Studies.—A report by Harold F. Dorn, of Bethesda, Md., summarized the mortality statistics of nearly 200,000 United States government life insurance policyholders for the period from July 1954 to December 1956. Although the death rate was greater among heavy cigarette smokers, the death rate among regular cigar and/or pipe smokers was not appreciably higher than in nonsmokers. No indication was found that regular cigar and pipe smokers experience a higher death rate from cardiovascular disease than nonsmokers, although the death rate from these diseases is higher among heavy cigarette smokers.

Myers Friedman and Ray H. Rosenman, of San Francisco, Calif., reported on a study of the effects of continuous emotional drive in a group of 212 men. Coronary artery disease was found to be seven times as prevalent among men trying to excel economically and socially as in men not under such habitual stress.

(See also ENDOCRINOLOGY; MEDICINE.)

JOHNSON MCGUIRE, *Director, Cardiac Laboratory, and Professor of Medicine; and* ARNOLD IGLAUER, *Assistant Professor of Medicine, College of Medicine, University of Cincinnati.*

HEATING. See Index entry.

HEBRIDES, THE, or **WESTERN ISLANDS.** These 500 or more islands (aggregating 2,812 square miles) form an archipelago off Scotland's west coast and are part of the Scottish counties of Inverness, Argyll, and Ross and Cromarty. Diminished by emigration, the population was 53,000 in 1951. The islands are in two groups: the Inner Hebrides (among them Skye, Mull, Islay, Jura, Coll, Rum, Tyree, and Colonsay); and the Outer Hebrides, of which the principal islands are Lewis with Harris (1951 pop., 26,465), Barra, North Uist, Benbecula, and South Uist. The latter three islands have been designated as sites for the testing of guided missiles. Oats, barley, and potatoes are grown as subsistence crops. Sheep raising and the weaving of tweeds and other woolens are principal industries. Fishing has recently declined in importance.

HEENEY, Arnold Danford Patrick, Canadian government official: b. Montreal, Quebec, April 5, 1902. Canada's former ambassador to the United States (1953–57) was reappointed to that post on Jan. 17, 1959. Just one day earlier he had submitted to Prime Minister John Diefenbaker his report as chairman of the Civil Service Commission and thereby completed the assignment for which he had been recalled by then Prime Minister Louis St. Laurent in 1957. The report, aimed at improving the efficiency of the government service, recommends the first major changes in 40 years in Canada's Civil Service Act.

Heeney has been in Canadian government service since 1938. Educated at the University of Manitoba and Oxford University, he received law training at McGill University and practiced law in Montreal from 1929 to 1938. In the latter year he became principal secretary to Prime Minister W. L. MacKenzie King and was subsequently clerk of the Privy Council and secretary to the cabinet (1940–49). Entering the foreign relations field, he later served as under secretary of state for external affairs (1949–52) and ambassador to the North Atlantic Treaty Organization (1952–53) before his first appointment as representative of the Canadian government in Washington, D.C.

HELICOPTERS. See Index entry.

HERTER, Christian Archibald, U.S. secretary of state: b. Paris, France (of American parents), March 28, 1895. Following the resignation (announced April 15, 1959) of John Foster Dulles (q.v.) as secretary of state, President Eisenhower

WIDE WORLD

Christian A. Herter, named secretary of state by President Eisenhower on April 18, 1959, succeeding John Foster Dulles.

named Christian A. Herter to that post. Herter's appointment, after his more than two years' service as under secretary of state, came when the United States was entering a period of crucial international negotiations, especially in regard to the Western Alliance and the Soviet Union. Added to the diplomatic problems facing the new secretary was the fact that he succeeded a man of overwhelming drive and dominance, who for six years, almost singlehandedly and with little dependence on his subordinates, formulated American foreign policy.

After graduating from Harvard College in 1915, Herter entered the foreign service. His first assignment, in 1916, was as an attaché to the United States embassy in Berlin. In 1917–18 he returned to his homeland as a special assistant in the State Department. The following year he was in Paris as secretary to the American Commission to Negotiate Peace.

Herter next served as an assistant to Herbert Hoover when that administrator was director general of the American Relief Administration and when Hoover was secretary of commerce in the Harding administration. Herter left the government in 1924 to try his hand at publishing, and from then until 1928 he was coeditor and copublisher of the *Independent*, a journal of opinion. In 1929–30 he was a lecturer on international relations at Harvard.

In 1931 Herter was elected as a Republican to the Massachusetts House of Representatives, where he was speaker from 1939 to 1943. He was elected to the U.S. Congress in 1942, and for the next decade represented the 10th Massachusetts District. His main interests were in foreign affairs, and in 1947, at his urging, a special Congressional Select Committee on Foreign Aid was established. As the committee's vice chairman, Herter led a delegation to study conditions in Europe. The report which followed this trip was a vital factor in gaining bipartisan support for the Marshall Plan.

In an election in November 1952, Herter upset incumbent Paul Dever for the governorship of Massachusetts. He was re-elected in 1954, but declined to run in 1956. It was the latter year Harold Stassen launched a campaign to nominate Herter, rather than Richard M. Nixon, as the Republican vice presidential candidate. Herter gave no encouragement to this move and, at the National Convention in August, placed Nixon's name in nomination.

On Dec. 8, 1956, Herter was appointed under secretary of state, and he was sworn into office on February 21 of the following year. In this post he was overshadowed by his chief, John Foster Dulles, who conducted American foreign affairs from a "commanding position" that allowed little room for major actions by other State Department officials. Herter did, however, play an important role in the 1957 negotiations that followed the Middle East crisis of 1956. In February 1959, when Dulles took a leave of absence because of illness, he turned over his duties to Herter. Even before the announcement of Dulles' resignation on April 15, it was acknowledged that Herter would represent the United States in future major Western negotiations.

President Eisenhower delayed three days before naming Herter as Dulles' successor; but it was pointed out that Herter's nomination awaited the outcome of a thorough physical examination (he suffers from arthritis of the hips), and that the president was obviously upset by the resignation of a man who had been his close and trusted associate for over six years. On April 21, in order to allay any signs of division on the choice of Herter, the Senate acted quickly to confirm his appointment, and, on April 22, when he assumed office, President Eisenhower praised him as the "man best qualified to take over the office of the secretary of state."

(See also FOREIGN POLICY OF THE U.S.; UNITED STATES—*The United States in 1959.*)

HEYROVSKY, Jaroslav, Czechoslovak chemist: b. Prague, Czechoslovakia, Dec. 20, 1890. The first Czechoslovak to become a Nobel laureate, Heyrovský was awarded the 1959 Nobel Prize in chemistry for his development, 27 years earlier, of the polarographic method of electrochemical analysis. Along with the other Nobel winners, he received the prize (worth $42,600) at ceremonies in Stockholm, Sweden, on Dec. 10, 1959.

Educated at the universities of London and Prague, Heyrovský became an instructor at University College, London, in 1913. From 1920 to 1954 he was a member of the faculty of Charles University, Prague, becoming professor of physical chemistry in 1926. He left this post in 1954 to assume the directorship of the Institute of Polarography in Prague (an adjunct of the Czechoslovak Academy of Science), which the government had created for him.

Heyrovský's research has centered on the application of physical chemistry to analytical chemistry, specifically to the problem of accurately analyzing substances for their chemical content. In 1922 he developed polarography, an electrochemical method of analysis. Essentially polarography is the measurement of the current-voltage behavior of microelectrodes. It involves the electrolysis of a solution containing a small amount of a substance which is reducible in oxidation-reduction reactions. When increasing voltages are applied across the electrolytic cell, the microelectrode changes potential (polarization occurs). The resulting current-voltage curve is automatically registered by the polarograph, an instrument invented in 1925 by Heyrovský and an associate, M. Shikata.

Polarography has found application in determining traces of metals in alloys, ores, and such organic substances as certain medicinals and vita-

mins. It has also proved useful in theoretical chemistry in, for example, measuring reaction rates and rates of diffusion.

HIGH-FIDELITY RECORDINGS. See RECORDS, PHONOGRAPH.

HIGHWAYS. Highway construction in the United States again surpassed previous records in 1959. Estimates indicate that $10,504 million was spent during the year for improvement, maintenance, highway police, administration, and interest on highway debt of the nation's roads and streets. Of this total, construction expenditures accounted for $5,750 million, and $1,190 million was spent for preliminary engineering work and the acquisition of rights-of-way. Capital expenditures totaled $5,487 million for construction plus preliminary engineering and right-of-way costs on the improvement of 39,000 miles of principal highways, and additional capital expenditures of $1,453 million went for the improvement of 93,000 miles of local roads and streets.

Total road and street mileage in the United States is 3,479,000. Motor vehicle registrations in 1959 were expected to exceed 70 million, a gain of 3.1% over the previous year's total.

Federal-Aid Program.—The federal government's program of aid to the states for highway improvement, administered by the Bureau of Public Roads, was greatly enlarged by the Federal-Aid Highway Act of 1956. This act provided for construction, in a 13–16-year period, of the National System of Interstate and Defense Highways. This nationwide system of 41,000 miles of controlled-access expressways will serve 90% of all cities of 50,000 population or more. It is designed to handle adequately the traffic of 1975, when more than 100 million motor vehicles are expected to be registered. The cost of this network is being met with 90% federal and 10% state funds.

The regular federal-aid program, in which federal funds are matched 50–50 by the states, continued on a larger scale than ever before. Roads and streets eligible for federal aid in 1959 totaled about 815,000 miles, of which 260,000 miles (including the Interstate System) were in the federal-aid primary system, and 555,000 miles were in the federal-aid secondary system of farm-to-market and feeder roads.

Funds authorized by the 1956 Highway Act for the fiscal years 1957, 1958, and 1959 totaled $6,550 million and were allotted to the states in 1956 and 1957. The Federal-Aid Highway Act of 1958 provided additional funds for fiscal 1959, which were apportioned among the states on April 17, 1958. Included were $200 million more for the Interstate System, and a special fund of $400 million to finance primary, secondary, and urban projects which were placed under contract before Dec. 1, 1958, and completed within a year, as an antirecession measure.

On Aug. 1, 1958, apportionment of $3,400 million was made to the states in federal aid authorized by the 1958 Highway Act for the fiscal year 1960. This amount, the largest single federal-aid apportionment ever made, exceeded the total of all authorizations made during the first 24 years (1917–40) of federal aid for highways. The 1960 fiscal year apportionment included $2,500 million for the Interstate System and $900 million for primary, secondary, and urban highways.

The Highway Act of 1956 anticipated a close balance of authorizations paid out and tax revenues received, but this balancing was based on the life of the Interstate System, not on a year-by-year reckoning. Congress anticipated a surplus in the first few years, followed by several years of deficits which would be balanced by surpluses in the closing years of the program. The legislation permitted repayable advances from the general funds in the Treasury to the Highway Trust Fund to iron out this deficit-surplus problem. But a pay-as-you-go clause also included in the 1956 Highway Act had the effect of requiring a year-by-year balance. This limitation had no immediate impact on the Interstate System program, but as the fiscal year 1959 approached it was evident that the increased authorization called for in the 1958 Highway Act could not be met by the Highway Trust Fund revenues anticipated for the fiscal years 1959 and 1960. Accordingly, Congress in the 1958 act waived the pay-as-you-go clause for two years and directed that the full amounts authorized for fiscal 1959 and 1960 be apportioned to the states.

These and other financial provisions of the 1958 legislation which increased federal outlays advanced the day when the Highway Trust Fund would be threatened with a deficit, for this act made no commensurate provision for additional revenue, and the pay-as-you-go requirement would come back into effect after its two-year suspension. To meet this situation, the Federal-Aid Highway Act of 1959 increased the motor-fuel tax by 1 cent a gallon (from 3 to 4 cents) during the period Oct. 1, 1959—June 30, 1961. In addition, from July 1, 1961, to June 30, 1964, one half of the 10% tax on new automobiles and five eighths

APPORTIONMENT OF FEDERAL-AID HIGHWAY FUNDS AUTHORIZED FOR THE FISCAL YEAR 1961

Political unit	Primary, secondary, and urban program	Interstate System program	Total
Alabama	$ 16,715,402	$ 35,141,040	$ 51,856,442
Alaska	36,768,519	...	36,768,519
Arizona	10,613,418	24,342,120	34,955,538
Arkansas	11,993,122	17,695,260	29,688,382
California	46,622,027	181,086,840	227,708,867
Colorado	13,461,726	13,810,500	27,272,226
Connecticut	7,955,738	21,740,400	29,696,138
Delaware	3,642,755	6,272,640	9,915,395
Florida	13,817,683	46,171,620	59,989,303
Georgia	19,162,437	42,999,660	62,162,097
Hawaii	3,924,455	...	3,924,455
Idaho	7,961,559	12,295,800	20,257,359
Illinois	37,569,048	91,380,960	128,950,008
Indiana	20,256,040	51,392,880	71,648,920
Iowa	17,658,947	16,911,180	34,570,127
Kansas	16,675,273	15,948,900	32,624,173
Kentucky	14,749,616	31,327,560	46,350,389
Louisiana	13,018,683	47,062,620	60,081,303
Maine	6,028,512	9,159,480	15,187,992
Maryland	9,201,929	40,148,460	49,350,389
Massachusetts	15,721,010	49,628,700	65,349,710
Michigan	30,569,888	70,032,600	100,602,488
Minnesota	21,261,070	33,590,700	54,851,770
Mississippi	14,070,405	19,566,360	33,636,765
Missouri	22,638,658	50,840,460	73,479,118
Montana	12,729,514	20,261,340	32,990,854
Nebraska	13,263,598	10,994,940	24,258,538
Nevada	7,791,113	9,319,860	17,110,973
New Hampshire	4,116,021	9,801,000	13,917,021
New Jersey	16,342,239	57,665,520	74,007,759
New Mexico	11,291,509	21,348,360	32,639,869
New York	53,755,978	88,262,460	142,018,438
North Carolina	19,997,881	9,658,440	29,656,321
North Dakota	8,982,538	7,894,260	16,876,798
Ohio	33,473,020	116,079,480	149,552,500
Oklahoma	15,843,900	16,198,380	32,042,280
Oregon	12,378,962	30,882,060	43,261,022
Pennsylvania	40,819,031	72,669,960	113,488,991
Rhode Island	4,741,918	8,304,120	13,046,038
South Carolina	11,571,897	14,863,680	26,255,577
South Dakota	9,871,273	7,555,680	17,426,953
Tennessee	17,262,501	52,854,120	70,116,621
Texas	49,068,867	80,510,760	129,579,627
Utah	8,646,670	16,661,700	25,308,370
Vermont	3,536,715	16,804,260	20,340,975
Virginia	16,024,294	75,503,340	91,527,634
Washington	13,596,329	32,272,020	45,868,349
West Virginia	9,054,553	22,328,460	31,383,013
Wisconsin	18,907,300	18,764,460	37,671,760
Wyoming	8,189,918	18,514,980	26,704,898
District of Columbia	5,057,506	17,659,620	22,717,126
Puerto Rico	5,989,953	...	5,989,953
Total	$925,000,000	$1,800,000,000	$2,725,000,000

of the 8% tax on motor vehicle parts and accessories are earmarked for the Highway Trust Fund rather than, as at present, for the general fund of the Treasury. The 1959 Highway Act also reduced the Interstate System authorization for the fiscal year 1961 from $2.5 billion to $2.0 billion; however, only $1.8 billion could be apportioned. The accompanying table shows the apportionment of funds to the states for the fiscal year 1961.

Federal-Aid Work in 1959.—Federal funds totaling $3,223 million were obligated in the federal-aid program during the fiscal year 1959. Completions of all federal and federal-aid projects resulted in the improvement of 32,828 miles of roads and streets at a cost of $3,275 million, including $2,095 million of federal funds.

On the Interstate System, work costing $1,325 million was completed in the fiscal year, of which $1,039 million was federal aid. Construction contracts were completed on 2,290 miles. Much of the year's expenditures was for preliminary engineering and right-of-way purchase.

On the federal-aid primary system, 7,135 miles of highway improvements were completed at a cost of $781 million, including $407 million of federal funds. Federal-aid secondary system improvements on 16,310 miles of farm-to-market roads cost $505 million, of which $261 million was federal aid.

Projects were completed during the fiscal year on 1,113 miles of roads in national parks and forests, on national parkways, and on flood-relief projects, at a cost of $75 million, including $65 million of federal funds.

Foreign Activities.—Since World War II the Bureau of Public Roads has assisted many countries in highway activities in cooperation with the Department of State, the Export-Import Bank of Washington, the International Bank for Reconstruction and Development, and the International Cooperation Administration. During 1959 established programs continued in Jordan, Liberia, Ethiopia, Nepal, Iran, Sudan, and the Philippines. Assistance was also planned for Laos and Yemen.

The Inter-American Highway.—Since 1930 the United States, through the Bureau of Public Roads, has assisted the Central American republics in construction of their portions of the 3,200-mile Inter-American Highway from Laredo, Texas, to Panama City. Mexico financed and built the 1,600-mile section within its borders. By 1959, 72% of the highway was paved and another 24% was usable the year round. It is now possible to travel by car from Laredo to San Isidro, Costa Rica—a distance of 2,725 miles. The next 150 miles to Concepción, a few miles beyond the Panama border, though under construction, were still impassible in late 1959.

Safety.—The Bureau of Public Roads promotes public safety by its research work in the design, construction, and the operation and use of highways. Planned and controlled access is required on all routes of the Interstate System, and is a factor in sharply reducing accident and fatality rates on these new freeways. This modern feature was one of many discussed in a recent broad study of safety carried out by the bureau under the 1956 Highway Act. Other vital safety factors include more extensive education, more effective enforcement, and safer vehicles. In 1959 the President's Committee for Traffic Safety continued its emphasis on the need for organized public support.

(See also ACCIDENTS; BRIDGES; CITY PLANNING; *Transportation and Communications* sections of articles on countries and states.)

E. A. STROMBERG,
Chief, Division of Research Reports, Bureau of Public Roads.

HISPANIOLA (formerly also HAITI or SANTO DOMINGO). An island in the West Indies, east of Cuba. Hispaniola is divided politically between the Dominican Republic and Haiti (qq.v.).

HOCKEY. See SPORTS, GAMES, AND SHOWS.

HOLLAND. See NETHERLANDS.

HOME BUILDING. See BUILDING AND CONSTRUCTION; HOUSING.

HOME ECONOMICS. See AGRICULTURAL RESEARCH SERVICE.

HOME FURNISHINGS. See INTERIOR DECORATION.

HONDURAS. This Central American republic is bounded on the northwest by Guatemala, on the southwest by El Salvador, and on the south by Nicaragua. The area, more than 80% of which is mountainous, is 43,227 square miles (with additional territories in dispute), and the population is 1,887,626 (1959 est.). The capital, Tegucigalpa (elevation about 3,200 feet), has a population of about 110,000 (1959 est.). The second most important city is San Pedro Sula, located on the north coastal lowlands, with a population of 71,217 (1959 est.) in the district and 27,519 in the urban area. Among the smaller cities are Puerto Cortés, Choluteca, La Ceiba, Santa Rosa de Copán, Tela, Trujillo, Comayagua, Danlí, and Juticalpa. According to the latest census (1950), ethnic distribution is as follows: mestizos, 91%; Indians, 6%; Negroes, 2%; and whites, 1%.

Government.—Honduras is a unitary state with a presidential structure in the central government which exercises great control over the departmental and local units. Governed by the constitution of 1957, Honduras in 1959 had a president (Dr. José Ramón Villeda Morales); 3 presidential designates; a 58-member single-chamber Assembly of Deputies; and a 5-man Supreme Court elected by the congress. Administration of the country's 17 departments is conducted through governors appointed by the president.

Education and Religion.—About 50% of the children do not receive any education, and many of the remainder attend school for 3 years at the most. Illiteracy of those 10 years of age and older is estimated at 60–65%. In 1957 there were 1,879 rural schools, including 91 private schools, providing 3 years of instruction. In the same year there were 437 urban schools, including 55 private schools, which provided a 6-year course. Progress is being made; there were 1,325 elementary schools in 1937 and 2,316 in 1957.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) began to help reorganize the elementary school system in 1958. Of the 60 secondary schools (total enrollment about 7,000), more than half are located in Tegucigalpa and San Pedro Sula. The National University, located in new quarters in the city of Comayagüela, adjacent to Tegucigalpa, has about 1,000 students, including about 150 women. There are some vocational schools, the most important probably being the School of Agriculture at Zamorano, founded in 1943 by the United Fruit Company. It offers free courses in scientific husbandry, and its attendance is limited to 160.

Public education was allocated 12,971,433 lempiras in the 1959 budget.

Finance.—The budget for the calendar year 1959 was fixed at 89,593,938 lempiras (2 lempiras = U.S.$1), as compared with 92,400,000 lempiras in 1958. The internal debt increased sharply from 7,400,000 lempiras in 1954 to 26,600,000 lempiras in 1958, largely as a result of deficit financing. The external debt increased from 1,400,000 lempiras in 1954 to 7,200,000 lempiras at the end of 1957. Net international reserves showed improvement, however. They increased from $14.6 million at the end of June 1958 to about $18 million in June 1959.

Transportation and Communication.—Inadequate roads are retarding economic progress in Honduras, although great efforts at improvement have been made in recent years. There were only 24 miles of paved roads in 1955. No main highway crosses the country from east to west, and only horse or mule trails can be found in the entire eastern half of the country. The Inter-Oceanic Highway crosses the country from north to south, but parts of it are passable only in dry weather.

The three railroad lines, which have about 1,000 miles of track, all operate near the port cities of Puerto Cortés, Tela, and La Ceiba, and service mainly the banana industry. United Fruit Company and Standard Fruit Company ships call regularly at the three active ports of Puerto

Cortés and La Ceiba on the north coast and Amapala on the Pacific coast. Only Toncontín, completed in Tegucigalpa in 1955, meets international standards among 30 airports.

The government's domestic telephone service covers the most important population centers. There are 3,455 miles of telegraph lines to some 300 communities. The country's 17 radio stations include 7 in Tegucigalpa and 5 in San Pedro Sula. A 50-foot tower and 2,000-watt transmitter costing $280,000 were under construction in 1959 to provide television broadcasts for Tegucigalpa.

Agriculture and Industry.—About 83% of the people work in agriculture, which comprises about 50% of the gross domestic product (manufacturing accounts for 11.7%, and wholesale and retail trade for 11.3%). The total gross product rose 34% between 1948 and 1957, but manufacturing increased 116.2%, and utilities 550%. Agricultural practices are backward; there is only one plow for every 4.3 farms or for every 14.4 persons engaged in agriculture. Blowdowns destroyed about 2 million stems of bananas, the country's chief crop, by mid-1959, but exports for the full year were expected to approach those of 1958. The production of ginned cotton was about 76,000 quintals (1 quintal = 101.43 pounds) in 1958 but may fall to only 33,500 quintals in 1959. Acreage in cotton dropped from 11,000 manzanas (1 manzana = 1.7 acres) in 1958 to slightly over 2,000 in 1959. It was expected that coffee production would total 440,000 quintals in 1959, an increase of 10% over 1958. Honduras exports the least coffee of any Central American country.

Although richer in minerals than any other nation in Central America, Honduras lacks the iron and coal for heavy industry. The Mochito mine of the New York and Honduras Rosario Mining Company, developed in 1948, was producing 2,200,000 ounces of silver by 1957.

Light industry has been developing rapidly since the end of World War II. The Empresa Nacional de Energía Eléctrica (ENEE) was created in 1957 to plan hydroelectric development. Although the hydroelectric potential is estimated at 1,040,000 kilowatts, Honduras has less electric power than any country in the Western Hemisphere except Haiti. No power plant exceeds 5,000 kilowatts in total installed capacity, and rates are high. The country's first cement plant (near San Pedro Sula) began operations in July. Initial production is estimated at 84,000 quintals per month, but the potential is about 200,000.

Foreign Trade.—Honduras achieved a favorable trade balance in 1958 when exports rose to 143.6 million lempiras (from 129.8 million in 1957) and imports declined to 133.2 million lempiras (from 137.4 million the previous year). Shipments of bananas, the country's leading export, were valued at 75.2 million lempiras, an increase of 7.8 million over 1957. For the first 6 months of 1959 banana exports were estimated at 7 million stems, or 900,000 stems below the same period in 1958; for the full year 1959, exports were expected to reach 12–13 million stems, as compared with 13.5 million in 1958. Other major exports in 1958 included (in millions of lempiras) coffee, 21.8 (24.0 in 1957); lumber, 13.1 (15.6 in 1957); and silver, 4.9 (4.1 in 1957). About two thirds of Honduras' trade is with the United States, which, along with Canada, imported most of the banana crop in 1958. Cotton exports in 1957–58 went mainly to Japan, France, Belgium, and Italy. Commerce is also conducted with Germany and the United Kingdom.

Principal Events, 1959.—President Villeda Morales and the Liberal Party continued to put into effect their program of welfare and government-directed development. It was not contemplated that heavy public expenditures and deficit financing would result in unemployment and rising prices, but when these things occurred, many people in both political parties blamed the administration. Although the new labor code and social security law were not to go into effect until after August 31, businessmen immediately estimated that labor costs would be increased 18–20%. Wage rates remained the same, but fringe benefits increased—such as full pay during illness up to 8 months, severance pay on similar terms, 10 week's full pay for pregnant women workers, and employer-supported nurseries. The Standard Fruit Company indicated that it might terminate banana cultivation by December 1959, and the United Fruit Company planned to close 5 plantations.

A *cuartelazo*, or barracks uprising, led by Lt. Col. Armando Velázquez Cerrato, began in Santa Bárbara, 150 miles northwest of Tegucigalpa, early in February. The main resistance was broken by February 10, but bombings and street fighting continued in Tegucigalpa, and final surrender did not come until March 9. Another attack by insurgents was made on Gracias on May 11 but was repulsed. Colonel Velázquez Cerrato led another attempted coup on July 12, but it failed within a day. University students and professional people, as well as army officers, appeared to be in opposition to the government.

On January 5, Honduras presented its petition to the International Court of Justice at The Hague to adjudicate the long-standing boundary dispute with Nicaragua.

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HONDURAS, British. See British Honduras.

HONEY. Honey production in the United States in 1958 totaled 265.6 million pounds with a value of $46.2 million, according to the U.S. Department of Agriculture. This yield was up 9% from the previous year's total of 243.9 million pounds and 13% above the 1952–56 average. The crop was produced by 5.4 million colonies, yielding an average of 49 pounds of honey. The states producing the largest crops were California, Minnesota, Florida, Wisconsin, and Texas.

HONG KONG. A British colony since 1841, Hong Kong is situated on the southeastern coast of China's Kwangtung Province and includes numerous islands off the Chinese mainland. The colony (area, 391¼ square miles) comprises the island of Hong Kong (32 square miles), on which is Victoria, the capital; the New Territories (with numerous islands, 356 square miles), leased in 1898 from China for 99 years; and the ceded territory of Kowloon (with Stonecutters Island, 3¼ square miles). A strip of water about one-fourth mile wide separates Hong Kong island from the mainland and provides a fine natural harbor for the colony, which is a thriving international seaport and a "listening post" for the free world to Communist China.

Population.—At the end of 1958 the civilian population was estimated at 2,806,000, the great bulk of which is Chinese and lives in Victoria and Kowloon. The non-Chinese population numbered 22,900, including 15,000 British subjects, 2,147 Americans, and 1,630 Portuguese. The influx of refugees from China, estimated at over 1 million since 1954, has posed serious problems for the administration. Resettlement of the squatter population continues; by June 30, 1959, resettlement areas and estates contained 286,313 persons. The New Territories are the site of several rapidly growing market towns and Tsuen Wan, an expanding industrial center.

Government.—The colony is administered by a governor (Sir Robert Black, who was installed on Jan. 23, 1958). He is assisted by a 12-member Executive Council headed by the commander of British forces (Lt. Gen. Sir Edric M. Bastyan), and a 17-member appointed Legislative Council.

Finance.—Government revenue for the fiscal year ending March 31, 1959, was HK$629,336,662; expenditure, HK$589,958,367. The largest single item of outlay was about HK$187 million for public works. (HK$1 = U.S.$0.175.)

Education.—Although education is not compulsory, the government has undertaken an ambitious seven-year plan to provide (by 1961) educational facilities for all children of primary school age. Primary school enrollment during the first five years of the plan has nearly doubled, increasing from 160,024 pupils in 1954 to 313,718 as of March 31, 1959. On that date there were 1,457 schools with a total enrollment of 435,774 students, of whom 181,790 were receiving government-aided education. Two teacher-training colleges (Grantham and Northcote) prepare 600 primary teachers annually. In 1959 the University of Hong Kong had 1,059 students; the technical college, 5,171.

Transportation and Communications.—In the fiscal year 1959, 50,061 vessels totaling 33,912,425 net tons entered and cleared the port; 1,127,882 passengers were embarked and disembarked. A government-owned railway links Kowloon with Shumchun (a distance of 22 miles) on the Chinese frontier and affords direct communication with Canton, Hankow, and Shanghai. In 1957, roads totaled 479 miles, of which 187 miles were situated on Hong Kong island, 166 miles in the New Territories, and 126 miles in Kowloon. The colony is served by 18 international airlines, which use Kai Tak Airport's new 8,350-foot runway that projects into Kowloon Bay and is suitable for all types of aircraft. In the fiscal year 1959 there were 9,858 international flights carrying 262,204 passengers to and from Hong Kong. The colony had 74,803 telephones in 1958.

Economy.—Although its traditional entrêpot trade continued to decline somewhat in 1958, Hong Kong's economy registered substantial gains during the year in manufacturing, construction, and tourism. Manufacturing provides employment for more than one half of the working population. In 1958 local manufactures accounted for 42% of the colony's export value and totaled HK$1,260,284,756. The important textile industry supplied export income of HK$230,059,583 in cotton piece goods alone, and an export value of HK$423,237,532 in outerwear, cotton yarn, shirts, and cotton singlets. Other consumer goods locally manufactured for export in 1958 included footwear (HK$97,733,101), enamelled and aluminum household utensils (HK$75,784,771), toys and games, furniture, and flashlights. Important industrial undertakings include shipbuilding and repairing, iron foundries, and rolling mills. The cost of private building construction in 1958 was HK$260 million, half again as much as in 1957. Tourism income was estimated at U.S.$62 million; a record 103,759 tourists visited the colony in 1958.

Agriculture employs over 100,000 persons; the output in 1958–59 included 84,718 metric tons of vegetables and 33,008 metric tons of rice paddy. Mineral production in 1958 was as follows (in metric tons): iron ore concentrate, 105,125; kaolin, 7,621; quartz, 4,484; graphite, 3,285; and feldspar, 1,653. Hong Kong's fishing fleet, the largest in the Commonwealth, comprised 7,421 junks in 1959.

Foreign Trade.—The value of Hong Kong's exports in 1958 was HK$2,988,801,712 (down less than 1% from 1957); imports, HK$4,593,733,632 (down about 11%). In the first half of 1959, exports totaled HK$1,025,918,545, of which 30% were listed as re-exports. Principal exports are textile yarns, fabrics, and manufactured articles, all of which were valued at HK$666,417,506 in 1958, and clothing, which had an export value of HK$525,114,151. Imports include foodstuffs, textile fibers, base metals, industrial raw materials, machinery, building materials, and pharmaceuticals. Hong Kong's chief customers in 1958 were the United Kingdom, which took 13% of total exports; Malaya, which received 12%; the United States, 11%; Thailand, 7%; and Indonesia, 7%. Main suppliers in 1958 were Communist China, which provided 30% of the colony's imports; Japan, which supplied 13%; the United Kingdom, 12%; and the United States, 10%.

Principal Events, 1959.—As of February 2, the Hong Kong government imposed controls on cotton cloth exports to Great Britain in accordance with an agreement reached in 1958 by a United Kingdom Cotton Board delegation and the Hong Kong Textiles Negotiating Committee. The colony will restrict for three years the quantity of cotton goods exported to the United Kingdom to 115 million square yards annually, or 4.1% less than the amount exported in 1958. The measure was taken to protect Britain's textile industry, which was unable to compete with the lower prices of cotton cloth manufactured in the colony. Efforts by the United States to obtain similar restrictions on Hong Kong's textile exports were reportedly opposed by local manufacturers.

Relations with Communist China became strained as a result of several intrusions by Chinese ships into Hong Kong waters. In January and May, Chinese gunboats allegedly violated those waters to seize junks piloted by Chinese citizens who were attempting to flee from Communist China.

A large-scale economic development program was in progress in the New Territories, according to a United Nations report released in March. The program stresses the building of dams and channels for irrigation, road construction, resettlement of unused areas, and agricultural improvements, all of which are designed to help accommodate the many refugees who have recently entered the colony.

Prince Philip, Duke of Edinburgh, visited Hong Kong on March 6–8. He laid the foundation stone of the Queen Elizabeth Hospital, Kowloon, which is to cost an estimated HK$60 million and is to be completed by mid-1962.

W. R. F.

HORMONES. See Index entry.

HORSE RACING. See SPORTS, GAMES, AND SHOWS.

HORSE SHOWS. See SPORTS, GAMES, AND SHOWS.

HORTICULTURE. For the past three to five years, the eastern part of the United States and Europe have experienced a series of unfavorable spells of weather (see METEOROLOGY and CLIMATOLOGY). Winter months have been unusually cold and wet, with the summers hot and dry; and the winter of 1958–59 and the 1959 growing season were no exceptions. For all plants there is a limit of tolerance beyond which the combination of winter injury and drought becomes fatal; and others which survive become weakened. The marked increase in the number of dead plants as a result of infections from secondary organisms is a good indication of the stress which plants have undergone in recent years.

Undoubtedly these stresses have had much to do with the dying of trees and shrubs throughout the East. Wilts infecting maples, oaks, and sweetgums; phloem necrosis and Dutch elm disease; rusts on hawthorns, cedars, and junipers; borers in locusts; leaf miners in birches; and root and crown rots of beeches, apples, peaches, cherries, and roses have all become more serious. As specimen shade trees in landscape plantings and on streets and boulevards die out, the search for superior varieties of trees is intensified.

In the face of the steady rise in the Consumer Price Index (see COST OF LIVING), horticultural commodities did not vary much in price in 1959. In some items, prices actually declined, especially in the apple industry, where the large crop was ultimately sold at prices essentially the same as the cost of the containers. The small margin of profit in those horticultural commodities which are

considered risk items is of major economic concern.

New Developments.—The creation of parklike shopping malls in Toledo, Ohio, and Kalamazoo, Mich., to stimulate business and rejuvenate downtown business areas is of considerable interest to ornamental horticulture. The first prolonged downtown shopping mall experiments have had a marked effect not only on business (overall business in the landscaped areas increased by approximately 15%) but also upon taxes. In the two-block area landscaped in Kalamazoo, increases in valuation of personal and real property brought $35,000 in additional taxes to the city in 1959. (See also CITY PLANNING.)

The business side of horticulture is receiving considerable attention today. Trade magazines, conferences, and associations are devoting large portions of their time and space to problems of business management, sales, and merchandising. In the past the degree of success of the professional horticulturist was dependent almost entirely on his knowledge of plant behavior, whereas today an extensive knowledge of merchandising methods is required.

In contrast to the family-owned and -operated business so typical of agriculture, the business of horticulture is becoming more corporate. Where the purchase of land was formerly the major expense of establishing a business, the cost of equipment necessary to produce and market the crop, as well as the cost of physical facilities for storage of equipment and merchandise, and for the handling, packaging, processing, and marketing of the commodities, now frequently exceeds by several times the cost of the land itself.

In an effort to reduce labor problems, equipment has become a major capital expense item. Almost all phases of production are now mechanized, from pruning to thinning, cultivating, and spraying. Machines to harvest nearly all types of vegetables, nuts, and cranberries, as well as to dig and plant flower bulbs, trees, and shrubs, are in wide use. Machinery to harvest blueberries, cherries, strawberries, raspberries, tomatoes, and apples are being developed. Automatic and semiautomatic equipment is in use for handling, sorting, sizing, and packing many commodities.

In spite of these labor-saving devices, labor itself has become increasingly costly. Family labor and materials produced on the land have been replaced by hired help and manufactured materials. Growth regulators to control the development of the commodity, herbicides to control weeds, and chemicals to eliminate both air- and soil-borne insects and disease are complicated and expensive. Their proper use has become a science in itself, requiring the employment of skilled labor.

Obtaining capital to establish and operate a modern horticultural business has become a matter of major concern. This, accompanied by problems of taxes and inheritance, has forced most of the larger businesses to become incorporated and and to issue stock. The one-time family business has become divided into different phases of operation, employing specialists and consultants in production, processing, and sales. With this, the art of growing plants has been relegated to a more minor position, as business management assumes an increasingly important role in the industry.

New Plant Varieties.—Open competitions are held each year to determine the most outstanding new plants. The All-America Selections' council of judges made the following selections for 1960: Just Right, an F_1 hybrid turnip; Bronze Rocket, Golden Rocket, Orchid Rocket, Red Rocket, Rose Rocket, and White Rocket, a new first-generation (F_1) hybrid Rocket snapdragon series; Vanguard, a double, rose-pink F_1 hybrid double snapdragon; Glamour, a salmon-colored annual phlox; Toreador, a large, orange Climax class F_1 hybrid marigold; and Spun Gold, a golden-yellow marigold. Headliner and Mardi Gras were fall-flowering mums selected along with Pink Cherub, a pompon mum; the first two are walnut-coral and bicolored red and gold, respectively.

The American Rose Society sponsors the All-America Rose Selections from trials held in 23 official test gardens across the United States. For 1959 the winners were Starfire, a cherry-red grandiflora, and Ivory Fashion, a white floribunda.

The 1960 award winners of the All-America Gladiolus Selections, Inc., trials were Landmark, a cream-colored gladiolus created by D.W. White, of Ste. Thérèse, Quebec, and Little Pansy, a deep blue gladiolus created by Carl Fischer, of Minnesota.

Awards, 1959.—Horticultural awards presented in 1959 included the following:

American Association of Nurserymen's Norman Jay Colman Award: Dr. Kenneth F. Baker, University of California, Los Angeles.

American Horticultural Council citations: E. S. Boerner, New York; H. J. Kohankie, Ohio; F. F. Rockwell, Massachusetts; T. P. Reilly, New York; J. N. Ott, Illinois.

Liberty Hyde Bailey Medal: B. Y. Morrison, Washington, D.C.

F. H. Bartlett Medal: B. H. Slavin, New York.

American Pomological Society's James Pinchney Wilder Medal: M. B. Davis, H. P. Olmo, California; T. J. Talbert, Missouri; the New York State Fruit Testing Cooperative Association.

American Society for Horticultural Science: Alex Laurie Award in Floriculture to C. D. Paris and W. J. Haney, Michigan; C. G. Woodbury Award in Raw Products to J. N. Moore, A. A. Kattan, and J. W. Fleming, Arkansas; Joseph Harley Gourley Award in Pomology to C. B. Shear, Florida; Leonard H. Vaughn Award in Vegetable Crops to Margaret N. Lesley and J. W. Lesley, California; Leonard H. Vaughn Award in Floriculture to Sam Asen and N. W. Stuart, Maryland.

Massachusetts Horticultural Society's Awards for 1958: George Robert White Medal of Honor to C. L. Wirth, Washington, D.C.; Thomas Roland Medal to A. B. Butler, Massachusetts; Jackson Dawson Medal to L. C. Chadwick, Ohio.

Arthur Hoyt Scott Garden and Horticultural Award: Not awarded in 1959.

(See also AGRICULTURAL RESEARCH SERVICE; BOTANY; GARDENING.)

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HOSPITALS. In 1958, 6,786 hospitals in the continental United States, with a total of 1,572,036 beds, admitted 23,697,157 patients. The average number of patients each day was estimated at 1,322,938—an occupancy of 84.2%. A total of 3,742,028 births was recorded in 1958 by 4,992 hospitals. Hospitals with less than 50 beds comprised 36 per cent of all hospitals and reported 11 per cent of all admissions.[1]

In the 5,290 nonfederal hospitals providing predominantly short-term care, there were 609,732 beds and 21,683,528 admissions. An average 451,144 patients were in these hospitals each day; the average occupancy was 74.0% and the average length of stay was 7.6 days.

For all listed hospitals, total assets in 1958 were in excess of $15 billion, and total expenses exceeded $7 billion, of which $4.7 billion was for payroll expense.

There were 1,464,829 full-time workers in all listed hospitals (including full-time equivalents for part-time employees), an average of 111 workers per 100 patients. The average number of personnel ranged from 224 per 100 patients in voluntary short-term general hospitals to 34 per 100 patients in nonfederal psychiatric hospitals.

Hospital utilization, financing, and staffing are shown in the accompanying table, from the American Hospital Association journal, *Hospitals*, Part 2, for August 1959.

[1] Of all hospitals with 25 beds or more, 58 per cent were accredited. In the nonfederal short-term hospitals of this size, 61 per cent were accredited; while in the voluntary hospitals of the short-term group, 73 per cent were accredited, with 100 per cent accreditation in the hospitals with 300 beds or more.

U.S. HOSPITAL STATISTICS

Category	All hospitals	Voluntary short-term general and special hospitals
Number:		
1946	6,125	2,583
1958	6,786	3,203
Number of beds:		
1946	1,435,000	300,000
1958	1,572,000	424,000
Number of admissions:		
1946	15,674,000	9,553,000
1958	23,697,000	15,825,000
Average daily census:		
1946	1,141,000	231,000
1958	1,323,000	321,000
Percentage of occupancy:		
1946	79%	76%
1958	84%	76%
Number of births:		
1946	2,135,327	1,596,127
1958	3,742,028	2,731,884
*Number of full-time personnel:		
1946	829,000	361,000
1958	1,465,000	720,000
Full-time personnel per 100 patients:		
1946	73	156
1958	111	224
Payroll expense:		
1946	$1,102,000,000	$ 431,000,000
1958	$4,660,000,000	$2,076,000,000
Payroll expense per patient-day:		
1946	$2.93	$ 5.11
1958	$9.63	$17.71
Total expense:		
1946	$1,963,000,000	$ 848,000,000
1958	$7,133,000,000	$3,427,000,000
Total expense per patient-day:		
1946	$ 5.21	$10.04
1958	$14.74	$29.24

*Includes full-time personnel plus full-time equivalents of part-time personnel; excludes residents, interns, and students.

Recent Trends.—Since 1954, the number of hospitals has been slowly decreasing so that the 6,786 hospitals listed for 1958 approximates the total number (6,788) listed for 1950. This decline is due largely to the decrease in numbers of proprietary short-term hospitals, nonfederal tuberculosis hospitals, and nonfederal long-term hospitals. On the other hand, the total number of beds in the voluntary short-term hospitals has increased about 3% per year since 1953. Current data further confirm the established trends toward increases in personnel and finances. The ratio of admissions to population has risen steadily, particularly in the short-term nonfederal hospitals.

Progressive Patient Care.—An exciting new idea in hospital service is progressive patient care—care services arranged in accordance with the patient's individual needs. According to the U.S. Public Health Service, progressive patient care includes the following five elements integrated in a continuing patient care program: (1) intensive care unit for the critically ill; (2) intermediate care unit for patients whose condition has stabilized and who require medical care; (3) self-care unit for patients who are physically able to care for themselves and who require restorative or diagnostic care; (4) continuation care unit for long-term patients requiring prolonged care; and (5) an organized home care program that is hospital based.

Many studies are now being conducted regarding costs of such a program, quality of care received, design of facilities to facilitate this approach, and related factors. If such studies prove this concept of medical nursing care is a better approach to meeting the health needs of patients in the general hospital, considerable changes would be forthcoming in hospital construction, financing, third-party payments, and the like.

(See also INSURANCE—*Health Insurance;* PSYCHIATRY AND MENTAL HEALTH; SOCIAL SECURITY; VETERANS ADMINISTRATION.)

JAMES A. HAMILTON,
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HOTELS. During the first nine months of 1959 the United States hotel industry had an increase in room sales of 4% over the comparable period of 1958. Average room occupancy was 67%, the same as in the previous year, but this represented a drop of 25% from the highest occupancy level, recorded in 1946. According to the latest (1954) available census, there were 24,778 hotels of six rooms or more, including about 15,000 hotels of over 25 rooms, of which more than 50% had more than 50 rooms; only 800 hotels had over 300 rooms.

Announced expenditures for new hotel construction during the first nine months in 1959 totaled $486 million. This included 90 new hotels, 36 additions to existing structures, and 24 new hotel-owned motor hotels, adding a combined total of 33,000 rooms. Average construction cost per room was $16,350 for new hotels, $11,403 for motor hotels, and $9,215 for new rooms in existing hotels.

In 1959, hotel directories listed 230 hotel chains, the fastest growing group being the Sheraton Corporation of America with 54 hotels and over 25,000 rooms. During the year several hotel chains set their sights on foreign markets, and those with overseas units announced plans for expanding these operations. The Hotel Corporation of America announced plans for a hotel in San Juan, Puerto Rico; Western Hotels created a subsidiary to operate a hotel in Mexico City to be completed in 1960; Hilton Hotels Corporation started construction on a hotel at Port of Spain, Trinidad; and Sheraton Corporation of America acquired the four Matson Navigation Company hotels in Hawaii. Zeckendorf Hotels Corporation, which controls six hotels in New York City, extended its operations by acquiring the Sherman, the Ambassador East, and the Ambassador West hotels in Chicago.

Among the larger hotels which opened during 1959 were the 800-room Pittsburgh Hilton in Pittsburgh, Pa.; the 600-room Sheraton-Dallas in Dallas, Texas; the 536-room Robert Meyer in Jacksonville, Fla.; and the Executive House in Chicago, Ill., with 448 suites and studio rooms. Hilton Hotels entered the airport hotel field with inns at San Francisco and New Orleans. New inns in Binghamton, N.Y., and Portland, Oreg., were added to the Sheraton holdings. The Shelter Island Inn in San Diego, Calif., also was opened.

Hotels outside the United States which were completed in 1959 included the Aruba Caribbean Hotel, Aruba, Netherlands Antilles; Howard Johnson Nassau Beach Lodge, Nassau, Bahamas; Nile Hilton, Cairo, Egypt; and the Ritz, Lisbon, Portugal.

The number of new motor hotels completed in the United States during 1959 indicates an increased demand by motorists for modern sleeping accommodations convenient to major highways. Among those opened were the Lake Tower, Chicago, Ill.; South Gate, Washington, D.C.; Marriott Key–Bridge, Arlington, Va.; Howard Johnson, Atlanta, Ga.; Charterhouses (Hotel Corporation of America) in Annapolis, Md.; and motels located at Newton and Waltham, Mass., Cleveland, Ohio, Alexandria, Va., and Bangor and Kittery, Maine.

Hilton Hotels entered the rapidly expanding credit card field in 1959 with the introduction of

its Carte Blanche, which is also honored by many hotels outside of the Hilton organization. Credit cards issued by the "big three" (Carte Blanche, American Express, and Diners Club), for which holders pay approximately $5 a year, took on more comprehensive proportions during the past year. Previously honored solely by hotels and restaurants, the cards are now used also for charging car rentals, air and rail tickets, and theater tickets.

WALTER O. VOEGELE.
*Late Editor, "Hotel Management."**

HOUSING. The year 1959 was characterized by several significant developments in housing in the United States. The volume of private housing built reached the second highest level in the history of the nation; housing costs—labor, material, land, and interest rates—nevertheless, continued to rise; and a higher proportion of the new housing accommodations were apartments. The federally supported aspects of the urban renewal program were retarded during the year because of shortage of funds, but many cities carried on their own neighborhood improvement programs. Several states gave attention to the matter of discrimination in public and private housing. Finally, after passing two housing bills which met with presidential vetoes, Congress in September passed a measure which the president approved and which became the Housing Act of 1959 (see below, *Congressional Action, 1959*).

Housing Demand.—The estimated number of households in the United States increased by 7.7 million, or about 18%, between March 1950 and March 1959, according to the U.S. Bureau of the Census. There were an estimated 51.3 million households in March 1959, compared with 43.6 million 9 years earlier. During the 9-year period, the total population of the continental United States increased about 16%, from 150.5 million to 174.5 million.

The total number of households increased by about 861,000 a year, on the average, during the period from 1950 to 1959. However, urban and rural-nonfarm households increased by about 955,000 a year, whereas farm households declined by about 100,000 a year during the same period. In March 1959 there were 45.9 million urban and rural-nonfarm households and 5.4 million farm households. In March 1950 the corresponding figures were 37.3 million and 6.3 million.

Of the 39.5 million married couples in 1959, only 1.1 million, or 2.8%, did not maintain their own households, according to the Bureau of the Census. This 1959 estimate of "doubled-up" married couples may be compared with the higher rate of 6.1% in 1949. The number of married couples who live in doubled-up quarters has dropped about 50% in the last decade.

Households in urban areas were estimated to represent 64% of all households; those in rural-nonfarm areas, 26% of the total; and those on farms, 10%.

Volume of New Private Housing.—The upward trend in new housing units built, which began in 1958, continued into 1959. The heavy volume of new construction of private housing in the spring and summer of 1959 was expected to result in approximately 1.32 million new privately owned houses and apartments for the year. This would be short of the all-time high of 1,352,200 new private nonfarm housing units started in 1950, but would exceed the second highest number of 1,309,500 in 1955.

* Mr. Voegele, who served as editor of the magazine from 1936, died in New York City on Nov. 24, 1959, shortly after this article was written.

EMERY ROTH AND SONS

Baruch Houses, a low-rent housing project on New York's East Side, was completed in 1959 at a cost of $30 million.

The trend toward a significant number of two-family and multifamily structures built, compared with the single-family structures, continued the momentum gained in 1958. For the first 7 months of 1959, 17% of all privately owned permanent nonfarm dwelling units started were in multifamily structures, and another 4% were in two-family structures, leaving 79% in single-family structures. The increased percentage of multifamily structures was due primarily to the shortage of lots within reasonable commuting distance of most cities. An important contributing cause, however, was the increased demand for rental units, especially on the part of the increased number of young couples and aged families. Many of the new apartments were in high rental brackets.

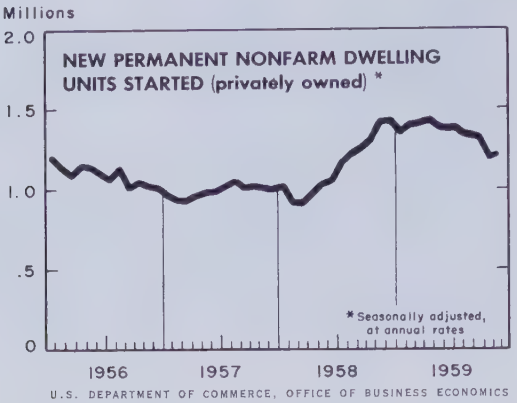
Conventional financing (that is, without government assistance) accounted for 71% of the nonfarm mortgage recordings of $20,000 or less at the end of the first 6 months of 1959, compared with 20% for mortgages insured by the Federal Housing Administration (FHA), and 9% for mortgages guaranteed by the Veterans Administration (VA).[1] This percentage distribution of the dollar amounts of mortgage recordings, however, does not reflect the distribution of the number of new housing starts because higher-priced houses tended to be financed with conventional loans and lower-priced housing with FHA-insured loans. A total of only 66% of the privately owned permanent nonfarm dwelling units started were financed with conventional loans, 25% were financed under the FHA, and 9% under the VA. (See also VETERANS ADMINISTRATION.)

Interest Rates.—Interest rates on home mortgages increased throughout the United States in 1959. In June, Congress voted an increase in the rate on VA-guaranteed mortgages from 4¾% to 5¼%. In September the rate on FHA-insured mortgages was increased from 5¼% to 5¾%. Interest rates on conventional mortgages averaged 6.1% in October 1959, according to a government report, compared with 5.65% a year earlier.[2]

Construction Costs.—The average cost of single-family dwelling units reached an all-time high of $13,750 by mid-1959. Residential building costs

[1] The percentage of mortgage defaults remained extremely low during 1959. By midyear (June) the VA announced that only 44,153 loans, representing 1.14% of all VA-guaranteed home loans outstanding, were in default. Of these, only 4,872 were listed as serious defaults, with foreclosure probably imminent. The FHA announced that approximately 14,702 of its mortgages were in default, representing only 0.54% of all insured home mortgages outstanding. Of these, foreclosure was imminent among 6,109.

[2] There was some variation in interest rates on conventional mortgages in different regions—from 5.85% in the Northeast to 6.5% on the west coast. The VA and FHA rates, of course, were the same in all regions.



climbed 5 points between July 1958 and July 1959 to 138.2 on the E. H. Boeckh Index (1947–49 = 100). The increase in the cost of building resulted from the increase in both wages and materials. Union wages climbed 7.6 points during that 12-month period to an estimated 170.0 by July 1959. This increase resulted from such rises in hourly wages as those in plumbing and heating, from $3.24 to $3.39; in painting and decorating, from $3.06 to $3.19; and in electrical work, from $3.55 to $3.68. Wholesale prices of construction material increased 5.8 points to 135.4 by July 1959. Contributing primarily to this gain were advances in the prices of lumber, including millwork and plywood, plumbing equipment, and structural clay products.[3]

Another factor contributing to increased housing costs in 1959 was the continued rise in land prices, due largely to the scarcity of lots in most cities. In many cities the price rose to between $10,000 and $12,000 per acre (where land had cost only $3,000 to $5,000 per acre four or five years ago). Some years ago land generally represented approximately 10% of the total cost of house and lot, but in 1959 in many cities it was found to represent between 15% and 20% of this total.

Vacant Dwelling Units.—The supply of available vacant dwelling units for sale in the United States remained low (approximately 1%) in 1959 despite the high rate of new home construction. However, the percentage of vacant units for rent was appreciably higher. During the third quarter of 1959, according to the Bureau of the Census, 8.8% of the rental units in the South, 8.6% in the West, 6.3% in the Northwest, and 3.5% in the Northeast, were vacant. Many of the vacant units were substandard in quality, but there also were some new apartments vacant, especially in cities in the South and West. The overall vacancy picture, however, was not alarming since it represented little change from 1958 for most communities.

Urban Renewal and Public Housing.—The urban renewal program, known as the Title I Program—a section of the Housing Act of 1949 (Public Law 171) that makes possible federal-city slum clearance programs—continued in 1959. Under this program a city is permitted, through condemnation or negotiated purchase, to acquire slum areas and parcels of substandard housing and to resell the land to private developers at an economical price.[4]

In 1959 the federal Housing and Home Finance Agency (HHFA) approved the 1,000th "workable program" for the prevention and elimination of slums and blight under Title I. By mid-year, the HHFA announced that there were nearly 400 cities with which its Urban Renewal Administration (URA) had contracts, for about 650 projects. (Most of the large cities had projects under way, but half of the cities having URA contracts had a population of less than 30,000.) Those aspects of the urban renewal program requiring federal grants-in-aid were retarded during 1959 by the scarcity of federal funds available for this purpose. However, in many cities neighborhood improvement programs not requiring federal monies proceeded at a rapid rate.

Only 11,500 new units of federally sponsored low-rent public housing, under Public Law 171, were initiated during the first seven months of 1959 (and 13,100 previously started units were completed during this period). However, the government announced that many low-income families were accommodated in the approximately 100,000 vacancies that occur in public housing each year.

Discrimination in Housing.—There was considerable activity in the form of anti-bias laws during the year. Four states—Colorado, Massachusetts, Connecticut, and Oregon—became the first to adopt laws forbidding racial discrimination in the sale or rental of private housing. Several other states had previously barred discrimination in the sale or rental of homes involving federal financing.

Congressional Action, 1959.—Although Congress had expected to enact a new broad-scale housing law early in the year, the Housing Act of 1959 was not signed by President Eisenhower until September 23. The delay was caused in part by disagreements tying up the legislation in the House of Representatives for a part of the time, and by presidential vetoes of two measures, one on July 7 and the other on September 4, before a measure was finally sent to the White House that the president felt he could approve.

The first bill passed by Congress would have authorized $900 million for a two-year program of urban renewal and 145,000 additional public housing units for future years, among other authorizations, and was vetoed by the president because he felt it was "extravagant," "inflationary," and "not needed." An attempt was made by Congress to override the veto, but it failed. A second bill was passed by Congress in August. It reduced the urban renewal authorization to $650 million for one year and the public housing authorization to 37,000 units. There also were some other changes, but this bill likewise was vetoed.

Some of the provisions of the third bill passed by Congress, which became the Housing Act of 1959 (Public Law 86–372) are summarized below.

FHA Insurance Programs. *FHA Mortgage Insurance for Sales Housing.*—The maximum amount of a mortgage which can be insured by FHA under the Section 203 sales housing program was increased from $20,000 to $22,500 for a one-family house, and from $20,000 to $25,000 for a two-family house. A new down-payment schedule for

[3] The Consumer Price Index, as differentiated from the cost-of-construction indexes, also reached an all-time high in 1959. For all items, according to the U.S. Department of Labor, the July index stood at 124.9 (1947–49 = 100). The index for housing alone stood at 129.0, the index for rents stood at 139.6, and for foods, 119.4. These indexes indicate the extent to which the increase in housing costs have outstripped the increase in food. (See also COST OF LIVING.)

[4] In order that a city may qualify for federal assistance under this program, it must have an approved "workable program" which promises enforcement of local housing codes, a comprehensive plan for future community development, a study of the community's neighborhoods in order to determine treatment needs to eliminate and arrest the spread of blight, an effective administrative agency to carry out the program, adequate financing to meet the city's redevelopment responsibilities, a means of relocating displaced families whose homes are demolished, and active community support and participation.

sales housing under the regular Section 203 program and the Section 220 urban renewal housing program was authorized as follows: up to $13,500, down payment of 3%; $13,500 to $18,000, 10%; and over $18,000, 30%.

Low-Cost Housing in Outlying Areas.—Provisions of the FHA Section 203(i) program of mortgage insurance for low-cost housing in outlying areas were changed by increasing the maximum mortgage amount from $8,000 to $9,000; by making existing housing eligible for mortgage insurance; by permitting the FHA to accept VA construction inspections; and by removing a separate insurance ceiling on certain farm housing which may be insured under this program.

Mortgage Maximums for FHA's Regular Rental Housing Program (Section 207).—The maximum amount of a mortgage which can be insured by FHA under its regular Section 207 rental housing program was increased from $12.5 million to $20 million. Per-room and per-unit mortgage limitations were increased as follows: $2,250 per-room limitation increased to $2,500; $8,100 per-unit (for efficiency units), increased to $9,000; $2,700 per-room for elevator structures, increased to $3,000; $8,400 per-unit for efficiency apartments in elevator structures, increased to $9,400; and $1,000 additional amount per-room for high-cost areas, increased to $1,250.

FHA Mortgage Maximums for Trailer Courts.—The $1,000 per-space mortgage limitation for trailer courts and the $300,000 mortgage limitation for trailer courts were increased to $1,500 and $500,000, respectively.

FHA Cooperative Housing (Section 213).—FHA mortgage limitations per project, per unit, and per room were increased for management-type cooperative housing.

FHA Mortgage Insurance for Nursing Homes.—A new program of FHA mortgage insurance for privately owned nursing homes was authorized. The property can be a new or rehabilitated nursing home, and the insurable mortgage cannot exceed $12.5 million or 75% of the estimated value of the property.

Housing for the Elderly. *New FHA Mortgage Insurance Program.*—A new Section 231 authorizing FHA mortgage insurance for both nonprofit and profit-making rental housing for the elderly was added to the National Housing Act. Property eligible for mortgage insurance under this program includes rental housing consisting of eight or more new or rehabilitated living units, not less than one half of which are specially designed for the occupancy of elderly persons. The property covered by the mortgage can include such commercial and special facilities as the federal housing commissioner deems adequate to serve the occupants. There was also a per-unit limitation of $9,000 for garden-type apartments and $9,400 for elevator-type apartments, except that these limitations can be increased by $1,250 per room in high-cost areas.

Direct Federal Loans.—A new program of direct federal loans for rental housing for the elderly was authorized. Eligible borrowers are private nonprofit corporations; eligible property includes new or rehabilitated rental housing structures and such related facilities as dining halls, community rooms, infirmaries, and other essential service facilities. A loan cannot exceed 98% of the total development cost.

Federal National Mortgage Association. *Increased Dollar Limit for Mortgages Purchased.*—The limit on the amount of a mortgage which may be purchased by FNMA was increased from $15,000 (for each family residence or dwelling unit covered by the mortgage) to $20,000 if purchased in its secondary market operations, and from $15,000 to $17,500 if purchased in its special assistance operations. Section 220 urban renewal housing was excepted from the dollar limits.

Urban Renewal and Planning. *Grant Authorization.*—The authorization for capital grant contracts and other grants for assistance to urban renewal was increased by $350 million, as of the date of enactment of the Housing Act of 1959, and by an additional $300 million on July 1, 1960.

Nonresidential Redevelopment.—The amount of the urban renewal grant authorization available for nonresidential redevelopment projects was increased from 10% to 20%.

State Loan Ceiling Removal.—The 12½% ceiling on the proportion of loan funds which can be expended in any one state was removed from the urban renewal law.

Relocation Payments.—Urban renewal relocation payments were authorized to be made when the displacement from the urban renewal area is a result of any governmental activity in the area, code enforcement, or programs of voluntary repair and rehabilitation. Prior to this new law, relocation payments were available only where displacement resulted from an urban renewal project. The maximum amounts of relocation payments were increased from $100 to $200 when made to individuals and families, and from $2,500 to $3,000 when made to business concerns.

Statewide Planning.—The Housing and Home Finance administrator was directed to encourage the utilization of local public agencies established to operate on a statewide basis in behalf of smaller communities within the state which are undertaking urban renewal programs. The governing body of the community must approve, by resolution or ordinance, the utilization of the state agency.

Community Renewal Programs.—The housing administrator was authorized to contract to make grants, up to two thirds of cost, for the preparation or completion of community renewal programs which would include identification of slum or blighted areas in the community, measurement of blight, determination of resources needed and available to renew such areas, identification of potential project areas and types of action contemplated, and scheduling of urban renewal activities.

Increase in Authorization for Federal Grants for Planning.—An additional $10 million was authorized to be appropriated for federal matching grants to assist state and urban planning.

Urban Planning Grant Program Broadened.—The scope of the urban planning grant program was broadened by authorizing federal matching grants to state planning agencies for the provision of planning assistance to municipalities having a population of less than 50,000 (previously 25,000); to counties with a population of less than 50,000 (previously only to counties with populations of 25,000 or more in cases of disaster); any group of adjacent communities having a population of less than 50,000 and common planning problems resulting from rapid urbanization; and to any cities and counties which have suffered from major disaster (cities and counties of 25,000 or more with major disasters previously eligible).

Low-Rent Public Housing. *Authorization of Additional Low-Rent Public Housing.*—New contracts were authorized for federal financial assistance to an additional 37,000 units of low-rent public housing.

Declaration of Policy.—The new law declares that it shall be the policy in the development of low-rent housing to make adequate provision for larger families and for families consisting of elderly persons.

Rents and Income Limits.—The statutory ceilings on family income for both admission and continued occupancy were eliminated. The local housing agency, with approval of the Public Housing Authority (PHA), was authorized to establish income limits and rent limits (subject to 20% gap between upper rental limit for admission and lowest rent on adequate private housing). In the case of housing for families displaced by governmental action, the required 20% gap was reduced to 5%.

College Housing. *Increase in Loan Authorization.*—The revolving fund for college housing loans was increased by $250 million. Of this increase, $25 million may be made available for "other educational facilities" such as dining halls and student centers, and $25 million may be made available for student nurse and intern housing facilities.

Armed Services Housing. *New FHA Mortgage Insurance Program for Military Housing.*—A new FHA Section 810 mortgage insurance program to provide not more than 5,000 units of housing for military and essential civilian personnel was authorized.

Farm Housing Research.—The authority of the Housing and Home Finance Agency to make grants to land-grant colleges for farm housing research was continued until June 30, 1961. The grants cannot exceed $100,000 during the two-year period beginning July 1, 1959.

(See also ALUMINUM; ARCHITECTURE; BUILDING AND CONSTRUCTION; CITY PLANNING; and references under the Index entry, *Housing.*)

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HUMAN RIGHTS. See Index entry.

HUMPHREY, Hubert Horatio, Jr., U.S. senator: b. Wallace, S. Dak., May 27, 1911. On December 30, 1959, Humphrey became the first major declared candidate for president in 1960, formally announcing his entry in the race for the Democratic nomination and his intention to run in the Wisconsin (April 5), District of Columbia (May 3), Oregon (May 20), and South Dakota (June 7) primaries. He recognized, he said, that it would be "an uphill fight." Failing selection by his party at its July convention, he faced a contest for his Senate seat in November.

After a college career interrupted by the depression, when he worked in his father's drugstore, Humphrey took his B.A. degree with honors at the University of Minnesota in 1939. While doing graduate work at the Universities of Louisiana (M.A. 1940) and Minnesota, and in 1943–44 at St. Paul's Macalester College, he also taught political science.

In his first try for elective office, Humphrey ran unsuccessfully for mayor of Minneapolis in 1943. The following year he was instrumental in bringing about a merger of the state's Democratic

and Farmer-Labor parties, a coalition that has since been the source of his political strength. He ran again in 1945 for the Minneapolis mayoralty and won, and in 1947 he was re-elected by the biggest margin in the city's history.

Humphrey first appeared on the national political scene as a delegate to the Democratic National Convention of 1948 in Philadelphia. Here he made a speech that was considered crucial in winning inclusion in the party's platform, over bitter Southern opposition, of a strong civil rights plank. In November 1948 he became the first Democrat ever sent to the U.S. Senate by the people of Minnesota. In the Senate he became a major spokesman not only for civil rights but for federal aid to education and housing, economic aid to underdeveloped countries, disarmament, and the extension of bans on nuclear tests. He is chairman of the Senate Subcommittee on Disarmament. In December 1958 he was much in the news as a result of his eight-hour interview with Soviet Premier Khrushchev in the Kremlin.

When the Humphrey-for-President Committee was established in mid-July 1959 the senator called for a Democratic program of "sane liberalism and prudent progressivism," to be led by "a walking, talking liberal"—a fairly accurate description of himself.

HUNGARY. A Communist-ruled people's democracy in central Europe, Hungary is bounded on the north by Czechoslovakia, on the east by Rumania and the Ukrainian SSR, on the south by Yugoslavia, and on the west by Austria. It occupies an area of 35,912 square miles and has an estimated population (March 31, 1959) of 9,898,000, of which about 40% is urban.

According to the 1949 census, Hungarians comprise 94.6% of the population; there are small Slovak, Rumanian, Yugoslav, and German minorities. The capital and principal city is Budapest, which, with its suburbs, has a population of 1,850,000 (est. 1957). Other important cities, with 1957 estimated populations, are Miskolc, 150,000; Debrecen, 130,000; Pécs, 110,000; Szeged, 100,600; Györ, 66,000; and Kecskemét, 64,000.

Government.—According to the constitution of 1949, the highest organ of the state is the unicameral National Assembly. When this body is not in session, it is represented by the 21-member Presidium of the National Assembly. Both these agencies, as well as the cabinet, are controlled by the Hungarian Socialist Workers Party (HSWP)—another name for the Communist Party—and merely ratify decisions made at the top level of the party. The president of Hungary is István Dobi; the premier is Ferenc Münnich; and János Kádár is first secretary of the HSWP's Central Committee.

The HSWP, which claimed 450,000 members in 1959, is the guiding force in the country's political, social, and economic life. It exercises power through its various branches and organizations and through auxiliaries which it controls, the most important of which are the People's Patriotic Front (PPF) and the youth, labor, and women's organizations. The PPF is a Communist "mass organization" which includes, besides the HSWP, groups willing to cooperate with the Communists. The members of the central government and local governments—the people's councils—are drawn exclusively from the PPF and are either Communists or their collaborators.

Education.—In 1946 the educational system was secularized and subordinated to full state control. Four years of elementary and four years of secondary schooling is compulsory between the ages of 6 and 14. The educational system was reorganized in 1959 to combine students' training with part-time work in industry and agriculture. In 1957–58 there were 1,259,114 pupils enrolled in the general schools, 126,500 in secondary schools, and 32,944 in the six universities and other institutions of higher education. In 1958–59 the number of university students totaled 31,600. The highest scientific institution is the Hungarian Academy of Sciences, which has been completely reorganized on the model of the Soviet Academy of Sciences. Under its auspices the first experimental atomic reactor in Hungary was put into operation on March 25, 1959.

Religion.—About two thirds of the people of Hungary are Roman Catholics. Protestants include members of the Reformed Church (1,954,000 in 1955), Lutherans (432,000), and Baptists (14,000). Although full separation of the church and state is constitutionally established, religious affairs are supervised and controlled by the State Office for Church Affairs, which was reorganized in 1959. The state exerts its influence on the clergy by fostering movements such as the Catholic Opus Pacis, which is cooperating with the government.

In April 1959, several Roman Catholic leaders, including József Grösz, archbishop of Kalocsa, swore allegiance to the state. On April 3, Dr. Imre Papp, spiritual director of the Roman Catholic Seminary of Budapest, and two other members of the staff were removed from their posts for political reasons, and on April 9 some students refusing to pledge complete obedience were also expelled. On April 14 the Vatican accused Hungary of trying to turn the teachers and the students into a kind of "ecclesiastical police." Pope John XXIII denounced on May 17 the interference of the state in the affairs of the church, protested against the government's attempts to control the appointments of church ecclesiastics, and accused the government of fomenting a schism within the church by having established the Opus Pacis movement. On July 11 the Vatican protested against decrees which authorized the State Office of Church Affairs to fill all church posts vacant more than 90 days. However, the government appointed four new Roman Catholic bishops on July 25. József Cardinal Mindszenty remained in the United States legation, to which he had fled after the revolution of October 1956.

National Defense.—Under the terms of the 1947 peace treaty, Hungary's army was to be limited to 65,000 men, and its air force to 5,000. In 1955, foreign observers estimated Hungarian armed forces at 12 divisions, totaling 165,000 to 180,000 men. Because of its failure in the October 1956 revolution, the army was drastically reorganized in 1957. The Soviet government announced on Jan. 30, 1959, that the total strength of its forces in Hungary had been reduced.

Finance.—The 1959 national budget called for expenditures of 52.1 billion forints (up 11.9% over 1958) and revenues of 52.9 billion forints (up 11.8%). The expenditures were distributed as follows: national economy, 28.9 billion forints; social and cultural expenditure, 16.3 billion (up 17% from 1958); defense, 4.9 billion; and administration, 2.0 billion. In February 1959, Minister of Finance István Antos announced that most of the income would come from the increased production by state industry. In 1959, Hungary reportedly invested 14.7 billion forints toward economic and social development. The bulk of the investment will go into development of electric power and coal mining industries, and the production of diesel engines, high-tension equipment, telecommunications equipment, and instruments. About 1 billion forints were allocated for cooperative farm investment.

Transportation and Communications.—Hungary had 8,220 miles of railways and 17,915 miles of roads in 1956. In 1954 there were about 170,000 motor vehicles of all types. There are 871 miles of navigable waterways, the most important being the Danube and Tisza rivers. In 1956 there were only 6 large river freighters with tonnages ranging from 1,800 to 3,000. Hungary had 347,672 telephones in 1957 and 1,274,000 licensed radio receivers in 1956. According to official reports there has been in recent years a constant increase of railway, truck, and Danube traffic.

Agriculture.—With a farm population approximating 43% of the total population, and with arable land amounting to 62% of the total area of the country, agriculture is exceedingly important to Hungary's economy. Chief crops and estimated 1957 output (in thousands of metric tons) were: wheat, 19,549; maize (corn), 3,284; barley, 968; rye, 487; oats, 263; sugar beets, 1,948 (1956); potatoes, 2,055 (1956). In 1958 there was a considerable increase in livestock. The agricultural plans provide for further expansion of cultivable and irrigated land, and increases in number of livestock and production of cereals and fruit.

In 1959 the collectivization drive was intensified, and indirect coercive methods were used by the government to compel peasants to accept collective farming. At the end of March 1959 there were 4,517 collective farms, or 1,010 more than at the end of 1958. Communist First Secretary János Kádár reported on April 4, 1959, that 1,300 cooperative villages containing 354,000 farmers had been formed in the two-month collectivization drive, and that 50% of Hungary's arable land belonged to the socialist sector. By July this figure was increased to 61.5%. Collectivization and the mechanization of agriculture made such quick

progress that Hungary found it necessary to increase imports of machinery and fertilizers. According to an agreement signed in Moscow on April 24, the USSR undertook to supply Hungary with tractors, combines, and other farm machinery.

Industry.—In 1958 the overall industrial production was 4% over the planned figures. Productivity in heavy industry rose by 12%, and in the light and food industries by 5%. The current Three-Year Plan (1958–60) is designed to step up production for export and to accelerate the completion of investment projects. The government in 1959 drafted a long-range Five-Year Plan (1961–65) to develop the petroleum, chemical, and light industries, and to further decentralize industry, as 51.9% of the country's entire industrial system is concentrated in Budapest. The National Planning Bureau has decided to relocate 12 new projects originally scheduled for Budapest.

The economic plan for 1959 provided the following increases over 1958 production in the basic industries: electric power, 10.4% (6.5 billion kw.-hr. in 1958); machinery, 10.7%; chemicals, 6.3%; mining, 3.8%; food, 4.2%; and light industry, 3.2%. Industrial production in 1958 was reported as follows (in thousands of metric tons): coal, 24,200; crude steel, 1,627; bauxite, 1,053; crude oil, 829; and aluminum, 39.

An electric power station at Tiszapalkonya was put into operation in July 1959; it is expected to supply one fifth of the electric energy in Hungary. Construction was also begun on another huge 200,-000-kw. plant at Százhalombatta, 20 miles south of Budapest. Hungary has reported new discoveries of oil at Battonya and Orosháza, and of natural gas at Tótkomlós and Kaszaper. (See below, *Principal Events, 1959.*)

Foreign Trade.—Soviet industrial assistance to Hungary in 1958 increased markedly in value to 3,413 million rubles. Hungary's trade with Communist countries continued to increase in 1958, when it comprised 71.8% of Hungarian foreign trade. There has been an expansion in trade with other countries as well. However, trade with China declined from exports of 262 million rubles in 1955 to 229 million in 1958. Hungary aimed to increase her trade in 1959 by 13.6% over that of 1958, with the ultimate goal of becoming self-supporting.

Principal Events, 1959.—The political, economic, and cultural life of Hungary still bears the wounds of the revolution of October 1956. Some participants in the revolution have recanted their "mistakes" and declared their allegiance to the Communist Party. With few exceptions, the partial amnesty announced on April 2 did not include those persons who had been involved in the 1956 revolt. One of those amnestied was Zoltán Tildy, former president of Hungary and a member of the Imre Nagy cabinet, who had been sentenced to six years in prison.

Purges of suspected and distrusted persons continued, and executions of some persons who took part in the 1956 revolution were reported. In April the well-known professor of psychology, Ferenc Mérey, and the journalist, Sándor Fekete, were sentenced to imprisonment for alleged "subversive antistate" activities. On April 4 the International League for the Rights of Man charged that the Hungarian government had instituted criminal procedures against 6,000 of the 21,000 refugees who had returned to Hungary under promises of amnesty. The government denied the charges. Since 1957 about 42,000 Hungarian citizens out of the 200,000 who fled abroad during the 1956 revolt had returned to Hungary.

It was announced on September 26 that the government had permitted the rebirth of the Hungarian Writers Union, a center of the agitation that had led to the October 1956 revolution. The president of the union is József Darvas, former minister of agriculture, and its general secretary is Imre Dobozi, a leading journalist. Gyula Kállai, a member of the Communist Central Committee, warned, however, that the regime would not allow artistic or literary activity "aimed against the legal order of the state."

In line with Soviet policy, much energy is being spent in promoting cooperation between Hungary and other Communist countries. Hungary participated in the meeting of the Soviet bloc's Council for Mutual Economic Assistance at Tiranë, Albania, on May 13–16, which agreed on further integration of the economies of the member states.

Much stress is put on exchanges of official visits by the leaders of Communist states. During his visit to Czechoslovakia on February 18–21, Communist First Secretary János Kádár commended that nation for successes in industry and agriculture, and attacked Yugoslavia for "revisionism." On June 4–6, Soviet Premier Khrushchev stopped off in Budapest while on his way to Moscow from Albania. A delegation led by Hungarian Premier Münnich visited the Mongolian People's Republic, North Vietnam, China, and North Korea in April and May. Later, on July 29, the Hungarian Parliament ratified a new Chinese-Hungarian friendship treaty.

Relations between the United States and Hungary remained strained. The United States rejected the Hungarian note of Jaunary 27 requesting the termination of the "absurd abnormal" relations between the two countries on grounds that the note implied threats of retaliation unless the United States agreed to negotiate. On July 6 the Hungarian government restricted the movement of the members of the United States legation to within 25 miles of the center of Budapest because the legation's activities allegedly constituted a constant danger to the Hungarian state. The United States retaliated by restricting the movement of Hungarian diplomats in the United States to within 25 miles of New York City and Washington.

During Soviet Premier Khrushchev's visit to the United States in September, official spokesmen found it necessary to remind the Hungarian people that the meeting between Khrushchev and Eisenhower would not have "internal political effects" in Hungary, and that "the social order and internal system of the socialist countries are problems exclusively concerning the peoples of these countries."

The Central Committee of the Hungarian Communist Party announced on November 23 the ex-

Hungary's Premier Ferenc Münnich (left) and Communist Party leader János Kádár (right) greet Soviet Premier Khrushchev on the latter's visit to Budapest, June 4, 1959.

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pulsion of 11 party members for spreading revisionist ideas. Another 20 members retained membership in the party after admitting their mistakes, and a number of other members were accused of having cooperated with the "enemies of the working people" in 1956. The purges apparently were necessary in order to eliminate dissident elements prior to the first party congress held in Hungary since 1956.

The Seventh Communist Party Congress met at Budapest on Nov. 30–Dec. 5, 1959, and was attended by Premier Khrushchev. In an address at the opening session of the congress, János Kádár said that Soviet forces would remain in Hungary as long as the international situation required their presence, and that his government favored negotiations for the withdrawal of all foreign troops from Europe. (It is estimated that about 50,000–80,000 Soviet troops are stationed in Hungary.) Kádár also denounced the United States for allegedly trying to "undermine" the Hungarian regime, although he expressed a wish for "normal relations" with the United States. He praised the Soviet Union for its work toward peace, thanked that country for its help in crushing the 1956 revolt, and lauded Khrushchev for his successful trip to the United States. In his speech to the congress on December 1, Khrushchev warned that the Soviet Union had enough rockets to destroy all its foes, and insisted that the West Berlin issue must be settled. He blamed the Hungarian revolution of 1956 on "serious mistakes" committed by Mátyás Rákosi (former Hungarian leader), and admitted that his own denunciation of the "cult of personality" (Stalinism) in 1956 had started a "kind of fever" in all Communist countries.

The congress approved decisions to intensify the ideological campaign against class enemies and "revisionism," and to accelerate land collectivization and industrial expansion. A new Central Committee of 71 members was elected, replacing the existing committee of 53 members. Kádár was again elected first secretary; other secretaries are Jenö Fock, Gyula Kállay, Károly Kiss, and György Marosán, who with seven other party members[1] constitute the new 12-member Politburo. The congress adopted the Second Five-Year Plan (1961–65), which is the first Hungarian plan to be completely coordinated with the economic planning of the Soviet bloc's Council for Mutual Economic Assistance. Hungary is to receive 1 million kw.-hr. of electric power from the Soviet Union, 245,000 kw.-hr. from Czechoslovakia, and 250,000 kw.-hr. from East Germany. A pipeline (to be constructed) will bring oil to Hungary from the Volga basin in the USSR. Hungary is to supply the telecommunication equipment for these projects. The government has announced that all essential industrial raw materials needed for the Second Five-Year Plan will come from the Communist countries.

[1] Antal Apró, Béla Biszku, Lajos Fehér, Ferenc Münnich, Sándor Ronai, Miklós Somogyi, and Bezso Nemés.

In a report issued on November 27, Sir Leslie Munro, the United Nations special representative on the question of Hungary, charged that the Hungarian government had violated fundamental human rights and was still executing patriots involved in the 1956 revolution. He challenged the Hungarian authorities "to allow the true facts to be known" by permitting him to visit their country, and said that the withdrawal of Soviet forces from Hungary would contribute toward "normalization of the situation." The U.N. General Assembly approved on December 9 a new resolution urging the Soviet Union and Hungary to cooperate in honoring previous United Nations resolutions which had called on the USSR to withdraw from Hungary and had sought admission of a United Nations representative to survey the situation there. The decision by the United Nations to debate the Hungarian question had previously been condemned by János Kádár, who said it constituted a violation of the United Nations charter.

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HURRICANES. See METEOROLOGY AND CLIMATOLOGY and the Index entry, *Hurricanes.*

HYDROELECTRIC PROJECTS. See Index entry.

HYDROGEN BOMB. See Index entry.

HYGIENE. See INDUSTRIAL HEALTH AND SAFETY; PUBLIC HEALTH; SANITARY ENGINEERING.

ICE HOCKEY. See SPORTS, GAMES, AND SHOWS.

ICE SKATING. See SPORTS, GAMES, AND SHOWS.

ICELAND. An island republic in the North Atlantic, located close to the Arctic Circle. Estimated area, 39,770 square miles; pop. (Dec. 1, 1958), 170,156 (over 70% urban). Reykjavík (69,268) is the capital and chief city.

Government.—Iceland's Althing (parliament) consists of 60 members elected for 4 years by a system of mixed proportional and direct representation (see below, *Principal Events*). The Althing selects a third of its members to constitute an upper house, the remainder forming the lower house. Following the elections of Oct. 25–26, 1959, party seating in the Althing was: Independence (Conservatives), 24; Progressives, 17; Labor Alliance (Communists and allies), 10; and Social Democrats, 9. Premier Olafur Thors (Independence) heads an Independence–Social Democratic coalition cabinet formed on Nov. 20, 1959. Asgeir Asgeirsson was re-elected to a 4-year term as president of the republic in 1956.

Education and Religion.—Education is compulsory for children aged 7 to 15. Primary schools in 1954 numbered 135 (17,200 pupils); secondary, 64 (5,585). There were also several technical, teacher-training, and other special schools. The university in Reykjavík had 750 students. The Evangelical Lutheran Church is the national church, but there is complete religious freedom.

Finance.—Treasury cash transactions in 1958 (with 1957 data in parentheses) were: revenue, 954.7 million krónur (882.3 million); expenditure, 893.7 million (910.0 million). The par value of the króna is 16.3 krónur per U.S.$1. Following the issuance of a law on Jan. 30, 1959, for the simultaneous reduction of wages and prices, the cost-of-living index dropped about 5% from January to April, and remained stable for the rest of the year. In 1959 the U.S. International Cooperation Administration granted Iceland a loan of $1,760,000 (expected to be used to complete construction of a third power station on the Sog River), and a loan of $3 million to finance essential commodity imports.

Transportation and Communications.—Iceland has no

railroads. High roads approximate 5,123 miles. Keflavík Airport, 31 miles from Reykjavík, is a base for major international airlines. Passenger cars in 1958 numbered 12,939; telephones, 33,295; licensed radio sets, 45,000 (1957).

Production.—Iceland's fish catch, a mainstay of the economy, totaled 502,700 metric tons in 1957 (chiefly cod, herring, and ocean perch). Agriculture, which engages about a fifth of the population, consists mainly of livestock raising (sheep and cattle), and Iceland is nearly self-sufficient in dairy products, meat, and wool. Principal manufactures are foodstuffs, wearing apparel, footwear, furniture, and other light items. Electric power output totaled 427 million kw.-hr. (about 97% hydroelectric) in 1957, or more than twice that of 1951. National income in 1957 was estimated at 3,800 million krónur.

Foreign Trade.—Exports in 1958 totaled 1,069.1 million krónur (up 8% over 1957); imports, 1,399.9 million (up 3%). Fish and fish products constitute about 95% of exports. Imports are chiefly fuels and lubricants, cereals and other foodstuffs, fertilizers, wood, and iron and steel products. The Soviet Union, Iceland's chief trading partner, took 16% of 1958 exports and provided 17% of imports. Other important trading partners are the United States, Britain, and West Germany.

Principal Events, 1959.—A redivision of voting districts to take account of population shifts, and an increase in the membership of the Althing from 52 to 60 took place in 1959. Forty-nine seats are now filled by direct election, and 11 are apportioned among the parties to render seating proportionate to popular vote. Since constitutional amendments require passage by two separate Althings, two general elections were held during the year. In the elections of June 28, the Independence Party scored gains, while the Communists' popular vote dropped about a fourth. In the elections of October 25–26, however, the Independence Party, though retaining its lead, showed less strength than expected, while the Communists recouped their losses. Social Democratic Premier Emil Jónsson resigned on November 19, and Independence leader Olafur Thors formed a new Independence–Social Democratic coalition government on November 20.

Iceland's "fishing war" with Britain continued in 1959. Iceland registered diplomatic protests against British fishing operations within the 12-mile limit (unilaterally proclaimed by Iceland on Sept. 1, 1958), Icelandic patrol boats fired occasional warning shots near British trawlers, and in a few instances British skippers were fined and fishing gear confiscated. On April 27 the Icelandic government warned that Britain's refusal to accept the 12-mile limit was imperiling Iceland's support of the North Atlantic Treaty Organization (NATO).

On September 11, Iceland protested in Washington against the maltreatment of two Icelandic civil air officials who allegedly had been forced by a United States sentry to lie on wet ground at Keflavík Airport while he ascertained their right to pass. This and other minor incidents reflected popular resentment over the presence (mainly at Keflavík Airport) of some 5,000 U.S. servicemen as part of the NATO air defense system. Following the Icelandic protest, the commander of the United States forces was removed. A reduction in United States forces by about 1,200 men was planned in the first half of 1960.

M. J. G.

IDAHO. Northwestern state, United States; admitted to the Union, July 3, 1890. The "Gem of the Mountains State" ranks 13th in area and 42d in population among the 50 states.

Area and Population.—Area: 83,557 square miles (land, 82,769; inland water, 788), divided into 44 counties. Population: (1950) 588,637; (est., July 1, 1958) 652,000. Urban places with 1950 populations above 7,500 (unless another date is given): Boise, *the capital* (special census, 1957), 34,383; Caldwell, 10,487; Coeur d'Alene, 12,198; Franklin-Whitney-Airport, unincorporated, 7,809; Idaho Falls, 19,218; Lewiston, 12,985; Moscow, 10,593; Nampa, 16,185; Pocatello (special census, 1957), 27,140; and Twin Falls, 17,600.

Executive.—Chief state officers in 1959:
Governor: Robert E. Smylie (Republican)
Lieutenant Governor: W. E. Drevlow
Secretary of State: Arnold Williams
Treasurer: Rulon Swensen
Attorney General: Frank L. Benson
Auditor: Joe R. Williams
Supt. of Public Instruction: Delmar F. Engelking

Constitution and Judiciary.—The present constitution went into effect in 1890. The Supreme Court comprises five justices; chief justice in 1959 was James W. Porter.

Legislature.—The Idaho Legislature comprises a 44-member Senate (in 1959, 27 Democrats, 17 Republicans) and a 59-member House of Representatives (36 Democrats, 23 Republicans), which meet in odd-numbered years commencing the first Monday after January 1.

The 1959 session was distinguished both by accomplishment and failure. With an opportunity to effect important governmental reorganization it rejected proposals to consolidate agencies, reduce the number of elected state officials, and streamline the lawmaking process by creating a Legislative Interim Council. Nevertheless it worked hard for 64 days and passed over 300 bills, of which some dozen were vetoed and about 250 became law.

Among significant enactments were a revised income tax law which placed the Idaho income tax structure on the federal model, and a controversial $10 tax for all required to report income. These measures were calculated to support a General Fund appropriation of $75 million. Other important measures included an appropriation of $27 million (up $5 million from 1957–58) for the public schools, a strengthened traffic code giving special attention to juvenile drivers, reorganization of the justice courts (including abolition of the fee system for justices of the peace), and establishment of a run-off primary when no candidate for governor, U.S. senator, or congressman obtains 40% of the vote. The lawmakers also extended federal food and drug laws to intrastate traffic and submitted two constitutional amendments for popular vote in 1960: (1) to lower the voting age from 21 to 19; and (2) to raise the bonded debt limit from $2 million to 3% of the state's assessed valuation, thus increasing the limit to approximately $20 million on the basis of current assessments.

Finance.—In the 1958–59 fiscal year, revenue included $46,061,106.45 from state tax sources and $65,621,889.33 from the federal government. State tax revenue included $13,229,364 from individual income taxes, $4,298,422 from corporate income taxes, $13,484,451 from motor fuel taxes, and $12,769,159.84 from licensing. Expenditures of $182,403,525.93 consisted of $21,059,354.36 for education, $16,255,070.03 for health, welfare, and safety, $37,382,831.90 for highways, and $107,706,269.64 for other purposes. State long-term indebtedness on June 30, 1959, amounted to $1,620,000.

Banking.—As of June 10, 1959, the state's 10 national banks had $491,695,000 in assets, $278,955,000 in demand deposits, and $173,066,000 in time deposits. The 20 state banks had assets of $168,906,196.08, demand deposits of $101,021,456.52, and time deposits of $53,653,964.30.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $35,577,880.48 ($259.97 per pupil), and revenue of $50,305,543.71 included $22,523,864.39 from local school district taxes, $11,921,092.42 from the state, and $2,587,545.80 from the federal government. Capital outlays for new construction and improvements amounted to $14,979,925.95. Teachers' salaries (1958–59) averaged $4,281 (high school, $4,472.19; junior high, $4,254.89; elementary, $3,857.67).

In the 1959–60 school year there were 427 public elementary schools with 3,309 teachers and 92,443 pupils, and 195 secondary schools (including 67 junior high schools) with 2,787 teachers and 63,447 pupils. College and university enrollment in the 1958–59 school year totaled 10,829.

Social Welfare.—Public assistance expenditures in the 1958–59 fiscal year from state and federal funds (excluding institutional costs) totaled $10,238,231.72, including $4,047,234.36 for the aged, $1,796,841 for dependent children, and $3,786,901.16 for general relief. A monthly average of 10,742 persons received public assistance.

Labor Force.—In June 1959 the state's labor force totaled 272,200 persons, including 74,900 agricultural workers. Nonfarm employment stood at 186,600, compared with 185,200 a year earlier and an average of 179,700 for the intervening 12

months. Major employment sources were trade, 20.2%; government, 17.7%; and manufacturing, 15.6%. Unemployment of 10,700 on June 30, 1959, was down from 12,900 a year earlier.

Manufacturing.—There were 26,235 persons employed in manufacturing plants in 1957 who received $109,331,000 in wages. Value added by manufacture totaled $212,192,000, and outlays for new plant and equipment amounted to $19,144,000. Leading manufactures were the lumber and wood products industry, which added $76,356,000 in value by manufacture, employed 11,912 persons, and paid $51,979,000 in wages; foods and food processing ($54,412,000; 7,666; $26,119,000) and chemicals and products ($21,397,000; 966; $5,473,000). Production workers averaged $91.37 for an average workweek of 39.9 hours in August 1959.

The U.S. Atomic Energy Commission is a major employer in the state. Its Idaho operations in 1959 engaged 4,300 permanent employees and its payroll totaled up to $30 million.

Mining.—Idaho ranked 33d among the states in the value of its mineral output in 1958, with 0.39% of the national total. It produced most of the domestic output of antimony and was the principal producer of cobalt. The state also led in output of columbium-tantalum and lead, and continued first in silver (nearly 47% of United States output); was third in nickel, phosphate rock, recoverable zinc, and zirconium.

IDAHO MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Copper	9,846	$ 5,179,000
Gold (ounces)	15,896	556,000
Lead	53,603	12,543,000
Phosphate rock (long tons)	1,291,000	5,652,000
Sand and gravel	6,714,000	6,305,000
Silver (ounces)	15,953,000	14,438,000
Stone	1,122,000	1,710,000
Zinc	49,725	10,144,000
Other minerals	...	7,929,000
Total	...	$64,456,000

(Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 totaled $258,443,000, compared with $259,326,000 for the corresponding period of 1958. For the full year 1958, income comprised $190,818,000 from livestock and livestock products, $213,025,000 from crops, and $10,274,000 from government payments. Principal income sources in 1958 were: cattle, $96,141,000; wheat, $65,347,000; potatoes, $52,799,000; and dairy products, $50,399,000.

IDAHO CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,476	1,200	1,250
Barley (1,000 bu.)	14,696	19,775	16,916
Beans, dry (1,000 bags)	2,293	2,697	2,592
Cherries (tons)	3,392	4,310	2,300
Corn (1,000 bu.)	2,441	4,216	5,600
Hay (1,000 tons)	2,693	3,117	2,911
Hops (1,000 lb.)	2,755	5,670	6,790
Oats (1,000 bu.)	8,435	9,100	7,399
Peas, dry field (1,000 bags)	1,119	1,116	1,827
Potatoes (1,000 cwt.)	29,234*	43,838	40,222
Prunes (tons)	20,880	19,300	22,500
Sugar beets (1,000 short tons)	1,387	1,902	1,901
Wheat (1,000 bu.)	40,284	42,492	42,748

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 39,000 farms in 1958. Their acreage (1954) of 14,364,000 included 3,728,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,414,000 cattle, 1,060,000 sheep, and 1,722,000 chickens (excluding commercial broilers). Some 76,000 family and hired workers were engaged in farming in the week of Oct. 18–24, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958 calendar year totaled $30,820,200, and 922.6 miles of new construction were completed.

Highways and roads on Dec. 31, 1958, totaled 42,476 miles (23,536.2 surfaced). Registered *motor vehicles* numbered 370,814 on the same date, including 240,018 passenger cars. There were (1958) 9 *railroads* operating 3,094.44 line miles; and (1959) 4 regularly scheduled *airlines* and 164 *airports and airfields* (84 commercial and municipal, 1 military, 54 private, and 25 state).

Communications media (1959) included 30 AM *radio stations;* 5 VHF *television stations;* 14 daily *newspapers* (circulation, 141,192) and 75 other newspapers (98,100); and (January 1) 55,200 business and 153,400 residential *telephones.*

Principal Events, 1959.—Politics and fish stirred Idahoans in 1959. Democrats controlled the legislature and, except for the governorship, held all elective state offices. The governor controlled most appointments. Political partisanship flourished. Patronage-hungry Democrats blocked a reorganization program which would have reduced the number of elective officials to three: governor, lieutenant governor, and a proposed new office of comptroller, combining the offices of treasurer and auditor. The Democrats tried to transfer the tax collector and the Bureau of Accounts from the governor's control to that of the auditor, but they were blocked by a veto in the first and a court ruling in the second instance. They fired Park Superintendent J. W. Emmert and tried unsuccessfully to have State Forester Roger Guernsey removed from office. Attorney General Frank L. Benson, repeatedly in the news, failed to get the courts to block use of highway funds for a state office building or to declare the new income tax law invalid. He tried without success to establish the principle that all state agencies needing legal advice must use his office. Governor Smylie also showed partisanship, vetoing a law to designate "Democratic" as the official name for that party, and, on the death of State Treasurer Ruth Moon, hastily appointing Rulon Swenson to replace her in order to prevent a Democrat from getting the office while he toured the Soviet Union.

The new state tax program was unlikely to resolve the tax issue or to end the pressure for a sales tax. The income tax law, which created a furor when an error—later corrected by court order—was discovered in the bill signed by the governor, remained under attack by both Democrats and Republicans who feel that taxes could be cut by reverting to old rates. By adopting the federal income tax code and by imposing a $10 tax on all who file, the new program was expected to reach between 30,000 and 70,000 new taxpayers. It could also create a surplus of from $2 million to $5 million. This fact, the regressive nature of the "head tax," and the obvious political advantages of advocating or seeming to advocate tax cuts, would indicate a continuing fight between supporters of the new program, the old law, and a sales tax.

Idahoans, strong for the development of the lower Snake River, which would bring slack water, navigation, and industry above Lewiston, were in 1959 heatedly debating the merits of the Nez Perce and Mountain Sheep (middle Snake), Bruces Eddy and Penny Cliffs (North and Middle forks of the Clearwater) dam sites. Multimillion dollar facilities to pass a few thousand game fish up and down streams seemed extravagant to advocates of economic development However, in a state which, with a population of 650,000, sold 246,101 resident fish and game licenses in 1959, this matter was not an academic one, and it threat-

ened to delay development of power facilities in the area.

Among educational developments, the Idaho Education Association came out for a sales tax, and the University of Idaho started a Ph.D. program, opened an adult education center in Boise, and began a study of the human and material resources of the Fort Hall Indian Reservation.

Legislature and Principal Events by:
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ILLINOIS. North Central state, United States; admitted to the Union, Dec. 3, 1818. The "Prairie State" ranks 24th in area and fourth in population among the 50 states.

Area and Population.—Area: 56,400 square miles (land, 55,935; inland water, 465), divided into 102 counties. Population: (1950) 8,712,176; (est., July 1, 1958) 10 million. Urban places with populations above 15,000 (as estimated by the University of Chicago Population Research and Training Center for July 1957, unless otherwise indicated) are:

Alton	32,600	Jacksonville	20,400
Arlington Heights	23,128[1]	Joliet	60,529[2]
Aurora	57,800	Kankakee	28,400
Belleville	37,300	Kewanee	16,800
Bellwood	17,933[2]	Lansing	16,500
Berwyn	52,700	Lincoln	16,700
Bloomington	36,200	Lombard	18,468[2]
Blue Island	19,000	Mattoon	18,000
Brookfield	20,100	Maywood	27,500
Calumet City	22,500	Melrose Park	18,797[2]
Champaign	48,500	Moline	39,200
Chicago	3,746,300	Morton Grove	16,643[1]
Chicago Heights	28,942[2]	Mount Vernon	15,600
Cicero	67,900	North Chicago	18,000
Danville	41,600	Oak Lawn	19,200
Decatur	78,900	Oak Park	60,900
DeKalb	15,700	Ottawa	19,500
Des Plaines	31,100	Park Forest	27,967[2]
Dixon	18,851[2]	Park Ridge	27,590[2]
Downers Grove	19,681[2]	Pekin	25,800
East Moline	15,300	Peoria	114,000
East St. Louis	92,600	Quincy	42,700
Elgin	48,200	Rantoul	22,000
Elmhurst	34,654[2]	Rock Island	49,400
Elmwood Park	23,000	Rockford	119,900
Evanston	76,200	Skokie	46,600
Evergreen Park	21,800	Springfield (*capital*)	81,600
Forest Park	16,200	Sterling	15,064[2]
Franklin Park	16,176[2]	Streator	16,500
Freeport	25,601[2]	Urbana	26,200
Galesburg	33,700	Villa Park	15,600[2]
Granite City	37,100	Waukegan	50,400
Harvey	24,500	Wheaton	20,000
Highland Park	23,500	Wilmette	21,500

[1] Special census, 1958. [2] Special census, 1957.

Executive.—Chief state officers in 1959:
Governor: William G. Stratton (Republican)
Lieutenant Governor: John W. Chapman
Secretary of State: Charles F. Carpentier
Treasurer: Joseph D. Lohman
Attorney General: Grenville Beardsley
Auditor: Elbert S. Smith
Supt. of Public Instruction: George T. Wilkins

Constitution and Judiciary.—The present constitution went into effect in 1870. The Supreme Court comprises seven justices; chief justice in 1959 was Byron O. House.

Legislature.—The Illinois General Assembly comprises a 58-member Senate (in 1959, 34 Republicans, 24 Democrats) and a 177-member House of Representatives (92 Democrats, 85 Republicans), which meet in odd-numbered years commencing the first Wednesday after the first Monday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1957–58 fiscal year, state revenue of $946,598,972 consisted of $768,370,820 from state tax sources, $163,434,563 from the federal government, and $14,793,589 from other sources. Tax revenue comprised $316,203,000 from a 2½% general sales and use tax, $149,170,408 from motor fuel taxes, $114,586,000 from licensing, and $188,411,412 from other state tax sources. Expenditures of $899,232,010 consisted of $197,455,781 for education, $302,488,111 for health, welfare, and safety, $274,346,393 for highways, and $124,941,725 for other purposes. State long-term indebtedness on June 30, 1958, totaled $198,272,200.

Banking.—As of June 10, 1959, the state's 395 national banks had $12,522,330,000 in assets, $7,936,132,000 in demand deposits, and $3,120,301,000 in time deposits. The 553 state banks (Dec. 31, 1958) had assets of $5,372,686,904.78, demand deposits of $3,148,052,197.11, and time deposits of $1,827,951,259.14. There were also 460 savings and loan associations with assets of $2,556,704,890.68.

UPI

Dutch freighter *Prins Johan Willem Friso*, first ocean-going vessel to reach Chicago via the St. Lawrence Seaway, is welcomed by crowd at Lake Michigan pier, April 30, 1959.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $580,761,784.68 ($410.86 per pupil), comprising $447,186,574.21 from local school districts, $127,767,592.63 from the state, and $5,807,617.84 from the federal government. Outlays for construction and improvements amounted to $172,181,569.07, and teachers' salaries averaged $4,918.37 (high school, $5,305.58; elementary, $4,462.94).

In the 1957–58 school year there were 1,145 public elementary school districts with 43,967 teachers and 1,294,713 pupils, and 276 public secondary school districts with 19,022 teachers and 411,154 pupils. Higher educational institutions included 21 junior colleges with 27,777 students, 5 teachers colleges with 11,243 students, and 46 colleges and universities with 136,743 students.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $201,635,000, including $65,353,000 for the aged, $61,934,000 for dependent children, and $53,908,000 for general relief. A monthly average of 363,834 persons received public assistance. The state spent $66,457,068 for all mental health activities and $25,100,631.78 (1957–59 biennium) for its prison and penal programs.

Labor Force.—The state's labor force totaled 4,255,300 on May 15, 1959, including 230,000 agricultural workers. On June 15 there were 3,455,700 nonagricultural workers, compared with 3,328,400 a year earlier and an average of 3,316,000 for 1958. Of total nonfarm employees, 1,233,700 were active in manufacturing, 718,600 in trade, and 424,100 in service industries. Unemployment fell to 201,000 on May 15, 1959, from the previous May 15 total of 335,000. The state paid $217,349,260 in unemployment compensation claims during 1958.

Manufacturing.—In the first quarter of 1958 there were 14,641 manufacturing establishments covered by unemployment insurance which were employing 1,163,446 persons and paying $1,529,961,191 in wages. Estimated employment in all establishments (including those not covered by unemployment insurance) was 1,163,900. Value added by manufacture (1957) totaled $12,363,458,000, and outlays for new plant and equipment amounted to $923,428,000. Production workers averaged $96.81 for an average workweek of 40.6 hours in July 1959.

MAJOR ILLINOIS MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Nonelectrical machinery	227,067	$1,214,664	$2,199,375
Food and kindred products	130,311	629,010	1,585,671
Electrical machinery	160,032	747,916	1,334,232
Fabricated metal products	129,176	655,886	1,212,843
Primary metal industries	98,055	547,194	961,774
Printing and publishing	99,670	546,802	946,302
Chemicals and products	52,370	274,930	864,645
Transportation equipment	57,335	324,668	723,028
Instruments and related products	41,673	196,698	410,447
Stone, clay, glass products	35,456	175,215	392,082

* For definition, see text footnote 1 in the article *Industrial Production*. (Source: *Annual Survey of Manufactures: 1957*.)

Mining.—In 1958 Illinois stood seventh among the states in the value of its mineral output, with 3.52% of the United States total. The fuel group of minerals contributed 77% of the year's record total value. Illinois continued first in fluorspar output (48% of national total); second in perlite; third in stone; and fourth in bituminous coal and pig iron.

ILLINOIS MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	9,618,000	$ 30,858,000
Clays	2,335,000	5,910,000
Coal	43,912,000	176,614,000
Coke	1,910,835	37,406,376[1]
Fluorspar	152,087	7,931,000
Iron, pig	4,217,898	258,661,000[1]
Lead[2]	1,610	377,000
Natural gas (1,000 cu. ft.)[3]	12,983,000	1,921,000
Petroleum, crude (1,000 bbl.)[3]	82,125	246,375,000
Sand and gravel	29,866,000	33,453,000
Stone	35,016,000	44,245,000
Zinc[3]	24,940	5,088,000
Other minerals	...	32,157,000
Total	...	$582,412,000[4]

[1] Values for processed materials are not included in the total. [2] Recoverable content of ores. [3] Preliminary. [4] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $1,464,370,000 from $1,500,090,000 for the corresponding period of 1958. For the full year 1958, income comprised $1,301,130,000 from livestock and livestock products, $782,649,000 from crops, and $41,342,000 from government payments. Principal income sources in 1958 were: cattle, $520,166,000; hogs, $501,152,000; corn, $319,714,000; and soybeans, $271,470,000.

ILLINOIS CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	2,672	2,140	2,300
Broomcorn (tons)	1,160	300	300
Corn (1,000 bu.)	509,193	587,673	673,350
Hay (1,000 tons)	4,558	4,709	4,508
Oats (1,000 bu.)	141,331	133,485	89,320
Peaches (1,000 bu.)	374	500	365
Popcorn (1,000 lb.)	44,108	63,800	42,550
Rye (1,000 bu.)	1,015	928	1,054
Soybeans (1,000 bu.)	96,964	141,848	125,610
Wheat (1,000 bu.)	44,246	53,361	42,330

(Source: U.S. Department of Agriculture.)

There were 168,000 farms in the state in 1958 with a total acreage of 30,500,000 (20,100,000 in harvested cropland). Livestock on farms (Jan. 1, 1959) included 4,061,000 cattle, 7,106,000 hogs, and 17,399,000 chickens (excluding commercial broilers). There were 254,000 persons engaged in agriculture between January and June 1959.

Transportation and Communications.—State and federal funds spent for highways in 1958 totaled $250,323,476, and 1,486.79 miles of new construction were completed.

Highways and roads on Dec. 31, 1958, totaled 102,247.77 miles, exclusive of 21,000 miles of municipal streets; in all, 92,669.3 miles were surfaced. Registered *motor vehicles* on the same date numbered 3,734,487, including 3,127,657 passenger cars. There were (1959) 57 *railroads* operating 11,412 line miles; 20 regularly scheduled *airlines;* and 660 *airports and airfields* (122 commercial and municipal, 3 military, and 535 private).

Communications media (1958) included 92 AM and 30 FM *radio stations;* 17 *television stations;* (1957) 94 daily *newspapers* (circulation, 3,829,219) and 667 other newspapers; and (Jan. 1, 1959) 1,274,100 business and 3,015,900 residential *telephones.*

Principal Events, 1959.—A hectic legislative session highlighted Illinois public affairs during the year. Starting with a sharp contest over the speakership and ending in much confusion, the session set many records. A contest for the speakership ended with Paul Powell (D., Vienna) being elected with the votes of the Republican minority. The dispute for the office grew out of a division in the Democratic Party between Chicago and downstate representatives.

More bills were introduced and passed than in any previous session, and the governor vetoed the largest number of bills in the state's history. On the next to last day, the House unseated one of its members, the first such action in recent years. The end of the session was marked by much confusion, and it was necessary on the last night to remain in session for 13 hours with the clock stopped in order for the legislature to complete its work.

To deal with financial problems, the legislature raised the state sales tax by a half cent to 3 cents per dollar. Counties were given the same power that cities already had to levy an additional half-cent sales tax in unincorporated areas. The legislature defeated a Democratic proposal to increase corporation taxes and an administration proposal to broaden the base of the sales tax. The tax on liquor was increased. A record budget was approved, but after the session the governor froze the funds for capital improvements, and many of the building projects at the state's institutions were held up.

The legislature enacted significant changes in the state's judiciary. The position of court administrator was created to speed up the flow of litigation, and the first appointee to the position was Henry P. Chandler, former administrator of federal courts. The number of justices of the peace in the state will be substantially reduced in 1961 and they will be put on a salary rather than fee basis. Other legislation provided for uniform daylight saving time from April to October, and a bonus for certain Korean War veterans.

For the first time since the adoption of the "Gateway" amendment in 1950, there will be no constitutional amendment on the ballot in 1960. There will be two bond issues on the ballot, however, providing funds for buildings at state educational and welfare institutions.

An unusually large number of foreign visitors came to Springfield and the Lincoln shrines during the year, including King Hussein of Jordan, President José María Lemus of El Salvador, and President Sean O'Kelly of Ireland. Mayor Willy Brandt of West Berlin, who spoke at a February 12 Lincoln sesquicentennial dinner, said that Lincoln's "house divided" speech contained "truths" which were "perhaps even more applicable to the present situation of the German people."

Although the steel strike had caused considerable unemployment, overall nonfarm employment was up 72,400 in September 1959 over the same month in 1958. Late in October the number of

those made jobless by the steel strike was 29,595.

Roger (The Terrible) Touhy, a well-known Chicago gangster of the prohibition era, was fatally shot by unknown assailants on December 16, three weeks after being freed on parole. He had served 25 years for a crime he said he did not commit. Touhy had been sentenced in 1934 to 99 years on a charge of having kidnaped John (Jake the Barber) Factor.

Principal Events by: SAMUEL K. GOVE, *Research Associate Professor, Institute of Government and Public Affairs, University of Illinois.*

ILLITERACY. See Index entry.

IMMIGRATION AND NATURALIZATION. Immigration.—The number of persons who entered the United States during the year ended June 30, 1959, reached a new high of 157 million. This figure includes 84 million alien and 66 million citizen entries made across the Canadian and Mexican borders. The remainder were immigrants, crewmen, agricultural laborers, tourists, diplomats, students, other alien visitors, and United States citizens returning from abroad.

During the year, 260,686 immigrants were admitted to the United States for permanent residence, an increase of about 3% over the previous year's figure. This number includes 25,424 Hungarians who have been in the United States for two years or more and who gained adjustment of their status to that of permanent residents under the terms of an act of July 25, 1958. Also included are 24,834 persons admitted to the United States under the provisions of an act of Sept. 11, 1957, which is approximately the same number of persons admitted under this act during the previous year. Among the special groups covered by the act, 2,934 orphans and 1,471 highly skilled aliens, as well as 1,457 spouses and children of such aliens, gained admission to the United States. Also admitted under this law were 1,036 parents of United States citizens, 5,154 spouses and children of resident aliens, and 12,782 refugees. Quota immigrants in the fiscal year 1959 numbered 97,657, showing a 4% decrease from 1958. This decrease was mainly due to the smaller number of immigrants coming from the United Kingdom and Ireland. Other countries show less variation from the previous year's figure.

Within the national quotas, preferences are established for highly skilled aliens and for specified close relatives of United States citizens and resident aliens. The first preference portion allots 50% of the quota for highly skilled professional and technical persons whose services are urgently needed in the United States. A little over 3,500 persons were admitted in this category in the fiscal year 1959, showing an 11% decrease from 1958. Their spouses and children admitted under the same classification numbered over 3,000. In addition, 6,843 relatives of United States citizens were admitted in the second and fourth preference categories, and 7,543 spouses and children of resident aliens entered under the third preference classification.

Nonquota immigrants are not restricted numerically, but they must meet the standards of health, morals, literacy, and economics established for all immigrants. In 1959, 163,029 persons were admitted as nonquota immigrants, an increase of almost 12,000 compared with 1958. Again in 1959, the largest nonquota class admitted consisted of 66,386 natives of the independent countries of the Western Hemisphere. This is a decrease of approximately 23% as compared with the previous year's figure, and was caused by a considerable decline in the number of immigrants from Canada, Mexico, and Cuba.

Spouses and children of United States citizens, totaling 36,402, were the second largest group of nonquota immigrants. The greatest number of wives came from Germany (5,399) and Japan (4,412), while the largest number of nonquota husbands were natives of Italy (1,734).

The 25,424 Hungarians mentioned previously were included in 1959 in the nonquota group under the act of July 25, 1958, as were the 24,834 admitted under the act of Sept. 11, 1957.

Table 1 shows, by principal countries of birth, the number of quota and nonquota immigrants admitted.

Table 1—IMMIGRANT ALIENS ADMITTED TO THE UNITED STATES IN THE YEAR ENDED JUNE 30, 1959

Country or region of birth	Total admitted	Quota immigrants	Nonquota immigrants
All countries	260,686	97,657	163,029
Europe	158,023	89,145	68,878
Austria	2,355	1,474	881
Czechoslovakia	2,813	2,219	594
France	4,487	2,784	1,703
Germany	31,422	23,997	7,425
Greece	4,507	435	4,072
Ireland	7,371	7,291	80
Italy	16,251	5,871	10,380
Netherlands	4,005	2,903	1,102
Norway	2,484	2,248	236
Poland	8,301	5,894	2,407
Sweden	2,079	2,020	59
United Kingdom	20,954	20,279	675
Yugoslavia	4,349	1,146	3,203
Other Europe	46,645	10,584	36,061
North America	64,740	1,527	63,213
Canada	23,082	9	23,073
Mexico	23,061	1	23,060
West Indies	12,218	1,212	11,006
Central America	5,808	102	5,706
Other North America	571	203	368
South America	9,792	160	9,632
Asia	24,312	4,941	19,371
Africa	2,631	1,115	1,516
Australia and New Zealand	870	503	367
Other countries	318	266	52

(Source: U.S. Department of Justice, Immigration and Naturalization Service.)

Admissions of nonimmigrants (aliens admitted for temporary periods) totaled more than one million in the 1959 fiscal year, an increase of 21% over the previous year's figure. This includes approximately 600,000 tourists, more than 35,000 students, and some 24,000 exchange visitors.

In addition to the above, approximately 450,000 Mexican agricultural laborers were admitted. Also, 1,692,893 alien crewmen serving on vessels and planes arriving in the United States were inspected and granted permission to land.

Apprehension and Expulsion of Aliens.—The number of deportable aliens who were located and found to be illegally in the United States declined further to 64,819 in the fiscal year 1959. This decline is due chiefly to the decrease in the number of Mexicans who entered the United States surreptitiously. In 1959, 7,988 aliens were formally deported from the United States, an increase of about 10% over the previous year's figure. Violation of nonimmigrant status and illegal entry were the main grounds for deportation; 56,610 aliens were required to depart without formal proceedings.

Naturalizations.—During the year ended June 30, 1959, 103,931 persons were granted United States citizenship through naturalization. Of these, 72% were from Europe (chiefly Germany, the United Kingdom, Italy, and Poland), 10% were

from Canada, and 5% were from Mexico. Besides the 77,000 persons naturalized under the general provisions of the law, there were 19,000 spouses and almost 6,000 children of United States citizens naturalized under the special provisions applicable to these classes. A third of the children were formerly German, and another 6% were Japanese.

Table 2 shows the principal countries of former allegiance of all those naturalized during the years ended June 30, 1955–59.

Table 2—PRINCIPAL COUNTRIES OF FORMER ALLEGIANCE OF PERSONS NATURALIZED IN THE UNITED STATES
(Years Ended June 30, 1955 to 1959)

Country of former allegiance	1959	1958	1957	1956	1955
All countries	103,931	119,866	138,043	145,885	209,526
British Empire	10,990	12,428	13,210	13,600	22,974
Canada	10,324	10,211	10,891	11,539	18,151
Czechoslovakia	1,474	2,271	2,739	3,174	5,890
France	1,920	2,130	2,357	2,406	3,320
Germany	18,442	20,486	17,445	16,230	17,842
Greece	2,457	3,370	4,791	2,550	3,785
Hungary	1,444	2,541	3,924	3,513	4,292
Ireland	3,163	3,259	3,624	4,832	9,116
Italy	8,079	8,462	9,056	9,549	16,128
Japan	3,094	2,736	2,861	4,231	7,593
Latvia	1,634	2,511	4,482	4,988	3,057
Mexico	5,147	5,042	5,541	6,958	10,166
Netherlands	2,078	2,000	2,060	2,229	2,979
Poland	7,603	11,038	16,582	17,256	27,777
USSR	3,205	4,582	6,993	7,771	8,627
Yugoslavia	2,121	4,154	4,647	4,681	3,689
Other	20,756	22,645	26,840	30,378	44,140

(Source: U.S. Department of Justice, Immigration and Naturalization Service.)

Certificates of derivative citizenship were issued to 25,162 persons during the fiscal year 1959, including 6,907 cases where citizenship was acquired by birth to citizen parents abroad. Petitions for naturalization were denied in 2,208 cases, generally because the petitioner withdrew or failed to prosecute the petition.

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IMMUNIZATION. See Index entry, *Vaccines.*

IMPORTS. See INTERNATIONAL TRADE and the *Foreign Trade* section of articles on countries.

INCOME. National Income and Product.[1]—National economic activity in the United States was markedly higher in 1959 than in the previous year. As shown in Table 1, gross national product for the first three quarters of 1959 was at a record annual rate (seasonally adjusted) of $478 billion, 8% above the 1958 total of $442 billion. (The annual rate data represent the average of estimates for the first three quarters which have been adjusted for seasonal influences and multiplied by four to facilitate comparison with previous annual totals.) The bulk of the rise in gross national product from 1958 to 1959 represented an expansion in the physical volume of production; the general average of prices increased relatively little over the period.

National income in the first half of 1959 amounted at an annual rate to $397 billion, as compared with $366 billion in 1958. (See Table 2.) Although complete information for the third quarter was not available in 1959, it was evident that the annual rate of national income for the first nine months of the year would also show an increase of about 8% over the full year 1958.

In the first three quarters of 1959, personal income was at an annual rate of $378 billion, and disposable income—personal income less personal taxes—amounted to about $333 billion. (See Table 3.) Both of these comprehensive measures of the flow of income to individuals averaged 5% higher than in 1958.

Table 1—GROSS NATIONAL PRODUCT OR EXPENDITURE, 1956–59
(Billions of dollars)[1]

Item	1956	1957	1958	1959[2]
Gross national product	419.2	442.5	441.7	477.8
Personal consumption expenditures	269.9	284.8	293.0	309.5
Durable goods	38.5	40.3	37.6	43.0
Nondurable goods	131.4	137.7	141.9	147.0
Services	100.0	106.7	113.4	119.5
Gross private domestic investment	64.4	66.6	54.9	71.4
New construction	35.5	36.1	35.8	40.6
Residential nonfarm	17.7	17.0	18.0	22.5
Other	17.8	19.0	17.7	18.0
Producers' durable equipment	27.2	28.5	22.9	25.6
Change in business inventories	4.7	2.0	−3.8	5.2
Net exports of goods and services	2.9	4.9	1.2	−0.9
Government purchases of goods and services	79.0	86.2	92.6	97.8
Federal	45.7	49.4	52.2	53.8
State and local	33.2	36.8	40.5	44.1

[1] Detail will not necessarily add to totals because of rounding.
[2] Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates. (Source: U.S. Department of Commerce.)

Patterns of Economic Change.—The expansion of income and production in 1959 reflected recovery of the economy from the business recession which extended from the fall of 1957 to the spring of 1958. However, the economic scene in the latter part of 1959 was dominated by the prolonged steel strike, which served to offset in part the gains achieved through midyear.

Table 2—NATIONAL INCOME BY DISTRIBUTIVE SHARES, 1956–59
(Billions of dollars)[1]

Item	1956	1957	1958	1959[2]
National income	350.8	366.5	366.2	396.7
Compensation of employees	242.5	255.5	256.8	274.4
Wages and salaries	227.6	238.5	239.4	255.2
Private	189.6	198.4	196.2	210.1
Government	38.1	40.1	43.2	45.0
Supplements to wages and salaries	14.9	17.0	17.4	19.3
Income of unincorporated enterprises and inventory valuation adjustment	43.7	44.5	46.6	46.8
Business and professional	32.1	32.7	32.4	34.1
Farm	11.6	11.8	14.2	12.7
Rental income of persons	10.9	11.5	11.8	12.0
Corporate profits and inventory valuation adjustment	42.0	41.7	36.7	48.3
Corporate profits before tax	44.7	43.3	37.1	49.6
Corporate profits tax liability	21.2	21.1	18.2	24.1
Corporate profits after tax	23.5	22.2	18.9	25.4
Inventory valuation adjustment	−2.7	−1.5	−0.4	−1.3
Net interest	11.7	13.3	14.3	15.3

[1] Detail will not necessarily add to totals because of rounding.
[2] Data cover first two quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates. (Source: U.S. Department of Commerce.)

From the third quarter of 1957 to the first quarter of 1958, gross national product declined 4% in value and 5% in physical volume—the difference between these percentages reflecting the further edging up of prices during the period of

[1] *National income* is the sum of the net earnings of labor and property which arise from the current production of goods and services by the nation's economy. It measures, therefore, the total factor cost of the goods and services produced by the economy. Earnings are measured in the forms in which they accrue to residents of the nation, before deduction of taxes on those earnings.

Personal income is the current income received by persons from all sources, including transfers from government and business but excluding transfers among persons. It differs from national income by the inclusion of transfers (such as relief, veterans' pensions, and unemployment compensation) which are not in return for current productive services, and by the exclusion of earnings (social insurance contributions and undistributed corporate income) which are not actually received by persons in the current period.

Gross national product or expenditure measures the market value of the output of goods and services produced by the nation's economy, before deduction of depreciation charges and other allowances for durable capital goods used up in the productive process. Other business products used by business in the accounting period are excluded.

business downturn. The economy made its turnabout in the second quarter of 1958 and expanded rapidly thereafter. In the second quarter of 1959, gross national product attained a record annual rate of $484.5 billion—about $54 billion, or 12%, above the first-quarter 1958 recession low. With prices showing only moderate rises, a very large proportion of the increase represented growth in the physical volume of goods and services.

The following generalizations emerge from a comparison of changes in overall production and prices during the 1957–59 cycle in business with those recorded for corresponding periods of the two earlier postwar swings in economic activity:

(1) Based on the movement of gross national product in real terms (adjusted for changes in price), the 1957–58 recession was the sharpest of the postwar period. It was also the shortest, since the first substantial stride in recovery came after three quarters (two of decline and one of leveling out), as against four quarters in the 1948–49 recession and five quarters in the 1953–54 downturn.

(2) More broadly, all three recessions may be characterized as relatively mild, with the declines serving to check only briefly the underlying forward motion of the national economy.

(3) The first five quarters of business recovery brought roughly equal expansions of total national output in the three postwar cycles.

(4) Real gross national product was not so much above its prerecession peak in the second quarter of 1959 as it had been at comparable points of the earlier recoveries. This distinguishing feature was directly attributable to the somewhat greater severity of the latest downturn, but it did not reflect any relative lack of strength in the recovery which got under way in the spring of 1958.

(5) The phenomenon of rising prices during a recession was not unique to the 1957–58 period. Taken together, the movements of prices in the three postwar business cycles were symptomatic of an almost total absence of downward pressure on

Table 3—PERSONAL INCOME AND DISPOSITION OF INCOME, 1956–59

(Billions of dollars)[1]

Item	1956	1957	1958	1959[2]
Personal income	332.9	350.6	359.0	378.0
Wage and salary disbursements	227.6	238.5	239.4	256.6
Other labor income	8.1	9.1	9.3	9.9
Proprietors' and rental income	54.6	56.0	58.4	58.2
Dividends	12.1	12.5	12.4	13.1
Personal interest income	17.5	19.5	20.4	22.0
Transfer payments	18.8	21.7	26.1	26.5
Less: Personal contributions for social insurance	5.8	6.7	7.0	8.3
Less: Personal tax and nontax payments	40.0	42.7	42.6	45.4
Federal	35.2	37.4	36.7	39.1
State and local	4.8	5.4	5.8	6.3
Equals: Disposable personal income	292.9	307.9	316.5	332.6
Less: Personal consumption expenditures	269.9	284.8	293.0	309.5
Equals: Personal saving	23.0	23.1	23.5	23.2

[1] Detail will not necessarily add to totals because of rounding. [2] Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates. (Source: U.S. Department of Commerce.)

the United States price level during the postwar period.

The upward movement of the economy at the middle of 1959 was checked by the work stoppage in steel, which lasted 116 days until the half-million workers out on strike returned to the mills in November under a Taft-Hartley Act injunction upheld by the Supreme Court. (See also IRON AND STEEL; LABOR.) In the third quarter of 1959, gross national product declined to an annual rate of $478.5 billion—about $6 billion below the peak attained in the previous three months.

Gross National Product.—The 1959 data on gross national product revealed marked changes in distribution of national output among its major markets. These changes did not constitute a fundamental alteration in the pattern of gross national product but represented primarily a reaction from the 1957–58 recessionary developments.

Most noteworthy was the strong expansion in investment demand, which had been sharply affected by the recession. Residential construction rose substantially; business inventories were again accumulated in 1959 following a liquidation during the period of recession; and producers' durable equipment also advanced, although remaining well below the 1957 level. Nonresidential construction changed little in the aggregate from 1958 to 1959.

Table 4—PERSONAL INCOME BY STATES AND REGIONS, 1957 AND 1958[1]

State and region	Total personal income (millions of dollars) 1957	1958	Per capita amount 1958	Per cent of national per capita income 1958
Continental United States	347,911	356,328	2,057	100
New England	22,769	23,257	2,335	114
Maine	1,573	1,622	1,704	83
New Hampshire	1,066	1,101	1,885	92
Vermont	634	649	1,745	85
Massachusetts	11,322	11,641	2,394	116
Rhode Island	1,696	1,720	1,966	96
Connecticut	6,478	6,524	2,817	137
Mideast	88,497	90,057	2,413	117
New York	41,078	41,954	2,585	126
New Jersey	14,220	14,494	2,521	123
Pennsylvania	23,580	23,617	2,127	103
Delaware	1,216	1,253	2,760	134
Maryland	6,323	6,566	2,221	108
District of Columbia	2,080	2,173	2,634	128
Great Lakes	78,283	77,734	2,182	106
Michigan	16,893	16,507	2,099	102
Ohio	20,819	20,409	2,184	106
Indiana	9,231	9,118	1,990	97
Illinois	23,856	24,076	2,435	118
Wisconsin	7,484	7,624	1,936	94
Plains	28,154	29,671	1,928	94
Minnesota	6,158	6,468	1,916	93
Iowa	5,116	5,258	1,863	91
Missouri	8,364	8,702	2,037	99
North Dakota	940	1,103	1,697	82
South Dakota	1,098	1,147	1,641	80
Nebraska	2,635	2,759	1,894	92
Kansas	3,843	4,234	2,001	97
Southeast	53,632	55,826	1,471	72
Virginia	6,342	6,586	1,674	81
West Virginia	3,091	2,972	1,509	73
Kentucky	4,177	4,303	1,397	68
Tennessee	4,841	4,992	1,439	70
North Carolina	5,954	6,297	1,384	67
South Carolina	2,813	2,929	1,218	59
Georgia	5,441	5,678	1,487	72
Florida	7,733	8,334	1,876	91
Alabama	4,201	4,364	1,359	66
Mississippi	2,121	2,302	1,053	51
Louisiana	4,854	4,901	1,576	77
Arkansas	2,064	2,168	1,228	60
Southwest	23,587	24,733	1,813	88
Oklahoma	3,734	3,975	1,740	85
Texas	16,436	17,007	1,814	88
New Mexico	1,398	1,548	1,838	89
Arizona	2,019	2,203	1,932	94
Rocky Mountain	7,807	8,134	1,916	93
Montana	1,274	1,321	1,920	93
Idaho	1,068	1,126	1,701	83
Wyoming	646	668	2,088	102
Colorado	3,357	3,503	2,047	100
Utah	1,462	1,516	1,753	85
Far West	45,182	46,916	2,450	119
Washington	5,815	5,982	2,160	105
Oregon	3,430	3,556	2,006	98
Nevada	647	686	2,569	125
California	35,290	36,692	2,559	124
Hawaii	1,098	1,154	1,852	90

The estimates of "state personal income" shown in this table differ in definition in one respect from the personal income data in Table 3. This pertains to the exclusion from the state estimates of income disbursed by the federal government to its civilian and military personnel stationed outside the continental United States. (Source: U.S. Department of Commerce.)

The United States business recovery through mid-1959 was generated primarily by the shift

from inventory liquidation to accumulation, the increase in residential building, and greater government purchases. Fundamental support came from the continuing steady advance of consumer spending. This mainly reflected, and contributed to, a rising trend in personal income.

In the third quarter of 1959, business inventories constituted by far the largest element of change in gross national product. Stocks were liquidated at a rate of $1 billion, following an accumulation at the very high annual rate of $10.5 billion in the previous quarter. Developments in steel were mainly responsible for this substantial shift. After building up steel supplies in the spring months as a hedge against the possibility of the strike which actually occurred, the principal steel-consuming industries drew heavily on these supplies in the third quarter to maintain deliveries, thereby offsetting the further increase of inventories elsewhere in the economy.

Termed "final purchases," total gross national product, except for the change in business inventories, advanced from an annual rate of $474 billion in the second quarter of 1959 to $480 billion in the third. While affected to some extent by the steel strike, basic market demands in the third quarter thus continued strong and expansionary.

National Income.—Among the major industrial divisions of the economy, the main impact of the recession was on manufacturing, particularly durable goods industries. Besides manufacturing, the fluctuations in economic activity during 1957–59 had a noticeable effect on transportation, mining, and certain other lines. On the other hand, the recession served barely to check the pace of continuing upward trends in such industrial divisions as communications, public utilities, services, and finance and insurance.

As is shown in Table 2, the principal changes from 1957 to 1959 in the distributive shares of national income were registered by corporate profits. Wages and salaries in private industry also reflected the impact of the recession, but the decline and ensuing recovery were much less marked than in the typically volatile profits item.

Personal Income by States.—The dollar flow of income to individuals was at a record high in nearly every state in 1958, the latest year for which official estimates were available in 1959.

Personal income in the continental United States as a whole was up 2% in 1958 over 1957. Rates of increase were largest in the Great Plains, Southeast, Southwest, Rocky Mountain, and Far West regions. (See Table 4.) Income expansion was comparatively limited in New England and the Mideast, while the Great Lakes states experienced an actual small decline. It was in these three industrialized regions that the slump in manufacturing activity during the 1957–58 recession had its principal impact, and in which the generally sharp expansion of farm income contributed least to overall income.

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Chief, North American Division, Western Hemisphere Department, International Monetary Fund.

INCOME TAX. See TAXATION.

INDIA, Portuguese. See PORTUGUESE TERRITORIES.

INDIA, Republic of. Seventh largest country in the world (area, including Sikkim, 1,269,835 square miles), India extends southward for 2,000 miles from the Himalaya in a tapering peninsula that is flanked on the west by the Arabian Sea and on the east by the Bay of Bengal. The population, which increases by more than 5 million annually, was estimated on July 1, 1958, at 397,540,000, being exceeded only by that of Communist China.

Formerly an imperial realm of Great Britain, India became a sovereign democratic republic under a constitution inaugurated on Jan. 26, 1950, with full membership (from April 27, 1949) and dominion status in the Commonwealth of Nations. Under the States Reorganization Act (effective Nov. 1, 1956), it consists of 14 states, 7 centrally administered territories, and the protected state of Sikkim. Included in the aggregate population and area is the disputed state of Jammu and Kashmir (see KASHMIR). Components of India, with areas and populations as issued by the Indian registrar general in December 1957, based on 1951 census figures adjusted to the reorganization of states in 1956, are as follows:

REPUBLIC OF INDIA

Component	Area (sq. mi.)	Population (1951)[1]	Capital
States			
Andhra Pradesh	105,963	31,260,133	Hyderabad
Assam[2]	85,012	9,043,707[3]	Shillong
Bihar	67,164	38,783,778	Patna
Bombay[4]	190,919	48,265,221	Bombay
Jammu and Kashmir[5]	92,780	4,410,000[6]	Srinagar
Kerala	15,035	13,549,118	Trivandrum
Madhya Pradesh	171,201	26,071,637	Bhopal
Madras	50,110	29,974,936	Madras
Mysore	74,326	19,401,193	Bangalore
Orissa	60,136	14,645,946	Bhubaneswar
Punjab	47,456	16,134,890	Chandigarh
Rajasthan	132,077	15,970,774	Jaipur
Uttar Pradesh	113,409	63,215,742	Lucknow
West Bengal	33,945	26,302,386	Calcutta
Territories			
Andaman and Nicobar Islands	3,215	30,971	Port Blair
Delhi	578	1,744,072	Delhi
Himachal Pradesh	10,904	1,109,466	Simla
Laccadive, Minicoy, and Amindivi Islands	10	21,035	
Manipur	8,628	577,635	Imphal
Pondicherry[7]	191	317,253	Pondicherry
Tripura	4,032	639,029	Agartala
Protected State			
Sikkim	2,744	137,725	Gangtok
Total	1,269,835	361,606,647	

[1] Census populations adjusted to political divisions as reorganized in 1956. [2] Includes North-East Frontier Agency and Naga Hills–Tuensang Area, which are administered by the president of the republic acting through the governor of Assam. The latter, formed on Dec. 1, 1957, comprises 6,236 square miles and has a population of about 369,000 people of the Naga groups, living in 718 villages. Numerous raids by Naga tribal rebels occurred in 1959. [3] Excludes population of Part B tribal areas (est. 561,000), where census was not taken. [4] Includes Gujarat and Maharashtra. [5] Status in dispute with Pakistan. [6] Estimate; census not taken in the state. [7] Includes Pondicherry, Karikal, Yanaon, and Mahé, formally ceded by France in 1956.

Although the population dependent on agriculture numbered 249 million at the 1951 census, the share of urban dwellers in the total population had increased from 13.9% in 1941 to 17.3% in 1951. In that year, 26.5% of the rural population lived in villages of fewer than 500 persons; 38% of the urban population, in the 73 cities with populations exceeding 100,000.

The capital, New Delhi, had a population of 276,314 in 1951. Major seaports, with 1951 populations, are Calcutta (2,548,677; in 1955, 3,344,938), Bombay (2,839,270), and Madras (1,416,056). Other large cities are Hyderabad (1,085,722), Old Delhi (914,790), Ahmadabad (788,333), Bangalore (778,977), Kanpur (705,383), Lucknow (496,861), Poona (480,982), Nagpur (449,099), and Howrah (433,630).

The People.—Partition of the subcontinent in 1947 reduced the Moslem population of India to 35,400,117 (1951 census). In 1951, Hindus numbered 303,186,986; Christians, 8,157,765; Sikhs, 6,219,134; Jains, 1,618,406; Buddhists, 180,767; Parsis, 111,791; and Jews, 26,781.

The Indian birth rate (crude rate, est. 39.9 per 1,000 in 1958; registered rate, 23.9) is one of the highest in the world, the death rate (crude rate, est. 27.4 per 1,000 in 1958; registered rate, 11.9) is similarly high, and the proportion of people who live beyond middle age is very low. India accordingly has a large juvenile population (38.3% of the total), or only slightly less than that of the countries of Africa (39.1%). The average population density is 313 persons per square mile. In February 1959 the Indian government decided to provide surgical facilities (at first for males only) in state-owned hospitals as a means of controlling population growth. As yet only the governments of Madras and Kerala have officially adopted the sterilization of men.

Government.—Under the Indian Constitution, the executive consists of a president (Dr. Rajendra Prasad, re-elected on May 10, 1957, for a second 5-year term by an electoral college consisting of the elected members of both houses of Parliament

and of the legislative assemblies of the states) and a vice president (Dr. Sarvepalli Radhakrishnan, re-elected for a second 5-year term on April 23, 1957). A 13-member Council of Ministers is headed by Prime Minister Jawaharlal Nehru, leader of the Congress Party. In addition, there are 14 ministers of state and 12 deputy ministers.

Parliament comprises a Council of States (Rajya Sabha) of 232 members, of whom 12 are nominated by the president and 220 elected by state legislative assemblies; and a House of the People (Lok Sabha), consisting of a maximum of 500 members directly elected in the states on the basis of adult suffrage and of not more than 20 members chosen to represent the Union territories. Each of the states has its own popularly elected legislature.

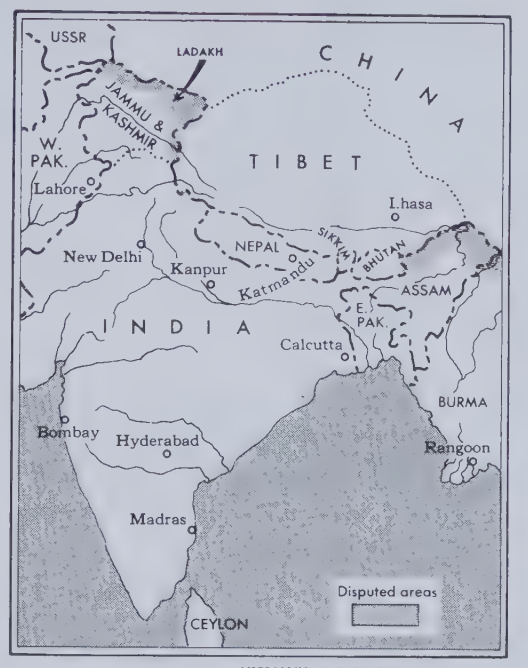
When the Indian states and territories were reorganized, largely on linguistic lines, in 1956, Bombay remained bilingual. Two main groups, the Marathi-speaking people, numbering 29,500,000, of the central and southern regions, and 18,500,000 Gujaratis in the north, pressed for a division of the state between them, but the future status of the city of Bombay caused a deadlock. Finally, on Dec. 4, 1959, a 9-member study group recommended partition of the state into two new states, Gujarat and Maharashtra, with the city falling within the boundaries of the latter. It was expected that the Congress Party would secure legislation to put the recommendation into effect in 1960.

On Feb. 2, 1959, Mrs. Indira Gandhi, daughter of Prime Minister Nehru, was elected to the presidency of the Indian National Congress, an office held by both her father and her grandfather. On December 3, Neelam Sanjeeva Reddy, chief minister of Andhra Pradesh, was chosen to succeed her in 1960.

Finance.—The 1959–60 budget provided for a deficit of Rs.583 million (1 rupee = U.S.$0.21) on the revenue account. Total revenue was estimated at Rs.9,314 million, including income tax, Rs.1,663 million; excise duties, Rs.3,251 million; and customs, Rs.1,328 million. The principal categories of expenditure were building development and social service, Rs.2,529 million; defense, Rs.2,427 million; and debt and administrative services, Rs.1,124 million. The budget was also debited with Rs.1,646 million of revenue transferred to the states. Capital outlay by the central government was estimated at Rs.4,775 million, and loans and advances at Rs.3,868 million. The net permanent debt was Rs.3,979 million.

United States economic assistance to India, which began in 1951, totaled $1,792.7 million by Aug. 31, 1959. In November 1959, agreements were reached covering sales of United States agricultural commodities valued at $257.3 million. Assistance from Great Britain included credits of £28.5 million (December 1958) and £19 million (November 1959) and a loan of £13 million (June 1959) for an oil pipeline in Assam and Bihar. (For Soviet assistance, see below, *The Year 1959 in India.*)

Education.—Education in general is the responsibility of the state governments; the Union government determines standards for higher education and administers 4 universities: Aligarh, Varanasi (Banaras), Delhi, and Visva Bharati. It was announced in September 1959 that literacy had increased to 40.7% of the population, as compared with 16.6% in 1951. Under plans formulated for compulsory and free education for all children up to 14 years of age, basic education schools, of which there were 47,813, with 5,060,807 pupils, in 1955–56, are to replace primary schools (278,765, with 22,965,562 pupils, in 1955–56). At basic schools academic learning is correlated with such activities as spinning, weaving, and domestic crafts. Similarly, secondary schools (32,568, with 8,526,509 students, in 1955–56) are being converted into multipurpose institutions, offering instruction in languages, social studies, science, and crafts. In 1955–56, India had 32 universities, 712 arts and science colleges, 34 research institutions, 346 professional colleges, and 112 special education colleges. The Second Five-Year Plan called for the establishment of 6 more universities by 1960–61



AMERICANA MAP BY DONALD T. PITCHER

INDIA'S DISPUTED BORDER AREAS

A major international trouble spot developed in 1959 when Communist Chinese troops attacked Indian outposts in the region of disputed border areas (shaded portions on map) between the two countries. In the North-East Frontier Agency, China claims large areas of Indian territory below the McMahon Line, established in 1914 as India's border with Tibet and China. In the west, the Chinese have built a highway through the Ladakh section of Kashmir, connecting Gartok, Tibet, with the Sinkiang Province of China.

(the 37th, Vikram University, Ujjain, was opened in 1957).

Defense.—India's armed forces consist mainly of a small regular army, a National Volunteer

"SOMETHING MUST HAVE GONE WRONG"

PLETCHER IN THE SIOUX CITY JOURNAL

Force with a training program involving 500,000 men, a National Cadet Corps (at strength in 1958 of 4,500 officers and 160,000 cadets), and an Auxiliary Cadet Corps (780,000 in 1958). Regular personnel in the air force number 26,400, and there are about 450 operational aircraft.

In connection with his announcement (Aug. 28, 1959) of attacks by Communist Chinese forces (see below, *The Year 1959 in India*), Prime Minister Nehru stated that all of the North-East Frontier Agency had been placed under army control, with the chief of staff, Lt. Gen. K. S. Thimayya, in command. Operational headquarters were set up in Jorhat, Assam, and the Assam Rifles, a civilian force under the state government, was incorporated with regular elements. Other frontiers were reinforced, with defense in the Ladakh section of Kashmir being planned by senior army and air force officers in consultation with local commanders. Estimates put the number of Chinese troops deployed on the Tibetan border at 40,000.

Second Five-Year Plan (1956–61).—Of the Rs.10,943 million earmarked for industrial expansion under the plan, 45.9% was to be spent by 1960–61 on metallurgical industries, 13.7% on heavy and light engineering, and 12% on the chemical industry. Expansion of facilities to produce heavy chemicals, including nitrogenous fertilizers, and of the iron and steel industry were given priority in 1959. The first blast furnaces were opened at the Rourkela steel plant, built with West German assistance, on February 3, and at the Bhilai plant, erected with Soviet aid, on February 4. With the Durgapur mill's first blast furnace opened on December 29 with British assistance, the new plants were scheduled to add over 3 million tons to India's steelmaking capacity.

Agriculture.—Official estimates of the 1958–59 rice crop were a record 43.7 million tons of paddy and 29.7 million tons of grain. Food prospects were further improved by the success of kharif pulses, of which 1,542,000 tons were produced. Production of wheat rose from 290 million bushels in 1958 to 362 million in 1959, and that of corn from 120 million to 126 million bushels. Overall food grain production in the crop year 1958–59, at 73.5 million tons, fell short of national requirements by 6.7 million tons, however, and 3,173,000 tons of grain, valued at Rs.1,205 million, had to be imported.

India produces almost half the world's supply of tea, the 1958–59 crop amounting to 701,600,000 pounds. In 1958–59 centrifugal sugar production declined to 2,642,000 short tons; tobacco production rose from 530,640,000 pounds in 1958 to 588,880,000 pounds in 1959. In 1959, 4 million bales of cotton and 2,040 million pounds of jute were produced.

Mineral Production.—In 1958, India produced 6,132,000 metric tons of iron ore. Bauxite deposits are widespread, and in 1958 output of primary aluminum totaled 9,109 short tons. Coal reserves are estimated at 50 billion tons; in 1958 production reached 45,350,000 metric tons, to which the private sector contributed 39,550,000 tons. Production of refined copper amounted to 7,967 metric tons in 1958; that of refined lead, to 3,360 metric tons. According to the Indian Atomic Energy Commission, the country has established uranium reserves of 30,000 tons.

Industrial Production.—While the industrial production index (1953 = 100) rose from 130 in 1957 to only 132 in 1958, it averaged 139 in the first 6 months of 1959. Besides the products of heavy industry, including 2,148,000 metric tons of pig iron and ferroalloys and 1,848,000 tons of crude steel in 1958, India turns out a wide variety of consumer goods. In 1958–59 these included 1,689 million pounds of cotton yarn, 4,915 million yards of mill cloth, 1,111,700 motor vehicles, 28,620 tractors, 260,875 tons of paper, 30,671 million cigarettes, and 805,200 tons of wheat flour. The output of cement in the calendar year 1958 totaled 6,168,000 metric tons. In 1958–59, 12,597 million kw.-hr. of electricity were generated, as compared with 10,869 million kw.-hr. in 1957–58. The International Bank for Reconstruction and Development (IBRD) made a $25 million loan for the Koyna hydroelectric project in Bombay State on April 8, 1959.

External Trade.—Strict licensing control accounted for a decline in imports from the high level of Rs.10,683 million in 1957 to Rs.8,642 million in 1958. As a result, India's trade deficit was reduced from Rs.4,118 million to Rs.2,862 million. Total earnings from exports also decreased, from Rs.6,565 million in 1957 to Rs.5,780 million in 1958, but exports of tea rose from Rs.1,243 million to Rs.1,368 million. In 1958 imports from the United States amounted to Rs.1,615 million; exports to the United States, to Rs.932 million. Total imports were valued at Rs.4,157 million in the first half of 1959; total exports, at Rs.2,687 million.

Transportation and Communications.—In 1958–59 gross traffic receipts on the government railways were estimated at Rs.4,075 million, working expenses at Rs.3,306 million, and passengers at 1,382.5 million. The system, which is the largest in Asia after that of the USSR, totals 34,744 route miles. On July 15, 1959, the IBRD extended a $50 million loan for its expansion and modernization. National highways, aggregating 13,800 miles, connect state capitals; about 126,000 miles of surfaced and 205,000 miles of unsurfaced roads are maintained at public expense. A 6,074-foot, double-decker road and rail bridge across the Ganges, named Rajendra Bridge for the president, was opened at Mokameh on May 1, 1959. The only bridge across the river in Bihar, it was expected to improve communications both within that state and with Nepal and other buffer states. Indian aircraft flew 23.4 million miles on scheduled services in 1957, carrying 593,700 passengers and 98 million pounds of cargo and mail.

In 1958, India had 6,472 telephone exchanges, 334,773 telephones, and 1,540,495 radio licenses. The first television station was opened in New Delhi on Sept. 18, 1959.

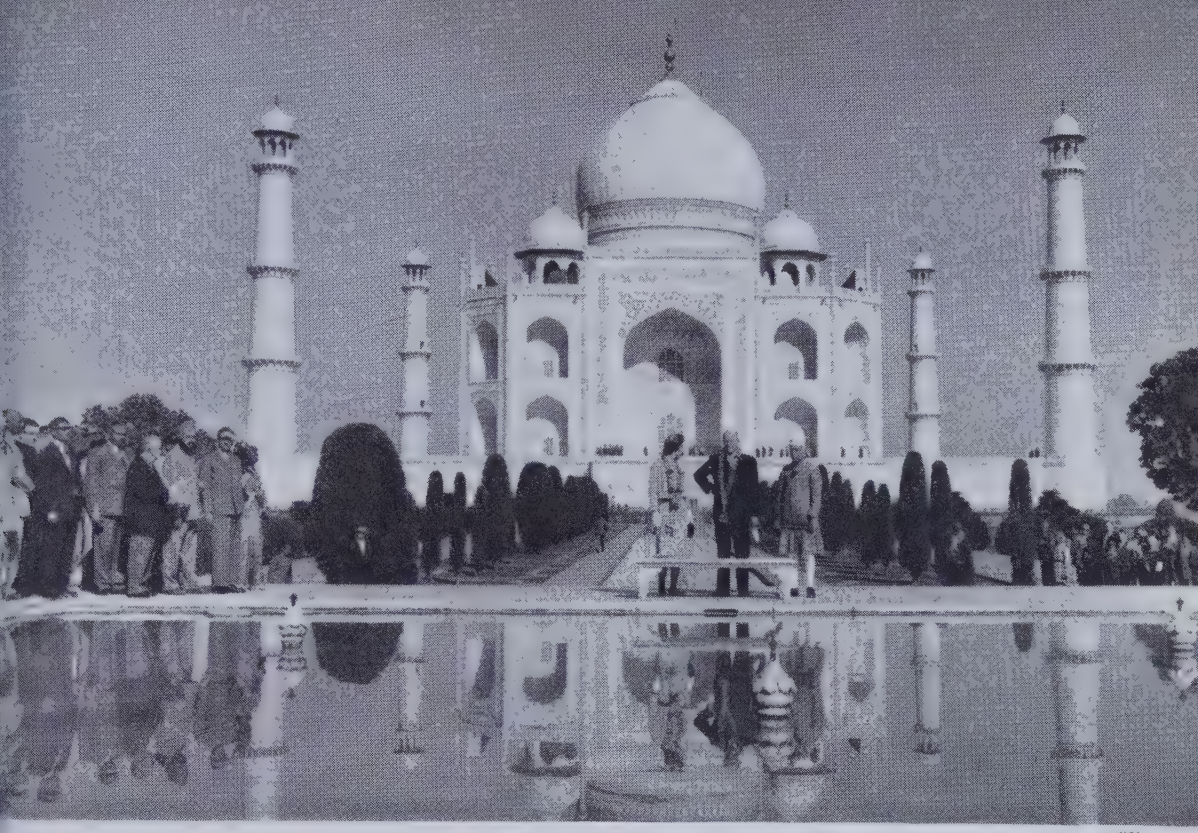
DONOVAN ROWSE,
Author and Publicist.

Dalai Lama (right), who fled from Tibet in March, is met at Mussoorie, India, on April 24 by Prime Minister Nehru.

WIDE WORLD

THE YEAR 1959 IN INDIA

Overshadowing events within India during the year was the developing quarrel with Communist China. The friendship which had marked relations between the two countries was interrupted by the



UPI

Standing before the Taj Mahal, the 17th-century mausoleum near Agra, India, President Eisenhower (center), with his daughter-in-law Barbara and Prime Minister Nehru, pays his respects on December 13 to one of India's famous architectural wonders.

harsh repression of a Tibetan revolt against Chinese control, first among the unsubdued Khamba tribe in eastern Tibet and then in the capital itself, when Tibetans perceived a threat to the safety of the Dalai Lama. Accompanied by an entourage of 80, the Dalai Lama left Lhasa on March 17 and reached the border of the North-East Frontier Agency near Towang on March 31. On April 3, India announced that he and his party had been granted asylum, and on April 21 he was escorted to Mussoorie, Uttar Pradesh, where he now resides.

Meanwhile, on March 28, the official New China News Agency charged that the Indian town of Kalimpong had served as the "commanding center" of the rebellion. Mounting pressure for a public denunciation of Chinese suppression of the revolt seized upon this reflection on India's carefully preserved neutrality. On March 30, Prime Minister Nehru, after denying India's complicity, expressed his country's fundamental dilemma when he spoke of India's real desire on the one hand to see the people of Tibet "progress in freedom" and on the other to maintain friendly relations with "the great country of China." He counseled "a certain measure of restraint." The Chinese propaganda barrage continued, however, and on April 1 there was an acrimonious debate in the Indian Parliament, spurred by the publication by the Chinese embassy in New Delhi of an article originally printed in the Peking *Jenmin Jihpao* describing Kalimpong as a "center of collusion with imperialism" and by a statement released by the Indian Communist Party supporting this charge. In an exchange of notes, Communist China stated that the Dalai Lama had left Tibet under duress and charged India with interference and imperialist expansion, a charge India vigorously protested. On April 18, the Dalai Lama denied that he had left Tibet under duress. Although he failed to obtain Indian sponsorship, he referred the Tibetan dispute to the United Nations on September 9. (See also TIBET.)

The Tibetan matter had hardly settled down when Prime Minister Nehru announced in Parliament on August 28 that large detachments of Communist Chinese troops had entered the Subansiri and Kameng frontier divisions of the North-East Frontier Agency. In the ensuing debate it was revealed that the Chinese had completed a road from Sinkiang through the Ladakh section of Kashmir in 1958 and had established a camp at Spanggur, taking actual control of 3,000 square miles of Ladakh territory. Altogether, the territorial dispute involved about 48,000 square miles along the 2,500-mile border.[1] The Chinese showed little inclination to soften the dispute despite Soviet urging of a peaceful settlement. Armed clashes continued, including a Chinese ambush on October 21 well within Ladakh, in which nine members of an Indian patrol were killed and seven were captured.[2] Spokesmen for outraged public opinion demanded a stronger stand, and Nehru assured the country that the army was prepared to defend its borders, in which he specifically included (November 27) the northern border of Nepal. Meanwhile, between September 8 and December 26, India and China exchanged a series of notes on the territorial dispute. A Chinese note of November 7 suggested a conference between Nehru and Premier Chou En-

[1] A 1914 treaty established the McMahon Line at the crest of the Himalaya along the northeastern frontier of India, but it was endorsed only by the then British government of India and Tibetan authorities, and maps published in China included within its territory various areas on the Indian side of the line. The eastern border of Ladakh has never been formally delineated, although a *de facto* partition line has stood for several decades.

[2] With three Indians captured earlier, the seven men were returned on November 14.

lai and a mutual withdrawal to about 12.5 miles from the frontier along the McMahon Line and from the line of actual control in Ladakh, thus surrendering control of 3,000 square miles of that section to China. India countered on November 14 with a proposal to create a no-man's land, with China withdrawing to its side of the border in both areas, while India would draw back to its side of the boundary line claimed by Peking. Personal diplomacy was considered premature, and a Chinese proposal for a meeting on December 26 was rejected. In the face of mounting criticism, directed particularly at the unpopular minister of defense, V. K. Krishna Menon, who was accused of softness toward China, Nehru won parliamentary endorsement of his policies on November 27. (See also CHINA.)

India's border troubles were not limited to the Chinese frontier. Firing across the Pakistan border, which had been halted after the agreement of Sept. 11, 1958, between Nehru and Malik Firoz Khan Noon, was resumed in a series of skirmishes on the Assam–East Pakistan border between November 1958 and July 1959. On April 10, 1959, an Indian bomber was shot down 40 miles south of Rawalpindi in West Pakistan. On the brighter side, a one-year agreement on the distribution of the canal waters in the Punjab was reached in Washington on April 17, and successful trade discussions were held in New Delhi on July 22–27. In meetings at New Delhi on October 15–23, delegations of the two countries reached agreement on several questions concerning the borders between India and East Pakistan.

President Dwight D. Eisenhower (q.v.), who visited India on December 9–14 during his 11-nation tour, was received enthusiastically in New Delhi.

Internally, India's major concern in 1959 was the formulation of the Third Five-Year Plan (1961–66). Despite criticism that the previous plan was overly ambitious, it appeared unlikely that the scope of the new plan would be curtailed. For one thing, it was anticipated that 21 million new jobs were needed to eradicate current unemployment of 7 million men and to take care of the 14 million expected to enter the labor force by 1966. At best, only 12 million new jobs were scheduled to be created during the five-year period. To maximize employment possibilities and to help reduce the agricultural labor force, the plan was to emphasize the development of heavy industry. On July 30, the USSR announced an unrestricted loan of Rs.1,800 million for the implementation of the plan, bringing total Soviet assistance to date to Rs.3,130 million.

At its 64th annual meeting, held at Nagpur on January 6–11, the Indian National Congress adopted a resolution proposing sweeping changes in the organization of agriculture. The resolution called for the adoption by the states of ceilings on landholdings and for the establishment of cooperatives. Land would be pooled for joint cultivation, while individual farmers would retain their property rights and receive a share of the net produce in proportion to their holdings. Those actually working on the land would also receive a share according to the labor they expended. Land in excess of the ceilings would be vested in village panchayats (councils) and worked as cooperatives by landless farm laborers. Partly as a protest against the resolution, N. G. Ranga resigned as general secretary of the Congress Parliamentary Party, and on June 4 he emerged as a leader, along with Chakravarti Rajagopalachari, Minoo R. Masani, and M. A. Venkata Rao, of a new conservative bloc called the Swatantra (Freedom) Party. The party was formally launched in Bombay on August 1–2.

Throughout the country, the Congress Party was undergoing severe strain. The Congress ministry in Orissa, defeated in the Legislative Assembly on February 23, regained its position only by forming a coalition with the conservative Ganatantra Parishad on May 22. In Andhra Pradesh a new Democratic Party split off from the Congress on February 13 and, together with the Praja Socialist Party, crossed over to the opposition in the Legislative Assembly. Only by drawing back into its ranks 20 members elected as independents was the Congress able to maintain its majority. In Calcutta the army had to be called out on September 3 to restore order in the wake of violent demonstrations against the food policy of the Bengal government.

The most serious trouble arose in Kerala, where unrest consequent on agitation against the Communist-led government brought (July 31) a proclamation by President Prasad which, under Article 356 of the Indian Constitution, dismissed the state Assembly, placed all power in the president's hands, and called for new elections. Lined up in opposition to the Communists were the state Congress Party, the Praja Socialist Party, and the Muslim League; the Nair Service Society, representing a wealthy landlord caste in Kerala; and various church groups, notably the Roman Catholic Church, which has the largest membership among Christians in the state.

The immediate spark for the agitation was the signing by the president on February 20 of a modified education bill that empowered the state government to take over government-aided schools and to provide a list of approved teachers from which all schools must employ their staff. In the background was an Agrarian Relations bill which received its third reading in the Assembly on June 10. This bill included provisions that reduced the holdings and power of the wealthy landlords and scaled down the debt owed by the peasants. During May many private schools threatened not to open as scheduled on June 1. A fortnight's delay in the opening date was announced by the government, but a civil disobedience movement and the picketing of government offices were initiated on June 12, and mass demonstrations led to police firings on demonstrators. A hartal (complete stoppage of all public life) was called on the same day, and a general strike on June 29.

The agitation, which initially had been disapproved of by the national Congress Party, eventually led to the dismissal of the state government. Many Indians regretted the Congress Party move, fearing that a dangerous precedent had been set. They felt that if it were not for the Communist onus in the Sino-Indian quarrel, the Kerala Communists might win another election. E. M. S. Namboodiripad, Communist chief minister of the state, carefully dissociated himself from the Indian Communist Party's official support of the Chinese version of events.

(See also FAR EAST.)

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INDIANA. North Central state, United States; admitted to the Union, Dec. 11, 1816. The "Hoosier State" ranks 38th in area and 10th in population among the 50 states.

Area and Population.—Area: 36,291 square miles (land, 36,205; inland water, 86), divided into 92 counties. Population: (1950) 3,934,224; (est., July 1, 1958) 4,565,000. Urban places with populations above 10,000 (as estimated by the State Board of Health for 1958, unless otherwise indicated) are:

Anderson	50,700	Lafayette	40,500
Bedford	12,700	La Porte	23,100
Bloomington	30,100	Logansport	21,100
Columbus	21,700	Marion	35,344[2]
Connersville	17,800	Michigan City	33,100
Crawfordsville	13,900	Mishawaka	34,089[2]
East Chicago	59,700	Muncie	65,100
Elkhart	38,300	New Albany	38,600
Elwood	11,961[1]	New Castle	20,867[1]
Evansville	136,200	Peru	15,100
Fort Wayne	153,200	Richmond	38,900
Frankfort	15,600	Seymour	11,683[3]
Gary	177,500	Shelbyville	13,800
Goshen	12,600	South Bend	131,770[2]
Hammond	108,305[2]	Terre Haute	73,700
Highland	12,305[2]	Valparaiso	15,100
Hobart	16,800	Vincennes	18,800
Huntington	16,200	Wabash	12,000
Indianapolis (*capital*)	461,654[2]	Washington	11,400
Jeffersonville	19,900	West Lafayette	12,600
Kokomo	45,700		

[1] Special census, 1958. [2] Special census, 1957. [3] Special census, 1955.

Executive.—Chief state officers in 1959:
Governor: Harold W. Handley (Republican)
Lieutenant Governor: Crawford F. Parker
Secretary of State: John R. Walsh
Treasurer: Jack A. Haymaker
Attorney General: Edwin K. Steers
Auditor: Albert A. Steinwedel
Supt. of Public Instruction: William E. Wilson

Constitution and Judiciary.—The present constitution went into effect in 1851. The Supreme Court comprises five justices; chief justice in 1959 was Harold E. Achor.

Legislature.—The Indiana General Assembly comprises a 50-member Senate (in 1959, 27 Republicans, 23 Democrats) and a 100-member House of Representatives (79 Democrats, 21 Republicans), which meet in odd-numbered years commencing the first Thursday after the first Monday in January.

The 1959 General Assembly enacted its first billion-dollar budget, of which some $1,020,000,000 was for general state operations and $40 million for construction or improvement of state properties, including $17.2 million for educational institutions. More equitable valuation was enacted for real and personal property taxation. In the field of education, $205.5 million was allocated for public schools and $95.3 million for higher education; teachers' minimum salaries were raised; school corporations were authorized to conduct instruction through commercial television facilities; counties were required to plan reorganization of school units; and a State Commission for the Reorganization of School Corporations was created.

State participation in an interstate compact for traffic safety was authorized; traffic violators with a 30-day or shorter sentence were permitted to serve their sentences on weekends; and restricted drivers' licenses were authorized where suspension of licenses would cause hardship for dependents. Local authorities were authorized to finance community psychiatric clinics, and a Governor's Youth Council was created.

Other legislation set up a $2 million flood-control fund and a committee to survey water rights and management; passed a boating safety act; established the Wabash Valley Compact with Illinois; and adopted the Interstate Compact on Mental Health.

Unemployment compensation benefits were increased to $36 weekly and the benefits period extended to 26 weeks; workmen's compensation benefits were raised to $39 weekly; and larger payments were authorized for specific injuries. Women in manufacturing were permitted to work from 10 P.M. to 6 A.M.

Two proposed amendments would require judges of circuit courts to have been duly admitted to practice law by the state Supreme Court and would simplify technical legislative requirements in the General Assembly's enactment of laws.

Finance.—In the 1958–59 fiscal year, state revenue of $480,987,043 comprised $378,990,920 from state tax sources, $87,484,479 from the federal government, and $14,511,644 from other sources. Tax revenue consisted of $175,175,895 from gross income taxes, $95,761,241 from motor fuel taxes, $6,422,245 from licensing, and $101,631,539 from other sources. Expenditures of $465,613,085 comprised $157,900,554 for education, $82,595,381 for health, welfare, and safety, $170,174,588 for highways, and $54,942,562 for other purposes.

Banking.—As of June 10, 1959, the state's 123 national banks had $2,777,578,000 in assets, $1,731,628,000 in demand deposits, and $783,852,000 in time deposits. The 336 state banks (June 30, 1959) had assets of $2,120,667,640, demand deposits of $1,264,791,382, and time deposits of $679,302,667. There were also (Dec. 31, 1958) 228 savings and loan associations with assets of $1,480,950,236.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1958–59 school year totaled $265 million ($312 per pupil), comprising $166,950,000 from local school districts, $95,400,000 from the state, and $2,650,000 from the federal government. Outlays for construction and improvements amounted to $83,173,708.72, and teachers' salaries averaged $4,800.

INDIANA SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–8)	1,600	22,012	681,210
Public junior high (7–8)	75	...*	...*
Public senior high (9–12)	690	10,647	231,181
Private and parochial elementary and secondary	500	...	125,000
Vocational and trade schools	5	900	24,000
Colleges and universities	33	...	85,852

* Included in senior high data.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $36,525,194.95, including $21,241,874.35 for the aged, $13,558,573.79 for dependent children, and $1,724,746.81 for the needy blind. A monthly average of 61,834 persons received public assistance. State expenditures for mental health activities totaled $26,956,948; for correctional and penal programs (1957–58), $6,685,448.

Labor Force.—The labor force in June 1959 totaled 1,812,700 persons, of whom 322,500 were agricultural workers. Nonfarm employment was 1,408,800, above both the figure of 1,325,500 a year earlier and the average of 1,347,200 for the intervening 12 months. Of employed nonagricultural workers, 43% were engaged in manufacturing, 19% in trade, and 13% in government services. Unemployment in June 1959 totaled 80,700, less than half that of 165,700 a year earlier.

Manufacturing.—Major industrial developments of 1959 included the breaking of ground near Gary in August for a major new steel-finishing mill for the National Steel Corporation and announcement in November that the Youngstown Sheet and Tube Company would launch a $60 million expansion of its East Chicago facilities.

The preceding year the state's 6,940 manufacturing plants employed an average of 546,500 persons who received $2,610,566,000 in wages. Value added by manufacture totaled $4,929,951,000, and outlays for new plant and equipment amounted to $631,748,000. Production workers averaged $96.94 for an average workweek of 40.9 hours in August 1959.

MAJOR INDIANA MANUFACTURES, 1958

Type of industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Primary metals	88,200	$475,914	$964,503
Blast furnaces	57,700	311,340	630,973
Transportation equipment	81,100	422,667	709,531
Motor vehicles & equipment	48,100	275,745	442,372
Electrical machinery	75,300	342,555	616,439
Communications equipment	33,300	151,488	272,632
Food and kindred products	47,700	194,835	420,490
Chemicals & related products	22,700	128,777	396,658
Nonelectrical machinery	47,500	237,641	395,026
Fabricated metals	36,900	182,954	299,712

* Value of products less cost of materials, supplies, fuel, electric energy, and contract work. (Source: Indiana Department of Commerce.)

Mining.—In 1958 Indiana ranked 20th among the states in the value of its mineral output, with 1.20% of the national total. Fuels accounted for 47% and nonfuels for 53% of the total income. The state was second in coke production and fifth in pig iron output. Construction of a new aluminum plant at Evansville proceeded, although at a reduced rate, toward completion in 1960. The U.S. Bureau of Mines reported that the opening

of the St. Lawrence Seaway in 1959 stimulated interest in possible industrial, particularly steel, sites along the Indiana shore of Lake Michigan.

INDIANA MINERAL PRODUCTION, 1958

(In short tons except as noted)

Mineral	Quantity	Value
Clays	1,371,000	$ 2,477,000
Coal	15,022,000	58,506,000
Coke	7,797,352	157,112,578[1]
Iron, pig	7,757,011	453,049,000[1]
Natural gas (1,000 cubic feet)[2]	378,000	59,000
Peat	12,106	145,000
Petroleum (bbl.)[2]	11,864,000	35,711,000
Sand and gravel	16,862,000	15,045,000
Stone	15,394,000	31,974,000
Other minerals	...	56,407,000
Total	...	$197,677,000[3]

[1] Values for processed materials are not included in the total. [2] Preliminary. [3] Total adjusted to eliminate duplicating the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $749,721,000 from $797,823,000 for the corresponding period of 1958. For the full year 1958, income comprised $748,054,000 from livestock and livestock products, $341,498,000 from crops, and $38,018,000 from government payments. Principal income sources in 1958 were: hogs, $291,207,000; cattle, $202,615,000; dairy products, $126,099,000; and soybeans, $115,882,000.

INDIANA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,428	1,628	1,525
Corn (1,000 bu.)	252,458	280,161	336,350
Hay (1,000 tons)	2,648	2,355	2,224
Oats (1,000 bu.)	49,614	48,093	32,175
Popcorn (1,000 lb.)	52,098	97,500	61,600
Potatoes (1,000 cwt.)	1,871*	1,352	1,890
Soybeans (1,000 bu.)	41,400	61,263	60,112
Strawberries (1,000 lb.)	4,241*	5,250	3,240
Tobacco (1,000 lb.)	13,352	10,570	11,040
Wheat (1,000 bu.)	35,830	40,992	32,630

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 150,000 farms in the state in 1958. Total farm acreage (1954) of 19,233,000 included 11,333,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 2,107,000 cattle, 4,848,000 hogs, and 13,718,000 chickens (excluding commercial broilers). Family and hired workers numbered 205,000 during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $109,448,153.72, and 349.3 miles of new construction were completed.

Highways and roads on Sept. 30, 1959, totaled 87,913 miles (32,035 surfaced). Registered *motor vehicles* numbered 2,093,057 during 1958, including 1,568,713 passenger cars. There were (1959) 32 *railroads* operating 6,675.85 track miles; 9 regularly scheduled *airlines;* and 148 *airports and airfields* (106 commercial and municipal, 2 military, and 40 private).

Communications media (1959) included 60 AM and 16 FM (13 combined with AM) *radio stations;* 6 VHF and 7 UHF *television stations;* (1958) 87 daily *newspapers* (circulation, 1,695,194) and 257 other newspapers (1,410,727); and (Jan. 1, 1959) 399,300 business and 1,273,600 residential *telephones.*

Principal Events, 1959.—Since Indiana is one of the major steel-producing states and because many of its industries are users of steel, the steel strike (July 15–November 7) had a pronounced adverse effect on the economy of the state. The following table of selected indexes for five comparable months of 1958 and 1959 gives an indication of the effects of the strike. The trends indicated for 1958 were steady, as in employment, or rising, as in the other categories. The opposite was generally the case in the comparable period of 1959. The figures, compiled by the Indiana University Bureau of Business Research, use a 1947–49 base of 100.

Category	Five months of 1958 June	July	Aug.	Sept.	Oct.
Bank debits	174.2	197.2	181.5	184.2	208.3
Department store sales	107.7	118.4	119.4	120.9	124.9
Electricity production	224.6	233.9	235.5	237.6	241.7
Manufacturing employment	100.6	99.9	99.5	99.5	99.9
Steel output	111.0	111.1	117.6	124.2	130.4

Category	Five months of 1959 June	July	Aug.	Sept.	Oct.
Bank debits	220.0	223.5	230.2	215.0	196.4
Department store sales	143.3	136.7	126.1	132.2	131.0*
Electricity production	273.9	263.7	261.7	245.4	251.6
Manufacturing employment	113.8	111.0	100.4	101.3	103.1
Steel output	160.2	65.7	8.9	9.0	8.2

* Estimate.

The quadrennial municipal elections in Indiana occurred on November 3. Four years earlier the Democrats had more than doubled the number of cities under their control by winning 72 out of 104. It was rather freely predicted in 1959 that they would not be able to hold these gains and that at least a fourth of the cities under Democratic control would revert to the Republicans. During the four years intervening between elections three towns had become cities, thus making a total of 107. Of this total, 71 elected Democratic mayors in November 1959. The party therefore suffered a net loss of one mayoralty but for the first time in a quarter of a century won in all major cities. Only one city (Kokomo) in the state's top 20 went to the Republicans. Election results for boards of trustees in the state's 441 towns continued not to reveal any significant political trends, one reason being that many town races are between various "citizen" or "independent" groups rather than between Democrats and Republicans.

In one small city the race for mayor resulted in a tie. The state election board decided that the incumbent mayor, a Republican and candidate for re-election, would continue in office on the ground that a mayor serves "until a successor has been elected and qualified." To students of government this seemed a strange way of disposing of the matter. Generally in the state, election ties are decided by lot.

Principal Events by: P. S. Sikes,
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INDIANS, American. The Department of the Interior's Bureau of Indian Affairs continued in the fiscal year ending June 30, 1959, to provide American Indians with better and broader educational and economic opportunities. The Indian population of the United States in 1950 was 455,500, of whom 66,900 were in Arizona, 54,000 in Oklahoma, and 43,500 in New Mexico.

The Department of the Interior's position in regard to the termination of federal trust responsibilities for Indian tribal groups was clarified by Secretary Fred A. Seaton, in a radio address at Flagstaff, Ariz., on Sept. 18, 1958. He declared that it was not the department's intention to "abandon Indian groups regardless of their ability to fend for themselves," and that termination of the government's responsibility for a tribe could not occur until the educational level of the tribe was "equal to the responsibilities which it was shouldering." The secretary also said that an Indian tribal group should end its relationship with the government only when the Indians themselves approved of termination.

Terminal Legislation.—New Indian terminal legislation enacted by Congress in fiscal 1959 covered 41 small Indian groups in California who had asked for such legislation, and provided for a

referendum on each termination plan or property distribution scheme before it went into effect. By June 30, 1959, 23 of the groups had submitted plans which were tentatively approved by the Department of the Interior.

Congress also enacted a major amendment to the terminal law of 1954 affecting the Klamath tribe in Oregon. The act was concerned with the sale of tribal property to compensate the withdrawing members of the tribe, and it allocated $90 million to purchase the Klamath marshlands for a national wildlife refuge and the unsold forest areas for inclusion in the national forest system. Of 11 forest units designated for private purchase, four were offered for sale in April 1959. An area of about 145,000 acres was preserved for the remaining tribal members and was transferred to a private trustee in March 1959.

Education.—In fiscal 1959, enrollment of Indian children aged 6-18 in all schools increased 2% to a record 132,000. Instructional programs in the bureau's schools were adjusted to meet the needs of new Indian pupils. The bureau expanded its adult education classes on the reservations to 80 locations, five more than in fiscal 1958. Grant funds were used to help 500 Indian students enter institutions of higher learning.

Vocational Training.—Since fiscal 1958, when the bureau's new vocational training program began operation, the number of Indians receiving such training has increased from 376 to 1,547. In fiscal 1959, new plants for on-the-job training and employment of Indians were established near the Umatilla Reservation in Oregon and the Cherokee Reservation in North Carolina.

Economic Developments.—Income to Indians from the leasing of their lands for oil and gas development totaled $46,587,458 in fiscal 1959—the third highest figure ever reported, but a major decline from the top total of about $72 million in 1957. Increased production on Indian (especially Navajo) lands resulted in record oil and gas royalties valued at $30,172,382, or 63% above similar income in fiscal 1958. Receipts from sales of timber on Indian lands totaled about $10,937,485 in fiscal 1959—an increase of 17% over that of the previous year.

M. M. Tozier,
Information Officer, Bureau of Indian Affairs.

INDOCHINA. See Cambodia; Laos; Vietnam.

INDONESIA. The Republic of Indonesia is a nation consisting of some 2,000 inhabited islands, lying astride the equator between the Indian and Pacific oceans. The republic's total land area of approximately 583,000 square miles—exclusive of Netherlands New Guinea (q.v.), or West Irian, which is disputed between Indonesia and the Netherlands—is largely accounted for by four large islands: Kalimantan or Borneo (208,000 square miles, not including the British Borneo territories); Sumatra (164,000 square miles); Sulawesi or Celebes (73,000 square miles); and Java (51,000 square miles).

Population.—With a population estimated to total about 88 million at the end of 1958, Indonesia is the sixth most heavily populated country in the world. The approximate distribution of its population is as follows: Java and Madura (56.7 million); Sumatra (14.3 million); Sulawesi (6.4 million); Kalimantan (3.8 million); and other islands (6.8 million). Java is one of the most densely inhabited areas of the world, having an average of about 1,100 persons per square mile.

The major urban centers and their approximate population as of the end of 1956 were: Djakarta, the capital, 2,800,000; Surabaja, 980,900; Bandung, 870,300; Djogjakarta, 500,000; Malang, 420,000; Semarang, 390,000; and Surakarta, 350,000. All of these cities are in Java. Other cities of importance are: Medan, in Sumatra (520,000); and Makasar, in Sulawesi (346,100).

WIDE WORLD

Indonesian President Sukarno (l.) shakes hands with Prime Minister Djuanda Kartawidjaja, July 6, after Sukarno reinstated the constitution of 1945 and the cabinet resigned.

The vast majority of the Indonesian people spring from a common Malayan stock. Among the more important ethnic groups on the island of Java are the Javanese, Sundanese, and Madurese; on Sumatra, the Minangkabau, Batak, and Atjehnese; in Borneo, the Dayaks; in Celebes, the Buginese and Menadonese; and in the Moluccas Islands, the Ambonese. The principal ethnic groups not of Malayan stock are the Chinese (about 2.5 million), Arabs (70,000), and Indians and Pakistanis (30,000). A wide variety of regional and local languages are spoken throughout the nation, but the official and national language is Indonesian, a dialect of Malay. English is a compulsory subject in the secondary schools.

Government.—Indonesia's independence from its former Dutch rulers was proclaimed on Aug. 17, 1945, and, following protracted hostilities and negotiations, was confirmed by a formal transfer of sovereignty from the Netherlands to Indonesia on Dec. 27, 1949. Indonesia is now operating under its third constitution since the transfer of sovereignty. Under a decree promulgated by President Sukarno on July 5, 1959, a provisional constitution which served as the republic's basic document from 1945 to 1949 was re-enacted into law as a permanent constitution. Like the United States Constitution, it provides for a strong president, a cabinet responsible directly to him, a Parliament, and an independent judiciary headed by a Supreme Court.

Power to amend the constitution and the responsibility to set down the broad lines of national policy are entrusted to a People's Consultative Assembly which, though not yet in being, is to consist of Parliament, plus an unstated number of regional and other representatives. A Provisional Supreme Advisory Council, consisting of representatives of the provinces, of political parties, and of "functional groups" (such as labor, peasants, and intellectuals) was appointed on July 30, 1959, by President Sukarno. Its function is to advise the president and the government on national policy matters. A National Planning Council was appointed by the president on the same date, to provide blueprints for governmental action in the political, economic, and social fields.

Under the newly re-enacted constitution of 1945, Parliament has undergone some reduction in influence, since it no longer possesses the power to overturn cabinets. The Parliament, installed in 1956, consists of 273 elected and appointed members. Four major parties dominate it: the Indonesian Nationalist Party (57 seats), the Moslem Masjumi (57 seats), the Moslem Scholars or Nahdlatul Ulama (45 seats), and the Indonesian Communist Party (39 seats).

President Sukarno is the chief of state and, since July 1959, the prime minister as well, although Djuanda Kartawidjaja is the functioning head of the cabinet, serving as "first minister." In the event the president is unable to act or is absent from the country, the chairman of Parliament acts as president.

Education.—It was officially estimated that in 1955 some 55% of the population over 13 years of age was illiterate. During the 1955 school year official statistics show that 5,911,957 pupils were enrolled in 30,031 public and private schools. Over 637,000 students were enrolled in secondary schools, while 20,395 students attended colleges and universities. At the end of 1958 there were 38 university-level institutions.

Religion.—The great majority of the population is of the Moslem faith, although Islam is not practiced with equal fervor in all parts of the country. Official estimates show that at the end of 1956 there were 3.5 million Protestants and about 1 million Roman Catholics in the country. About 1 million Indonesians practice a modified form of Hinduism on the islands of Bali and Lombok, and there are relatively smaller, but still considerable numbers of Buddhists, especially among the Chinese. In the islands

outside of Java and, to a limited extent, in Java itself, a large number of people practice a form of animism.

Finance.—The official unit of currency is the rupiah. It was devalued on Aug. 25, 1959, and its present par value is officially 45 rupiah to U.S.$1. (The official basic rate had been 11.4 rupiah to $U.S.1, but a certificate rate of 37.8 rupiah to $U.S.1 had governed virtually all transactions.) Although some improvement in financial conditions took place in the early part of 1959, as compared with 1958, deterioration set in again in the summer and fall. Internal price levels rose steadily during the first half of 1959, and, in an effort to maintain control of the situation, the government devalued the currency, aiming at increasing exports and discouraging imports, in order to conserve its limited holdings of foreign exchange. The devaluation measure was accompanied by regulations freezing 90% of the value of bank accounts over 25,000 rupiah and reducing notes in the 500- and 1,000-rupiah denominations to one tenth their face value. These regulations had the effect of virtually wiping out the working capital of many private firms, and restrictions on the extension of bank credit contributed to make the position of these companies a difficult one.

The budget for the calendar year 1959 estimated total expenditures at 28.9 billion rupiah against receipts of 20.9 billion, for a record deficit of 8.0 billion rupiah. However, these estimates were prepared in mid-1958, and it appeared likely that the deficit by the end of 1959 would be larger. The budgetary deficit for the calendar year 1958 was officially estimated at 9.7 billion rupiah, compared with a preliminary estimate of 8.0 billion rupiah.

Notes and coins in circulation rose from 14.1 billion rupiah at the end of December 1957 to Rp. 18.4 billion by Sept. 16, 1959. Bank deposits, which totaled 7.3 billion rupiah at the end of 1958, seasonally declined to 6.7 billion by mid-1959. In response to the new monetary regulations described above, they dropped off to 4.4 billion rupiah by Sept. 16, 1959.

During 1959, Indonesia contracted some additional foreign debts, but at a slower pace than in 1958. In February 1959, the United States agreed to sell a quantity of light military matériel to Indonesia. In May, further quantities of arms and military equipment were purchased from several western and eastern European countries. The exact amounts involved in these military purchases were not made public. In July the Soviet Union made available U.S.$17.5 million for construction of a sports stadium in Djakarta and a maritime institute in Ambon.

Transportation and Communications.—According to official statistics, at the end of 1958 Indonesia had a basic road network of 46,800 miles, of which 75% was improved. The latest statistics available on motor vehicle registration show that as of Jan. 1, 1956, 195,420 vehicles were registered. No change or additions were reported on the government-owned railway system, which was reported in late 1957 to operate 3,780 miles of track, mostly in Java. The most recent statistics (for 1957) show that the railroad system transported 140,357,000 passengers and 6,158,000 metric tons of freight. The government-owned airline, Garuda Indonesian Airways, as of Sept. 1, 1959, had a fleet of 36 aircraft, and had 4 Lockheed Electra transport aircraft on order in the United States.

Economic Conditions.—Economic conditions in general showed some improvement during 1959, by comparison with corresponding months of 1958. However, the economy as a whole has not recovered to the levels reached prior to the take-over of Dutch property in December 1957, and the rebellion that began in 1958. The financing of the 1959 budgetary deficit contributed considerably to slowly rising prices during most of the year. The index of food prices (1953 = 100) stood at 241 in September 1959, compared with 233 in January. The severely deflationary measures adopted in August reduced the level of economic activity in the latter part of 1959.

On March 18, 1959, Indonesia and the United States signed an agreement providing the terms under which Indonesia could borrow rupiah accumulated under the Surplus Agricultural Commodities Agreement of 1956 for economic development purposes. These funds, valued at the rupiah equivalent of U.S.$70 million at the time of deposit, are, at the present rate of exchange, valued at a considerably smaller amount. A second surplus agricultural commodities agreement was also concluded in 1959.

Production and Foreign Trade.—Revised official statistics show that 1958 production of milled rice totaled 7,553,917 metric tons, and it was expected that production in 1959 would total about 7.7 million tons. This level of production is currently about 700,000 metric tons short of estimated annual requirements, which are slowly increasing, as the population increases by about 1.5 million persons per year.

Production of rubber amounted to 709,000 metric tons in 1958, compared with 728,000 tons in 1957. Factors in the decline apparently included dislocations to production resulting from the rebellion in Sumatra, as well as the advancing age of most Indonesian rubber trees, few of which have been replaced by newer stock. Other agricultural products such as sugar, copra, and kapok were produced during 1958 at levels close to 1957, although there were reported to be large-scale diversions of copra exports into illegal channels.

Production of crude petroleum for the calendar year 1958 was 16,110,000 metric tons, compared with 15,468,000 metric tons in 1957. Production probably would have been higher had not the principal oil-producing areas in Central Sumatra been affected by some dislocation as a result of the rebellion in that area during 1958.

As a result of the seizure of Dutch property in late 1957 and the dislocations that followed this action, as well as the rebellion which began in 1958, the value of all exports fell off by about 30% in 1958, compared with 1957. While serious balance of payments problems were encountered in 1958 and 1959, their gravity was lessened by rigid limitations on imports, which, in 1958, amounted to about 55% of imports during 1957. On the export side, Singapore continued to be Indonesia's best market, taking 24.6% of the total, followed by the United States (17.2%), the United Kingdom (12.7%), Australia (5.9%), and Communist China (5.7%). The Netherlands still took some 4% of Indonesia's exports, but this was much less than the average of 20% recorded over the last several years. On the import side, the United States continued to be the principal single source of imports (15.9%), followed by Japan (13.6%), West Germany (9.7%), the Netherlands (6.5%), and the United Kingdom (5.3%). Total exports during 1958 amounted to 8,611.5 million rupiah, while imports totaled 5,850.9 million rupiah. In spite of the apparent surplus of 2,760.6 million rupiah, large-scale purchases of military equipment and increased expenditures on invisibles, including such items as ocean freight, are reported to have produced a considerable deficit in the balance of payments.

Principal Events, 1959. *Domestic Affairs.*—Domestic affairs dominated the Indonesian political scene in 1959. The rebellion in Sumatra and Celebes continued to smolder, and the maintenance and re-establishment of security continued to occupy much of the government's attention. Deteriorating economic and financial conditions led to the adoption of a series of economic reform measures in August 1959 (see above, *Finance*). However, the single most important issues revolved around the question of constitutional reform. A Constituent Assembly had been meeting since November 1956, charged with writing a permanent basic law to replace the provisional constitution of 1950. Feeling that the process of framing a constitution was taking too long, President Sukarno proposed in February that the Assembly re-enact the constitution of 1945 which had served Indonesia in the years immediately following the proclamation of independence in 1945. Following discussions of this proposal in May, the Constituent Assembly, on June 2, failed to give it the requisite two-thirds majority, and the Sukarno proposal failed of adoption. A period of uncertainty followed as President Sukarno was abroad on a visit to Europe, the Americas, and Japan. However, on July 5, follow-

ing his return to Indonesia, President Sukarno, acting under extraordinary powers in his capacity of supreme commander of the armed forces, proclaimed the dissolution of the Constituent Assembly and the enactment of the constitution of 1945. A new cabinet was then installed, and new organs of government were established. (See above, *Government.*)

During the first nine months of the year political activity was subjected to periodic limitations or prohibitions by action of the army, on the grounds that such activity might endanger public order and safety. However, some measure of political activity continued, and in September the powerful Indonesian Communist Party held its sixth National Congress.

Among important legislation adopted was a decree promulgated by President Sukarno in September, providing for increased centralization of the administration of government. From 1957 until the president's act, some progress had been made toward decentralizing regional government. However, Sukarno and his supporters reportedly feel that extension of the powers of regional government at present would be destructive of national unity.

Foreign Relations.—President Sukarno left Indonesia on April 22 on a 68-day journey which took him to Turkey, the Soviet Union, Poland, Sweden, Italy, the Vatican, Brazil, Argentina, Venezuela, Mexico, the United States, Japan, North Vietnam, and Cambodia, before returning on June 29. During 1959, Indonesia continued to participate actively in official and unofficial conferences of Asian-African states. In January, Indonesia indicated it would not take part in a proposed Southeast Asian regional organization, on the grounds that it could best pursue its "independent and active" foreign policy within the larger context of the Asian-African community of states.

A political difference of some significance arose with Communist China in the spring of 1959 when the Indonesian government issued a regulation, effective Jan. 1, 1960, providing that foreign nationals would not be permitted to carry on retail business outside the larger cities of Indonesia. The regulation principally affected Chinese traders, many of whom claim to be citizens of Communist China. However, discussions on the implementation of the regulation were held in Djakarta, and Foreign Minister Subandrio visited Communist China in October 1959, to hold further negotiations on the subject. The issue grew hotter in November, and Dr. Subandrio issued a strongly worded statement in which he charged that Chinese embassy personnel were advising rural aliens to ignore the ban. He cautioned the Communists against "sabotaging" government regulations, and on November 18 travel restrictions were imposed on Chinese embassy personnel.

As the year ended it appeared that Indonesia would implement its new regulations on aliens engaged in retail trade despite Chinese Communist objections. In late December, Foreign Minister Subandrio publicly expressed puzzlement at the motives of the Chinese Communist government in taking such a strong stand on this issue. One consequence of the controversy was the public announcement by First Minister Djuanda that exchange of the instruments of ratification of the 1955 Sino-Indonesian Nationality Treaty would be postponed indefinitely. The treaty had reportedly been on the verge of entry into effect.

(See also FAR EAST.)

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INDUSTRIAL DESIGN. There is no easy description—no "square look" or "sheer look"—that can be attached to the design year 1959, a year that seemed to be dominated less by design than by collection, exhibition, and comment on the designs of other years.

The Museum of Modern Art, New York City, held a major exhibition of "20th century useful objects" from its permanent collection, and, later, an exhibition of package design. Illinois Institute of Technology's Institute of Design sponsored a widely publicized effort to determine, by ballot, "the 100 best examples of industrial design." The Albright Art Gallery in Buffalo, N.Y., showed more than 2,500 products under the title, 20th Century Design: U.S.A. In Stockholm, Sweden, the International Council of Societies of Industrial Designers held its first general assembly, with 19 countries represented, and attempted to standardize at least some of the terminology of the profession.

Technology.—Meanwhile, designs were being created on the drawing boards that tended to reflect a strong concern for translating technological developments into products for home and industry. Two such contributions came in 1959 from the office of George Nelson. For the American National Exhibition in Moscow, Nelson designers, with Albert Dietz of the Massachusetts Institute of Technology, developed a new kind of shelter: hexangular, translucent, Fiberglas-reinforced plastic flower shapes, about 15 feet high and 16 feet across, fastened together and anchored in concrete slabs. Another Nelson innovation was a high-fidelity console, with a three-dimensional grille, for Rek-O-Kut, using Dynel in a fabric designed by F. Schumacher & Co.

The classic Speed Graphic camera was redesigned by Peter Müller-Munk Associates to incorporate materials advances (the frame is of extruded aluminum bar stock, the revolving back is of die-cast magnesium); and Henry Dreyfuss designed a strobe unit for Heiland, working with the manufacturer in developing a disk capacitor to simplify the form. RCA-Whirlpool introduced the 1959 "Miracle Kitchen," designed and constructed by Sundberg-Ferar. Using Fome-Cor, a polystyrene foam with kraft paper bonded to both sides, William Moss developed the Roll House—a neat, well-insulated portable shelter now being produced for the U.S. Army Quartermaster Corps.

Often in 1959 the designer's role was not so much to exploit technology as to express it. This was particularly true in electronics, where complex equipment requires simplification of controls and information display devices. Computers, power os-

Curtiss-Wright's Air-Car, designed to travel over both land and water on a cushion of low-pressure, low-velocity air, is shown at New York's Rockefeller Center, November 9.

UPI

cillators, and other special industrial equipment were given cleaner forms, with human engineering emphasis on clarity and operating ease. One of the smartest examples was the ITT closed-circuit camera housing by Channing Wallace Gilson and William Brewer. RCA brought "decorator colors" to the computer field with a red, blue, and yellow electronic data-processing system styled by Stewart Pike and John Vassos.

In automotive design, the major development of 1959 was the first appearance of the widely publicized "compact" cars produced by the industry's "big three"—General Motors, Ford, and Chrysler—which joined Studebaker-Packard and American Motors in the small car field. In general, auto manufacturers made no drastic style changes in 1959, and the new models for the most part were modifications of the previous year's design. The trend toward greater use of glass continued, and there was a marked tendency away from excessive chromium decoration. Some of the new models showed increased emphasis on functional lines, with design highlights molded into the body itself. (See also AUTOMOBILES.)

Packaging.—Although the presumed requirements of supermarket selling continued to be met in general with showy package art, some items were given unusually fresh graphic treatment. Notable packages in 1959 included a set of whimsical ice cream cartons by Morton Goldsholl; the Spring cigarette package by Jay Doblin, Leedia Vitale, and Ray Grove; a polyethylene bailing-sponge wrapper created for the Burgess Cellulose Co. by Dave Chapman, in which the basic color comes from the sea-blue sponge itself; the Wash-Up! package and display carton by Brownjohn, Chermayeff & Geismar (one of the few contemporary graphic designs shown at the Museum of Modern Art's package design show); and a polystyrene lid clamp designed by Smith, Scherr & McDermott to package a set of Rubbermaid nesting mixing bowls.

(For further discussions of current trends in industrial design within individual fields, see articles on such subjects as ARCHITECTURE, FASHIONS, and INTERIOR DECORATION, as well as the Index entry, *Industrial Design.*)

RALPH S. CAPLAN,
Editor, "Industrial Design."

INDUSTRIAL HEALTH AND SAFETY. Toxicity.—There was continued pressure in 1959 for more information on the toxicity and hazards associated with well-known and previously investigated substances, and with the new chemical compounds continually introduced into commerce. There are a number of reasons for this trend: a demand for safer work places, the expanded use of household chemicals, and a recognition by industry that toxicological testing must be conducted concurrently with research and development because the economic potential of a compound will never be realized if that compound cannot be handled safely.

A striking feature of recent developments in industrial health and safety has been the application of new and complex scientific methods, such as neutron activation of trace metals for the closer examination of physiological response, metabolic processes, and detoxication mechanisms. The results of such studies provide a better basis for initiating preventive measures and minimizing injurious exposures.

Comprehensive papers were published in 1959 on the toxicology of aliphatic and alicyclic hydrocarbons, and of fatty acids, aliphatic aldehydes, and alkyl derivatives of benzene. These compounds have wide application in the production of paints, solvents, fuels, plastics, resins, synthetic fibers, lubricants, pesticides, and pharmaceuticals. Additional toxicity data were published on currently important substances, such as toluene diisocyanates (used in making flexible foams), boranes (used in making missile fuels), and numerous insecticides and fungicides.

Metals.—Much attention during the year was directed toward industrial health and safety problems associated with handling metallic substances. Reports were published on the toxicity and physiological action of beryllium, uranium, vanadium, nickel, chromium, cadmium, lithium, indium, rhenium, lead, manganese, mercury, copper, yttrium, lanthanum, and niobium. Of interest was a conference on beryllium disease and its control, held at the Massachusetts Institute of Technology. The present status of available information on beryllium disease was summarized in 29 papers published in the American Medical Association (AMA) *Archives of Industrial Health,* February 1959. At a similar conference on lead hygiene, 14 papers were presented; they subsequently appeared in *Industrial Medicine and Surgery,* March 1959.

Maximum Allowable Concentration (MAC).—An International Symposium on Maximum Allowable Concentrations of Toxic Substances in Industry was held in Prague, Czechoslovakia, April 14–17, 1959. Representatives from 22 nations discussed the following: (1) definitions and concepts of MAC's; (2) criteria used in establishing MAC's; (3) MAC's in biological specimens; and (4) sampling and analytical procedures. Major discussion revolved around criteria for limits, which differ in various countries, ranging from conditioned reflexes in the USSR to clinical observations, where possible, in the United States. Action was taken toward establishing international MAC standards.

The latest list of Threshold Limit Values for the United States, published in the AMA *Archives of Industrial Health,* September 1959, contained 250 substances, plus tentative values for 25. The American Industrial Hygiene Association published material supplementing Threshold Limit Values and giving information on hazards, evaluation of exposure, control measures, and first aid and medical procedures. Also, the association issued hygienic guides for nitrobenzene, metadinitrobenzene, heptane, hexane, propylene oxide, tetrahydrofuran, polonium, selenium compounds, and titanium. In addition, The Manufacturing Chemists' Association published chemical safety data sheets giving properties and essential information for the safe handling and use of diethylenetriamine, tolylene diisocyanate, vinyl acetate, and sulfur.

Ionizing Radiation.—Exposure to ionizing radiation occurs in all areas of daily living, with total exposure being the sum of natural background radiation from cosmic rays and naturally occurring radioactive elements, exposure during X-ray diagnosis, the therapeutic use of radioisotopes, fallout from nuclear weapon testing, and the industrial application of atomic energy and other radioactive sources. The amount of radiation which can be permitted in industry is limited to the difference between the level of exposure of the general public and the accepted limits of exposure. Much emphasis, therefore, is being placed on uniform standards of radiation protection in industry.[1]

Recently, more responsibility was given to the U.S. Public Health Service for the collation and interpretation of data on environmental radiation. Federal assistance to state and local governmental agencies has increased the regulatory responsibility

[1] The National Bureau of Standards *Handbook No. 69,* June 1959, gives recent information on the maximum body burdens and maximum permissible concentrations of radionuclides in both air and water.

of these agencies. Eight states have strong radiation protection codes and require the licensing or registration of sources of radioactivity; nine other states require licensing or registration. About two thirds of the states have some general radiation protection rules, and most of the others have study committees. (See also CHEMISTRY; RADIATION; SANITARY ENGINEERING.)

New Journals.—The first issue of the *Journal of Occupational Medicine*, official publication of the Industrial Medical Association, was published in January 1959. A journal entitled *Toxicology and Applied Pharmacology* also began in January 1959. *The Annals of Occupational Hygiene* was first published by the British Occupational Hygiene Society in December 1958. *Health Physics*, official journal of the Health Physics Society, started in June 1958.

H. H. SCHRENK,
Managing Director, Industrial Hygiene Foundation of America, Inc.

INDUSTRIAL PRODUCTION. Industrial production advanced steadily through the first half of 1959 and then declined moderately primarily as a result of a prolonged work stoppage in the basic steel industry (see IRON AND STEEL). The Federal Reserve System's seasonally adjusted production index, after reaching 155 (1947–49 = 100) in June was down to 148 in October, a decline of nearly 5% from the record midyear level. A large part of the reduction represented the loss of steel output.

The steel tieup began on July 15 and continued for 116 days until November 7 (the longest shutdown in steel history), when mill operations were resumed by court order. During the strike period, steelmaking facilities operated at an average rate of 13% of rated capacity in place as of Jan. 1, 1959. The direct impact on other producing industries was relatively moderate and centered in coal and iron ore where output was at reduced levels over the entire period.

Durable goods fabricators maintained a high rate of operations out of inventories through mid-October. In the latter part of the month, however, supplies of steel were being rapidly depleted and output curtailments among steel consuming industries were spreading.

Table 1—U.S. INDUSTRIAL PRODUCTION INDEX FOR 1957–1959
(1947–49 average = 100)

Industry	1957	1958	Jan.–Oct. 1959 (seasonally adjusted)
Industrial production, total	143	134	149
All manufactures, total	145	136	152
Durable manufactures, total	160	141	162
Primary metals	131	104	116
Fabricated metal products	139	128	143
Machinery	168	145	172
Nonelectrical machinery	150	127	149
Electrical machinery	204	179	213
Transportation equipment	213	187	210
Autos, trucks, and parts	128	99	132
Other transportation equipment	344	319	322
Instruments and related products	172	164	191
Stone, clay, and glass products	155	145	166
Lumber and products	114	115	132[1]
Furniture and fixtures	120	119	141
Miscellaneous manufactures	140	133	149
Nondurable manufactures, total	130	130	143
Textile mill products	99	98	115[1]
Apparel and allied products	111	110	125[1]
Rubber products	135	125	152[1]
Leather and products	104	102	112[2]
Paper and allied products	158	160	177[1]
Printing and publishing	141	139	149
Chemicals and allied products	184	184	205[1]
Petroleum and coal products	141	134	140
Food and beverage manufactures	112	115	120[1]
Tobacco manufactures	111	118	125[2]
Minerals, total	128	117	121
Coal	83	68	68
Crude oil and natural gas	150	141	147
Metal, stone, and earth minerals	129	117	122[1]

[1] Represents data for January–September. [2] Represents data for January–August. (Source: Board of Governors of the Federal Reserve System.)

Elsewhere in manufacturing and mining, output showed little net change after June as increases and decreases among the major industry groups were generally mutually offsetting.

Industrial output was substantially higher in 1959 than in 1958 as strong business and consumer demands persisted throughout the year. The physical volume of output in the first 10 months of 1959 was 13% higher than for the same period of 1958 and 4% above the high production year of 1957.

The expansion in output in 1959 was widespread among durable and nondurable categories. All of the major manufacturing groups participated in the rise, and the year-to-year advances, as shown in Table 1, were large—though in many cases from the relatively depressed levels of 1958.

For most product groups, new production peaks were registered at various dates during the year, and in October the rate of operations, except in those industries affected by the steel situation, was at or close to record levels.

Durable Manufactures.—The steel industry, operating at an average rate of approximately 90% of rated capacity, turned out a record volume of raw steel in the first half of 1959. From mid-July through early November, the period of the strike, the operating rate was cut to about 13% of capacity, yielding a weekly output of 350,000 tons of ingot steel. This compared with a mill rate of 92% and an average weekly output of 2.6 million tons in the April–June period.

Steel producers resumed operations on November 7, and in the week beginning November 15 the scheduled weekly rate was up to 79% of capacity, equivalent in terms of tonnage to 2.2 million tons of steel. Some further advance in the output rate was expected in the weeks ahead.

In the first 10 months of 1959 the industry produced 74 million tons, and for the full year the total was expected to exceed 93 million tons, considerably above the 1958 volume although substantially below 1957 production.

Strong demand from metal-consuming fabricators stimulated output of most major nonferrous metals. The fast-growing aluminum industry (see ALUMINUM) operated at a record rate in 1959. Output in the first 9 months came close to 1.5 million tons, up more than one fourth from the volume of a year earlier. Despite prolonged work stoppages in some mines, production of copper in the first 9 months of 1959 was well above the volume in the like 1958 period. The effect of the strike in copper mining reduced output from 134,000 tons in July to 29,000 tons in September. Output of zinc also increased, although lead production declined.

Production of building materials was maintained in large volume, with lumber mills particularly active, turning out by a substantial margin the largest volume of finished lumber in the postwar period. (See also LUMBER.)

The machinery industry showed outstanding strength in 1959, as activity during the steel tie-up was sustained by drawing upon inventories built up earlier in the year. This industry, which turns out the bulk of heavy electrical and nonelectrical equipment, recorded a year-to-year advance of close to 20%, one of the largest gains among the major manufacturing industries.

Most segments within the machinery group shared in the advance. For example, the machine tool industry (see MACHINE TOOLS) in the first 9 months of 1959 stepped up dollar shipments nearly one fifth, plants producing tractors and agricul-

Table 2—LEADING UNITED STATES MANUFACTURES, 1957

Product	Total number of employees	Payroll (in thousands of dollars)	Adjusted value added by manufacture (in thousands of dollars)
Food and kindred products	1,688,228	$ 7,142,658	$16,349,436
Meat products	313,106	1,453,190	2,523,707
Dairy products	296,751	1,264,747	2,676,200
Canned & frozen foods	213,319	655,513	1,543,005
Grain mill products	107,375	473,559	1,423,514
Bakery products	303,746	1,299,312	2,482,370
Beverages	202,363	978,586	2,618,724
Tobacco manufactures	88,086	284,065	1,245,968
Textile mill products	988,951	3,183,279	5,196,690
Broad-woven fabrics	343,773	1,049,975	1,638,485
Knitting mills	229,848	669,393	1,114,228
Apparel and related products	1,264,308	3,663,658	6,066,503
Men's-boys' furnishings	300,995	748,323	1,206,297
Women's-misses' outerwear	378,154	1,167,736	1,973,067
Lumber and wood products	645,792	2,110,461	3,284,511
Lumber & basic products	330,659	1,025,547	1,523,569
Furniture and fixtures	374,850	1,431,976	2,513,910
Household furniture	266,869	970,298	1,627,512
Pulp, paper, and products	565,874	2,733,975	5,724,186
Pulp, paper, & board	226,440	1,202,039	2,780,890
Paperboard containers	156,409	689,948	1,175,367
Printing and publishing	867,485	4,300,502	7,921,543
Newspapers	308,707	1,519,917	2,597,614
Commercial printing	217,978	1,063,595	1,801,236
Chemicals and products	763,934	4,080,620	12,474,386
Inorganic chemicals	117,233	682,720	1,850,945
Organic chemicals	261,610	1,480,494	4,264,087
Drugs & medicines	94,684	513,134	1,975,413
Soap & related products	46,469	256,561	1,036,639
Paints & allied products	74,321	381,885	1,019,137
Petroleum and coal products	185,562	1,149,941	3,249,345
Petroleum refining	153,920	979,262	2,868,179
Rubber products	259,894	1,309,851	2,462,080
Tires & inner tubes	96,889	556,893	1,118,060
Leather and leather goods	361,945	1,156,661	1,891,636
Footwear, except rubber	235,026	718,280	1,145,044
Stone, clay, & glass products	525,597	2,354,451	4,980,460
Concrete & plaster products	101,372	422,981	1,041,309
Primary metal industries	1,271,940	7,018,584	13,320,274
Blast furnaces & steelmills	632,283	3,728,508	7,413,086
Iron & steel foundries	226,952	1,096,371	1,684,075
Nonferrous rolling & drawing	100,542	528,759	1,032,373
Fabricated metal products	1,113,534	5,383,103	9,543,780
Cutlery, tools, & hardware	146,640	697,445	1,249,657
Structural metal products	342,075	1,714,531	3,034,040
Metal stamping & coating	200,178	920,453	1,517,748
Nonelectrical machinery	1,707,459	9,049,909	15,977,505
Tractors & farm	148,397	716,307	1,325,644
Construction & mining	141,763	750,671	1,445,107
Metalworking	285,304	1,712,999	2,740,311
Special-industry	178,751	924,820	1,545,856
General industrial	246,381	1,314,194	2,386,664
Office & store machines	130,061	697,280	1,191,583
Service & household machines	189,529	938,394	1,768,213
Miscellaneous machinery parts	297,479	1,486,511	2,614,720
Electrical machinery	1,084,367	5,133,431	9,620,386
Industrial apparatus	391,680	1,953,266	3,750,618
Communication equipment	506,556	2,318,480	4,045,765
Transportation equipment	1,900,319	10,486,418	18,486,135
Motor vehicles & equipment	744,531	4,009,307	8,721,619
Aircraft & parts	944,820	5,377,048	8,006,361
Ships & boats	144,154	743,261	1,085,651
Instruments & related products	307,207	1,570,906	2,872,262
Ordnance and accessories (excluding government establishments)	169,910	940,697	1,420,427
Miscellaneous manufactures	665,067	2,826,208	4,747,558

(Source: U.S. Bureau of the Census, *Annual Survey of Manufactures: 1957.*)

tural machinery boosted output by 8%, and producers of excavating and earth-moving equipment expanded deliveries by about one fourth.

Production of transportation equipment was in considerably larger volume than in 1958, with all segments of the industry participating. The advance in output was particularly noticeable in the motor vehicle sector. Assemblies of passenger cars and trucks generally continued upward until August, when factory shutdowns for model changeovers got under way. Production of the new 1960 models began on a modest scale late in August and increased steadily thereafter to 158,000 in the third week of October, when steel shortages forced curtailment of production lines. During the week ended November 14, completions of cars and trucks totaled less than 80,000 units.

For the first 10 months of 1959, factory sales of cars, trucks, and buses amounted to 5.8 million units, which compared with 3.8 million in the same period of 1958 and 5.1 million for 1958 as a whole. The count for the full year 1959 was expected to total 6.7 million units. (See also AUTOMOBILES.)

Activity in aircraft plants was also higher despite the continuing shift from production of manned military aircraft to missiles and missile development work, the latter lines accounting for an increasing proportion of total output in the aircraft manufacturing industry. (See also AERONAUTICS.)

Nondurable Manufactures.—Output of nondurable goods showed a slowly rising trend in 1959, and for the first 10 months of the year the Federal Reserve index of output of these goods averaged 143% of the 1947–49 base period. This was more than one tenth higher than for the corresponding period of 1958, the previous top year, and represented the largest year-to-year advance in the post-World War II period.

In the early fall months of 1959, output was at a record rate, although there was evidence of some tapering off from peak rates in a number of industries. Production increases over the year among the major product groups varied from 5% for food and beverages to 25% for rubber products, with most industries showing advances of 10% or more.

Minerals.—Production of minerals in 1959 was only slightly above the relatively depressed level of 1958. A number of unfavorable factors accounted for this development. The cut in steel output during the strike period reduced coal and iron ore production; a large proportion of the copper mining industry was shut down from two to three months because of a work stoppage; and the unfavorable supply-demand position of refined petroleum products kept crude oil output under state production quotas during most of the year.

Annual Survey of Manufactures: 1957.—This survey, released in 1959, estimates that all manufacturing establishments operating in the United States in 1957 employed 12,841,750 production workers and 4,262,905 other employees for a total of 17,104,655, compared with 17,177,301 in 1956, and carried a payroll of $79,354,003,000. Operating manufacturing establishments in 1957 created $147,928,554,000 in adjusted value added by manufacture[1] ($144,971,368,000 in 1956), and provided $11,409,470,000 in capital expenditures, not including spending for plants under construction and not in operation.

Table 2 furnishes data for all industry groups and some component manufactures for which adjusted value added by manufacture was estimated at $1 billion or more in 1957.

(See also articles on various products or industries mentioned in this article.)

FRANCIS L. HIRT,
Office of Business Economics,
U.S. Department of Commerce.

INFANT MORTALITY. See Index entry.

INFLATION. See Index entry.

INFLUENZA. See RESPIRATORY DISEASES.

INFORMATION AGENCY, U.S. See UNITED STATES INFORMATION AGENCY.

INLAND WATERWAYS. In the first half of 1959 the shallow-draft water carrier industry in the United States made a strong comeback from the effects of the general business recession of 1957–58. However, the flow of traffic was interrupted in the last half of the year by the steel and dock strikes and by labor disputes within the water carrier industry itself. Total traffic in 1959 was expected to be below the 1957 record, as it was in 1958.

In 1958 an estimated 366.5 million tons of commerce[2] was transported on the 29,000 miles

[1] Adjusted value added by manufacture represents value of products shipped (including resales of finished products produced by other manufacturing establishments) less cost of products, materials, supplies, fuel, electric energy, and contract work, plus (in almost all cases) the net change in finished products and work-in-process inventories between the beginning and end of the year. The inventory figures were not adjusted for price changes.

[2] Inland waterway tonnages are classified as follows: internal traffic, 261.1 million tons; intraport traffic, 48.9 million tons; local port movements, 56.5 million tons. (Source: U.S. Army Corps of Engineers.)

of inland waterways (excluding the Great Lakes), as compared with 392 million tons in 1957—a drop of 6.5%. In 1958 inland water carriers rendered 109.1 billion ton-miles of service, or 5% below the 1957 all-time record of 115 billion ton-miles.

Principal commodities and their tonnages transported in 1958 included: petroleum and petroleum products, 134 million tons; bituminous coal and lignite, 83.8 million; sand, gravel, and crushed rock, 44 million; unmanufactured sea shells, 21.5 million; logs, 17.6 million; iron and steel products, 7.1 million; chemicals, 7.5 million; and grains, 7.0 million.

The accompanying table compares tonnages of commodities moved over 11 major waterways in 1958 with those moved in the record year 1957.

Channel	1958 tonnage	1957 tonnage
Atlantic Intracoastal Waterway[1]	3,166,155	2,885,614
Columbia River	17,600,871	20,855,073
Gulf Intracoastal Waterway	46,007,718	48,104,471
Illinois Waterway	24,488,921	24,234,066
Mississippi River[2]	75,279,676	74,599,221
Missouri River[3]	1,745,241	1,188,415
Monongahela River	28,911,161	38,420,767
Ohio River	73,476,894	81,567,152
Sacramento River	2,259,495	2,703,529
Tennessee River	12,040,826	12,742,223
Warrior-Tombigbee Waterway	5,666,203	4,873,991

[1] Consolidated total. [2] Inland traffic only. [3] Commercial traffic only.

There are approximately 1,800 firms employing about 80,000 operating personnel aboard the inland waterways fleet of 19,390 vessels (including 4,169 towboats, 12,912 dry cargo barges, and 2,309 tank barges). The cargo capacity of the inland fleet now stands at 14 million net tons, up 5% over 1956.

The use of more powerful towboats and tugs and more specialized and larger barges is enabling the shallow-draft water carriers to haul bigger loads—up to 30,000 tons of cargo in a single tow—thus helping to hold down transportation costs and to give the consumer improved service for his transportation dollar.

(See also INTERSTATE COMMERCE COMMISSION.)

BRAXTON B. CARR,
President, The American Waterways Operators, Inc.

INNER MONGOLIA. An autonomous region of the People's Republic of China, situated in northern China. Population (1953), 6,100,104; capital, Huhehot (148,400). Paotow (est. 1958, 650,000), the largest city, has become an industrial and transportation center. The Mongols are mostly nomadic, raising sheep, cattle, camels, and horses. Grains and other crops are grown by the Chinese.

INSANITY. See PSYCHIATRY AND MENTAL HEALTH and the Index entry, *Mental Health.*

INSECTS AND INSECTICIDES. See Index entry.

INSTALLMENT BUYING. See CONSUMER CREDIT.

INSURANCE. The following article is divided into three sections, reviewing developments in (1) Life Insurance; (2) Health Insurance; and (3) Property and Casualty Insurance.

LIFE INSURANCE

American families owned about $534 billion of legal reserve life insurance at the start of 1960, with average ownership per insured family totaling over $11,500, and about 115 million policyholders contributing to this all-time record. In the decade beginning in 1950, the total amount owned has doubled, average ownership per family has increased by $5,000, and the number of policyholders has risen by almost 30 million.

Purchases of new life insurance during 1959 set an annual record, as nearly 24 million individual policies and group certificates bought in the year accounted for about $68.5 billion of new protection. This represented more ownership than the total amount in force 35 years ago and was more than three times the amount purchased ten years ago.

Keeping pace with the rapidly increasing financial responsibilities of family living, the more than 1,400 life insurance companies serving the American public have geared their operations to provide up-to-date policy contracts with advanced marketing features. Among the factors contributing to life insurance growth in recent years are the following: purchases of policies in larger amounts; more policies owned per family; the popularity of such policy innovations as the family plan, which insures all members of the family under a single policy; development of new marketing procedures, such as monthly payment by preauthorized check, premium discount for larger purchases, increased age limits for issuance of policies, and liberalized underwriting to allow greater insurability ranges for risky occupations and health impairments; and the removal of legal restrictions, such as the lowering of the minimum size of groups eligible for group insurance.

In the past decade, ordinary life insurance ownership gained by about 125%; group life insurance experienced a gain of nearly 300%; and credit life insurance increased over 900%. The trend toward the purchase of policies with higher unit values was reflected in the lower proportionate gain of about 25% for industrial insurance over the same period.

Benefit Payments.—In 1959, American policyholders or their beneficiaries were paid a record total of nearly $7.6 billion in benefits by life insurance companies and about $2.4 billion from health insurance policies. About 58% of the life insurance benefits paid in 1959 went to policyholders themselves, with the remaining 42% paid as death benefits. In the past decade, close to $55 billion have been paid in life insurance benefits.

Investments.—The total assets of the more than 1,400 legal reserve life insurance companies reached $113.6 billion at the beginning of 1960, representing a 90% increase in the last decade. These guarantees of future obligations to policyholders and beneficiaries have long been one of America's chief sources of investment capital. During 1959, about $6 billion of new capital funds were invested by life insurance companies in the nation's economy. Previously invested funds available for reinvestment brought the companies' aggregate investments made in 1959 to $19 billion. The largest block of assets was the securities of industrial corporations, railroads, and utilities, accounting for an aggregate of about $50 billion of holdings and about $6 billion of purchases in 1959. Mortgages ranked second, with total holdings of $39 billion and purchases of some $6 billion. The net earning rate on life insurance company investments, before federal taxes, rose to about 3.95% in 1959, compared with a 3.13% earning rate in 1950. Federal legislation increasing the income tax on life insurance companies by an estimated $200 million was enacted by Congress in 1959.

Other Insurance.—Although 90% of the life insurance owned in the United States is with the legal reserve life insurance companies, American families had an additional $55 billion of life insurance in force with the Veterans Administration (q.v.), fraternal societies, assessment associations, and savings banks.

Canada.—Canadian families owned nearly $42

billion of life insurance at the start of 1960. The more than 8 million Canadian policyholders constituted the highest ratio of life insurance ownership to national income of any nation reporting life insurance statistics. About $490 million was paid in life insurance benefits and annuity payments during 1959, with 63% of the total representing payments to policyholders themselves.

HOLGAR J. JOHNSON,
President, Institute of Life Insurance.

HEALTH INSURANCE

Americans in 1958 made increasing use of health insurance as a source for the payment of medical bills, as shown by reports on the number of persons insured and the amount of benefits paid. By Dec. 31, 1958, persons in the United States who were covered by some form of health insurance numbered a record 123,038,000. Protection against the cost of hospital and doctor bills has been extended to include some 71% of the nation's population.

To help the public meet the cost of accidents and sickness in 1958, some $4.7 billion was paid in health cost benefits during the 12-month period by all types of insuring organizations. In 1957 the benefit payment figure was $4.2 billion.

Within the last seven years the number of persons covered by hospital expense plans rose by 44%, while the number of those covered by surgical plans and regular medical plans increased by 72% and 172%, respectively. Major medical expense insurance coverage rose by 1,599% during the same period.

Reports from the approximately 700 insurance companies handling health insurance policies in the United States during 1958 showed that of the 123 million persons covered, nearly 72 million had such coverage under policies written by insurance companies for hospital expenses. In addition, 69 million were covered for surgical expenses, and 35 million for regular medical expenses. Loss-of-income insurance policies covered 32 million persons, and some 17 million had protection against major medical expenses. Of the total United States civilian labor force in 1958, an estimated 62%, or 42 million persons, were protected by loss-of-income insurance policies and other salary continuation plans.

It was estimated that in 1958 insurance companies alone paid benefits on 9.5 million claims for hospital expenses, representing almost 45% of the 21.6 million admissions to voluntary hospitals during the year.

Progress also was made in providing persons 65 years of age and older with health insurance. By the end of 1958 it was estimated that more than 40% of the senior citizen population had health insurance. A survey disclosed that in five years' time the number of Americans aged 65 and over increased by 13%, while senior citizen coverage rose by 65%. This progress was due in large measure to new approaches adopted by insuring organizations which enable retiring workers to continue their health insurance coverage, as well as to new types of protection which cover all segments of the population.

JAMES R. WILLIAMS,
Vice President, Health Insurance Institute.

PROPERTY AND CASUALTY INSURANCE

The year 1959 was notable for the progress made by the property and casualty insurance industry in facing up to its most complex challenges in history. As profits continued on a downward path in 1958, property underwriters suffered from an unusual increase in the severity of fires and of wind and hail storms, and casualty underwriters found automobile liability losses remaining heavy despite higher rates, while the steady volume growth of assigned risks posed an increasingly serious problem. With numerical increases of 15% in population, 20% in homes, and 100% in automobiles projected for the next decade, the industry began a thorough reassessment of traditional concepts in many areas.

Industry highlights during 1959 included an appearance of industry leaders before a Senate subcommittee conducting hearings on the adequacy of state regulation of insurance; introduction of an automobile merit rating plan in several states; the difficulty of metropolitan courts in handling the growing mass of personal injury litigation; revision of a new homeowners' policy; realignment of functions of rating and service organizations in the property field; an increase in facilities available for an insurance education; and establishment of new organizations by the industry to promote safety education and broaden understanding of insurance by the public.

A major step in 1959 was the establishment of the Insurance Institute for Highway Safety in Washington, D.C., with all-industry sponsorship of more than 500 companies (representing 90% of all automobile insurance business). The institute will launch an all-out attack on the problem of the high toll in deaths and injuries on the streets and highways.

Automobile insurance continued to be a major problem, with accident frequency and claims costs remaining high. Although pressure in some states for compulsory automobile liability insurance continues, only Massachusetts. New York, and North Carolina have this type of law. Automobile bodily injury liability was the largest classification of casualty business in terms of dollar premiums in 1958. Net premiums earned amounted to $2,209 million, while losses and adjustment expenses incurred to premiums earned totaled $1,745 million, and underwriting statutory loss, $217 million. The loss ratio was 79%.

Although a serious downturn in profits was halted at the end of 1959, many companies remained deeply in the red. In the first half of 1959 the total loss ratio declined 1.7 points to 62.3%, and dollar premium volume was up 7%.

At the end of 1958, property and casualty insurance companies had total assets of $26,309 million, while net premiums earned in 1958 amounted to $12,308 million, and loss and adjustment expenses incurred to premiums earned were $7,878 million.

J. DEWEY DORSETT,
General Manager, Association of Casualty and Surety Companies.

INTEGRATION, School. See EDUCATION; NEGROES, AMERICAN.

INTER-AMERICAN AFFAIRS. Political Instability.— Violence and unrest characterized the pattern of Latin American domestic and foreign developments during 1959. Freed from tyrannical dictatorships, except in the Dominican Republic and Paraguay, the Latin peoples showed their deep feelings of thwarted expectation. Their hope for a better life had not materialized in the cities, to which 26 million rural Latins had moved since World War II, and their mood was exacerbated by the Communists and nationalists, and by adverse comparison of their economic situation with the prosperity of Europe and the United States.

Instability was most evident where the bankrupt heirs of corrupt dictatorships had introduced

drastic programs of social reform. After two years of bloody civil war, costing 8,000 lives and an estimated $100 million, Fidel Castro assumed political leadership in Cuba on Jan. 1, 1959. The object of genuine mass hero worship, which was sustained by his frequent television and radio addresses, Castro completely dismantled the existing army, police, government, and civil service, and set about to institute an extensive agrarian reform. Such rapidly paced changes provoked the mounting protest of affected groups whose first major effort to overthrow the Castro regime came in August, and was followed by other abortive revolts in September and October.

Although the reform measures of Venezuela's new president, Romulo Betancourt, were less ambitious than those of Castro, a riot at Caracas on Aug. 3, 1959, attributed to professional agitators, induced the government to suspend constitutional guarantees for a month. The regimes in Argentina and Bolivia incurred increasing unpopularity in the pursuance of deflationary policies inspired and supported by the United States. Rebellions in Bolivia on April 19 and again on June 27 provoked the government to impose a state of siege and press censorship.

These revolutionary programs encouraged unrest among oppressed peoples elsewhere. The Paraguayan dictator, Alfredo Stroessner, dissolved a rebellious Congress on May 30 and jailed scores of leaders in his own Colorado Party after the Congress had condemned police brutality in repressing student demonstrations. The coldly efficient dictatorship of Rafael Leonidas Trujillo Molina in the Dominican Republic confronted developing antipathy of the Roman Catholic hierarchy, the upper middle class in major cities, and student groups. Rebel hopes in these countries were raised by the anticipated assistance of exiles. Vigorous police searches and acts of terrorism in Nicaragua were followed by a bungled attempt to slay President Luis Somoza Debayle on June 6 and by student riots against the government on July 23.

Both Haiti and Honduras were torn by internal and international intrigue. Honduran President José Ramón Villeda Morales, whose two-year term had been marred by revolt, terrorism, and squabbles with neighboring countries, successfully withstood a rebellion on July 12–13. With his government sustained financially by means of a United States grant of $6 million, Haitian President François Duvalier maintained a perilous hold on the country in spite of a coronary occlusion suffered May 25, periodic revolts, and the opposition of the Roman Catholic Church over the expulsion from Haiti of two priests on August 18. Disenchantment with politicians was nowhere more evident than in inflation-burdened Brazil where a baby rhinoceros received the largest vote in a municipal council election in São Paulo on October 4.

Caribbean Unrest.—Domestic unrest spilled over national boundaries in the Caribbean area. Castro's success in Cuba encouraged rebels bent on social reform elsewhere; international radio programs in Venezuela and Cuba condemned the dictatorships in Nicaragua and the Dominican Republic; and national legislatures in Venezuela, Costa Rica, and El Salvador endorsed opposition to the Somoza regime in Nicaragua. The former president of Costa Rica, José Figueres, lent his prestige to revolutionary factions in both the Dominican Republic and Nicaragua. Exiles from Panama, Nicaragua, Cuba, and the Dominican Republic assembled men and arms on unguarded borders to overthrow the governments in their respective countries. By March, Costa Rica had become the principal asylum for fleeing Nicaraguans, while Cuban and Dominican exiles, operating without the law in the United States, were supplying illicit weapons to their allies in Cuba.

Although the Castro administration did not prevent all armed bands from organizing in Cuba and departing from its territory, it arrested (April 18) more than 100 Nicaraguans training on its shores and stopped (May 6) a group of 22 Cubans from joining the Nicaraguan rebels. Honduras and Nicaragua agreed to prevent their territories from being used to mount rebellions against each other on February 26. The Honduran government of President Villeda Morales lost favor with its own Liberal Party when on three occasions between June 27 and July 13 it disbanded Nicaraguan exiles who were preparing to overthrow the Somoza regime. Costa Rican President Mario Echandi Jiménez risked his popularity by enforcing his country's neutrality in the Nicaraguan revolt; on March 20 he instituted emergency measures to keep his country's borders from becoming a rallying ground for Caribbean revolutionaries, and on August 10 he established a military zone 15½ miles deep along the Nicaraguan border to prevent attacks on Nicaragua.

Guatemalan President Miguel Ydígoras Fuentes, in soliciting nationalistic support for his faltering regime, charged the Mexican government with encouraging Guatemalan exiles to attack his country. Diplomatic relations between the two countries, which were severed on Jan. 23, 1959, as a result of an attack in late 1958 by a Guatemalan Air Force plane on three Mexican shrimp boats, were resumed on September 15.

Inter-American Peace Machinery.—Panamanian President Ernesto de la Guardia, Jr., invoked the peace machinery of the Organization of American States (OAS) on April 28 after Roberto Arias, a reckless young member of the Panamanian oligarchy, and 87 mercenaries whom he had assembled in Cuba attempted to overthrow his administration. An investigating committee appointed by the OAS Council left for Panama that very day, and the United States, Colombia, Ecuador, and Guatemala responded to the council's recommendation that Panama be given military assistance. After Cuban cooperation was evidenced both in the deliberations of the council and in the interception of two supply ships destined for the rebels, the rebel forces surrendered on May 1.

The OAS withheld immediate support for the authoritarian governments in Nicaragua and the Dominican Republic. After 110 airborne exiles invaded Nicaragua from Costa Rica on May 31 and June 1, an investigating commission was appointed at an emergency session of the OAS Council to determine whether this might be a domestic affair which would preclude regional action. The commission delayed its departure to the area until June 14, by which time most of the poorly equipped rebels, who had found support neither from the Nicaraguan people nor the National Guard, had surrendered. The Dominican Republic requested the assistance of the OAS Council on July 2 to forestall anticipated raids by Cuba and Venezuela, but withdrew the request July 10 when it was clear that assistance would be denied. A majority of the member states disliked the Trujillo regime and feared the withdrawal of Cuba and Venezuela in the event of OAS action.

In view of the unstable Caribbean situation, the United States and several South American countries proposed the Fifth Meeting of Consultation of Ministers of Foreign Affairs, which was convened August 12–18, 1959, at Santiago, Chile. The conference agenda called for a review of Caribbean problems and a study of the "effective ex-

AMERICANA MAP BY DONALD T. PITCHER

ercise of representative democracy." The conferees concluded with a strong reaffirmation of the nonintervention doctrine and with the restoration of power to the Inter-American Peace Committee which would permit it to investigate any situation without the prior approval of the accused or accuser nation. The Declaration of Santiago restated the necessary conditions for democracy, and thereby made it abundantly clear that dictatorships of the sort that existed in the Dominican Republic were repugnant to the other nations.

After a short period of troubled tranquillity, the Caribbean erupted again in October when Fidel Castro, increasingly besieged by defections and revolts, appealed to zenophobic nationalism by accusing the United States of permitting planes to be launched from Florida to bomb Cuba. Panamanian students, prompted by Aquilino Boyd, an aspirant for the presidency in the 1960 elections, encountered forceful opposition from United States troops when they raised the Panamanian flag in the Canal Zone on Nov. 3, 1959. Hurried consultations with United States officials and subsequent demonstrations resulted in United States acceptance of Panama's demands that all Canal Zone merchandise would be purchased in Panama, that wage adjustments for Panamanian laborers working in the zone would be made, and that serious consideration would be given to flying the Panamanian flag along side that of the United States in the Canal Zone. On November 14, President Eisenhower announced the appointment of a six-member National Advisory Committee on Inter-American Affairs which would consider current and long-range problems.

Communism.—Deteriorating economic conditions, together with greater political freedom which accompanied the demise of dictatorships, provided Communists with both an issue and the means for increased activity in Latin America. By 1959 the number of Communist Party members had grown to an estimated 240,000. Although Latin American trade with the Soviet bloc in 1958 increased substantially over that in 1957, its proportion to the entire trade was negligible. In 1959, Cuba turned to the USSR as a market for its surplus sugar, and Brazil dispatched a seven-man trade mission to Moscow in November. Peking was displacing Moscow as a mecca for Latin leftists; 37 delegations from Latin America visited the USSR and China in 1958, and 40 such delegations, including one led by Mexico's former president, Lazaro Cardenas, had entered China by August 1959. Together, the USSR and China were spending an estimated $100 million annually on propaganda in Latin America.

While avowed Communists were not among the key decision makers, their influence in secondary roles was nonetheless disturbing. The United States representative to the OAS, John C. Dreier, declared on July 10 that they had infiltrated the revolutionary movements in the Caribbean. Nicaraguan exiles declared in August that a Cuban Communist was "in charge of Caribbean affairs" and that they had been instructed by the president's brother, Raul Castro, to "form a popular front with the Communists." If Cuba was doing nothing to suppress the Communists, President Ydígoras of Guatemala was encouraging their separate development in an effort to divide his leftist opposition. However, the Frondizi government in Argentina, which had embarked on an unpopular economic program, initiated court action in October to disfranchise the Communist Party in that country. (See also COMMUNISM.)

Economic Affairs.—If nationalism restrained vigorous inter-American cooperation, the Latin economies were nonetheless more dependent than ever on United States assistance. The annual rate of growth in the gross national product had fallen from 7% in the early 1950's to 2½% in 1958, and a teeming population was matching the rate of economic development. Monetary stabilization policies, necessary for effective planning, made slow headway against the opposition of labor, business, and military

groups. Terms of trade and foreign markets had deteriorated; foreign exchange reserves needed for capital goods had shrunk.

Vice President Richard M. Nixon's trip to South America in May 1958 had prompted a reappraisal of United States economic policy toward the area; the new approach promised a collective attack on the economic and social roots of communism. In supporting the charter for an inter-American bank, which was readied for signature in Washington, April 8, and which won final congressional approval on August 19, the United States was abandoning its traditional opposition to an institution much desired by the Latin countries. The United States agreed to contribute 45% of the $1 billion of subscribed capital—$850 million of which would support an Inter-American Development Bank and $150 million for a Fund for Special Operations. The Development Bank would extend loans, repayable in dollars, for wealth-producing projects; and the Special Fund would provide capital for undertakings unacceptable as bank risks to be repaid in local currencies. The bank and fund would begin functioning in Washington, D.C., about June 1960 and would supplement the five international lending institutions already available to Latin governments.

The new United States approach won the support of the Latin American countries at the second session of the Special Committee to Study the Formulation of New Measures for Economic Cooperation (Committee of 21) in Buenos Aires, April 27–May 8. Cuban Premier Castro's proposal for a 10-year, $30 billion Latin-American development fund to be financed by the United States was withdrawn on May 7. The conferees entrusted the OAS with the preparation of projects to stimulate public and private investment, technical assistance, and commodity marketing and production studies. (See also FOREIGN INVESTMENTS.)

United States and European demand for Latin exports was not keeping pace with the supply of these commodities; in 1958, United States imports from the area were $3.6 billion (5% below 1957), and they totaled $1.79 billion in the first half of 1959. Latin export prices continued to fall; average Brazilian coffee prices dropped 15% in 1958 and another 12% in the first half of 1959. Again, the United States assisted the conclusion of a new international coffee agreement, effective as of Oct. 1, 1959, which was signed at Washington on September 24 by the 15 Latin coffee-producing countries and by France and Portugal on behalf of their African dependencies. Similar cooperative efforts assured the orderly marketing of sugar, cotton, lead, and zinc.

The Trade Committee of the U.N. Economic Commission for Latin America, which met in Panama City on May 11–19, endorsed the principle of economic integration by means of a common market. Implementation of this principle was included in the Multilateral Treaty of Free Trade and Central American Economic Integration, which went into effect on June 2, when Guatemala's ratification was deposited with the OAS, following those of Nicaragua and El Salvador. While only a small part of the Central American trade was regional, it was expected that new industries in each of these countries would expand their markets in the future. Seven South American countries (Argentina, Bolivia, Brazil, Chile, Paraguay, Peru, and Uruguay) endorsed a draft treaty for a common market in Montevideo, Uruguay, on Sept. 30, 1959. (See also INTERNATIONAL TRADE.)

The newly organized Inter-American Nuclear Energy Commission, a semiautonomous organization formed to encourage cooperative research in the development of atomic energy for peaceful economic purposes, held its first meeting at Washington on Oct. 20–24, 1959. The commission elected Dr. Guillermo Sevilla-Sacasa, Nicaraguan ambassador to the United States, as its first chairman.

UPI

Members of a special commission, set up by the Council of the Organization of American States, begins its inquiry (June 5) into an invasion of Nicaragua by rebels based in Costa Rica. OAS delegates on the panel are (from left) Italo Zappa of Brazil; Vincente Sanchez Gavito of Mexico; Julio LaCarte of Uruguay; and John C. Dreier of the United States. Nicaraguan forces quelled the invasion in two weeks.

(See also ORGANIZATION OF AMERICAN STATES and articles on the countries named in this review.)

MARTIN B. TRAVIS,
Associate Professor of Political Science, Stanford University.

INTERIOR DECORATION. From the outset, 1959 showed a strong tendency for overscaling in furniture, in patterns of fabrics and wall coverings, and in accessories. This trend, in combination with the use of stronger, bolder colors, generally resulted in an architectural effect for both interiors and their furnishings. The preference for the outsize reached its apex in bold traditional styling with a return to a 17th century manner which reflected no specific period or country of origin, and in contemporary design with tall corner cabinets and other pieces in walnut that almost reached the ceiling and broke with the horizontality of the past.

Furniture.—The use of at least one magnificently scaled item of furniture was reflected in the Futura collection by Romweber, the Baroque group by Kittinger, the Laureate selections by Heritage, and the new French provincial furniture by Tomlinson, all characterized by bold designing, architectural detailing, and rich wood graining. Upholstered pieces tended generally to velvet, represented by the new hand-printed cottons by Patterson; to heavy linen in bold pattern, as re-

Three of the leading personalities who were involved in the unrest and strife which dominated inter-American affairs in 1959. (*Left*) Generalissimo Trujillo, dictator of the Dominican Republic, faced growing opposition from domestic and exiled factions. (Center) Fidel Castro, shown (above center flag) addressing rally in Havana, Cuba, antagonized some elements by his reforms. (*Right*) Alfredo Stroessner, longtime dictator of Paraguay, enforced stern measures to suppress opposition.

WIDE WORLD

DESIGN CENTER FOR INTERIORS

French period room, featuring designs by Yale R. Burge, includes wormy chestnut cabinet and lacquered coffee table, both Louis XVI; Regency sofa, covered to match the draperies; Charles X tole oil lamp set on an 18th century tier table; and a Directoire bird cage suspended from ceiling. Floor covering is of white vinyl, with black sisal area rug.

leased by Jack Lenor Larsen and David & Dash; or to rich and colorful crewel embroideries from Arthur H. Lee. The large scaling of furniture was also expressed in special cabinets styled by Drexel for television and high-fidelity sets.

The 17th century styling was made further evident in new chairs with X-bracing, by Probber, a modern rendition of the antique; in area rugs by V'Soske and Alpujarra rugs by Stark; white-on-white fabrics from Patterson; rich textural silks by Scalamandre; overscaled pattern and rich textures of wallpapers (Texture-Flex) from Katzenbach & Warren; and black wrought-iron furniture, brightened with brass accents in the Spanish manner, by Continental.

A bright note in the style picture was the appearance of Directoire furniture, copied in polished steel for the first time from 19th century French originals. The designers of these adaptations were Paul M. Jones and David Barrett, who also offered wire examples which were lacquered black. Other metal furniture included a polished stainless steel modern group by Dunbar; examples in the same contemporary styling for offices, by Steelcase; and a grouping of executive furniture in cast aluminum and walnut by JG Furniture from models created for the new U.S. Air Force Academy at Colorado Springs, Colo.

This sturdy quality in design, forming accent furniture of distinction, was observable also in Early American styling in the Cabot collection at Vanleigh, in new additions in American Colonial cherry by Statton, and in reproductions by Roundtree; and in modern furniture, based on Early American and Scandinavian precedents, by Directional, Risom, and Widdicomb-Mueller (designs by Nakashima), all blending handsomely with contemporary or period styles.

For terraces and porches, rattan and reed furniture was of graceful design and more attractive than ever in the new renditions by Whitecraft, in the designs of Oriental inspiration comprising Ficks' Mandalay group, and in the smart Edwardian designs by Tropi-Cal.

Fabrics.—Fabrics ranged from colorful chintz in floral patterns, as featured by Brunschwig & Fils, to exotic multicolored silks from the Orient, by Thaibok and Far Eastern. This lure for elegance in upholstery and drapery fabrics was evident also in richly woven textiles of fabulous patterns and hues in the new collections of Fortuny, Bergamo, J. H. Thorp, Schumacher, Stroheim & Romann, and Jofa. These fabrics embraced floral prints of traditional pattern; unusual textures exemplified by those of Tycora yarn, first introduced in jet plane upholstery; and fascinating modern patterns reflecting high standards of elegance and craftsmanship.

Wall Coverings.—Wallpapers were an important medium for achieving the new "architectural" look, with designs of friezes, dadoes, pilasters, capitals, and overdoors provided by Louis Bowen, Nancy McClelland, Piazza, and Jones & Erwin, the latter also offering new stencil patterns taken from old New England houses. The fascinating texture of hand-woven materials, including grasscloth and silk, was imitated in such sturdy, nonfading vinyl fabrics and wall coverings as Vicrtex by Carpenter, Tessara by Columbus Coated Fabrics, and Koroseal rough textures by Goodrich.

Leather was rarely more important than in 1959, when it appeared in woven, braided, twisted, and embossed forms. It was used as carpeting by Karl Mann, and was obtainable in hexagons or squares as wall covering from Katzenbach & Warren and, in 14 metallic colors, from Adams.

Floor Coverings.—Vinyl floor coverings were extremely popular in 1959. They varied from those by Congoleum-Nairn, the first firm to introduce vinyl flooring, to those in a new color range by Robbins, and included vinyls by Armstrong and Amtico. Amtico made available custom floors to match any wallpaper or fabric.

Lighting.—In illumination the new trend was toward indirect diffusion rather than floodlighting and spotlighting. The effect was achieved through the use of tall lamps and wall fixtures, with particularly noteworthy examples in stained glass by Raymor and by Art Glass for Interiors. Lamps were more individualized, generally being made from vases with a bold, hand-made look, such as those created by Lee Rosen for Design-Technics.

Accessories.—The year's new note in accessories was a great revival in the use of artificial flowers and plants, which appeared more realistic than ever. High on the preferred list of accessories were screens of all types, particularly those of laminated plywood, or fretwork, by Gery Hecht and by Mayor.

LEE CANNON,
Managing Editor, "Interior Design" Magazine.

INTERNAL REVENUE. See Index entry.

INTERNATIONAL AFFAIRS. See references under the Index entry, *World Politics.*

INTERNATIONAL ATOMIC ENERGY AGENCY. Formally established on July 29, 1957, the International Atomic Energy Agency (IAEA) is an intergovernmental agency of the United Nations (but not one of its 12 specialized agencies). Following the inclusion of Iraq in the IAEA on March 4, 1959, the agency had a total of 70 member nations.

Set up to promote the development of atomic power for peaceful applications, the IAEA was intended particularly to act as an international center to supply smaller nations with nuclear ma-

terials and equipment. The actual program of the IAEA, however, has largely been limited to organizing international scientific meetings and to providing technical training and advice. In its first two and one-half years of operation, the IAEA supplied only one country (Japan) with nuclear materials, to be used for a research reactor.

The chief organs of the IAEA are the General Conference, in which each member nation is represented by one delegate, and the Board of Governors, consisting of 13 members (including Canada, France, the Soviet Union, the United Kingdom, and the United States) designated by each outgoing board, and 10 members elected for 2-year terms by the General Conference. The director general of the agency is W. Sterling Cole, a former United States congressman, who began his 4-year term on Dec. 1, 1957. The chairman of the Board of Governors is Donald Sole of South Africa, elected for a 1-year term on Oct. 5, 1959.

The General Conference held its third annual session at Vienna, the agency's headquarters, on Sept. 22–Oct. 2, 1959. A regular budget of $5,843,000 for the fiscal year 1960 was approved, along with an operational budget of $1.5 million. Dr. Hiroo Furuuchi was elected president of the conference by a vote of 39 to 15.

On Sept. 26, 1959, the IAEA provisionally adopted a set of principles intended to prevent the diversion to military applications of nuclear materials in international trade. The action was important chiefly because it prepared the way for the eventual channeling of trade in atomic fuels through the agency. On Oct. 1, 1959, John A. McCone, chairman of the U.S. Atomic Energy Commission, announced that details of United States–Soviet cooperation in developing peaceful uses of atomic energy would be arranged through the IAEA.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. Also known as the World Bank, the International Bank for Reconstruction and Development is an international financial agency owned and operated by its 68 member nations. The bank lends only in member countries or their territories. The borrower may be a government, a governmental agency or subdivision, or a private enterprise, but in the latter instance repayment must be guaranteed by the member government concerned. At the close of its 13th fiscal year, on June 30, 1959, the bank had lent a cumulative total of $4,426 million in 234 separate loans in 50 countries.

In the fiscal year 1959, the bank lent $703 million (only $8 million less than the record high established the previous year), and so for the second consecutive year loans were about 75% higher than the average for 1954–57. Of the $703 million, about 50% went to Asia, 19% to Latin America, 17% to Africa, and 15% to Europe. Loans were made in Gabon, Malaya, and Sudan for the first time, and single and multiple loans in 16 other nations brought the total for the year to 30.

The pattern of lending, as in previous years, emphasized basic projects essential for economic development. Electric power loans accounted for $294 million of the total; these funds will be applied in Austria, Brazil, Ceylon, Colombia, Denmark, El Salvador, Honduras, India, Italy, Japan, and Malaya. Transportation loans totaled $257.2 million for roads, railroads, or ports in Ecuador, El Salvador, India, Iran, Peru, and Sudan. Loans to industry (mainly steel, paper, and mining) accounted for $149 million; enterprises in Finland, Gabon, Italy, Japan, and Sicily will benefit from these investments. Farming in Costa Rica will be helped by a $3.5 million loan; this was the year's only agricultural loan, but in many instances agriculture is profiting indirectly from loans for projects such as highways and electric power development.

Net earnings in fiscal 1959, aside from loan commissions, were $46.5 million, up $4.5 million over the previous high attained in 1958. Reserves reached $420 million, an increase of $70 million during the year, while loan disbursements increased to $583 million, as compared with $499 million the year before. Sales to other investors of parts of World Bank loans totaled $148 million, an increase of $49 million over the previous high of 1955. Borrowing, although substantial at $432 million, was down compared with the year before when it totaled $650 million. Only one issue of the bank's bonds was sold in the United States, while three quarters of the $432 million was borrowed abroad. Public offerings of the bank's bonds were sold for the first time in Germany and Belgium, and the German issue was the largest non-dollar sale in World Bank history.

On Sept. 15, 1959, the bank's authorized capital was increased from $10 billion to $21 billion. Most member governments are doubling their capital subscriptions to take up the new stock, and the governments of Canada, Germany, Japan, and 14 other countries are making even greater additions to their subscriptions. When all the new subscriptions have become effective, the bank's total subscribed capital will be approximately $19 billion.

SUBSCRIPTIONS OF MAJOR WORLD BANK MEMBER NATIONS
(In millions of dollars)

Country	Old subscription	New subscription	Subject to call
United States	3,175	6,350	5,715
United Kingdom	1,300	2,600	2,340
France	525	1,050	945
West Germany	330	1,050	945
India	400	800	720

When the new subscriptions are complete, about one tenth of the bank's capital will be paid in. The bank will be able to call on the remaining nine tenths if it should ever need additional funds to pay off what it has borrowed from other investors through the sale of its bonds and notes. The major part of the bank's capital, in effect, constitutes a guarantee of the agency's obligations; and the result of increasing the subscribed capital is to increase the bank's ability to borrow funds.

(See also INTERNATIONAL DEVELOPMENT ASSOCIATION.)

DAVIDSON SOMMERS,
Vice President, International Bank.

INTERNATIONAL CONFEDERATION OF FREE TRADE UNIONS. The tenth-anniversary congress of the International Confederation of Free Trade Unions (ICFTU), held at its world headquarters in Brussels, Belgium, in December 1959, witnessed the greatest upsurge of African trade union influence in the history of the organization. This did not come about because of large African labor organizations, comparable in any way to the AFL-CIO in the United States, the British Trades Union Congress, or the German Federation of Labor. On the contrary, the trade unions in Africa are small, with the exception of those in Morocco, Tunisia, Ghana, and Tanganyika, but they all are burgeoning.

The reason for the growing influence evidenced at the congress in Brussels is the accelerating movement among many African countries for independence, which has had, as one of its concomitants, an interest in trade unionism. In this area, the ICFTU has pioneered for the past five years,

and at the 1959 conference African labor leadership moved to positions of specific responsibility within the organization.

During the congress, the ICFTU added another seat on its executive board for Africa; placed an African on its powerful subcommittee; elected an African vice president; established an African regional organization comparable to ones in Asia, Europe, and the Americas; virtually agreed to assign a top official to work full time on African labor matters; and invited African unions to send selected members to Brussels to work within the secretariat. In addition, the ICFTU, with its associated trade secretariats, will undertake to support a continentwide union organizing campaign in agricultural and industrial fields.

One of the ICFTU's problems has been the efforts by Prime Minister Nkrumah of Ghana and President Touré of Guinea to create a "neutralist" Pan-African labor federation with no ties to the international group. Ghana's labor movement had been an ICFTU affiliate but withdrew in 1959; Guinea's labor organization, headed by Touré, has never been a member of the ICFTU. Despite the Ghana-Guinea labor alliance, which the ICFTU believes is based more on political strategy than on trade union effectiveness, budding labor movements in other parts of Africa have chosen to remain within the ICFTU. Significantly, the Nigerian labor movement, in a country which is due to become independent in October 1960, elected to join the ICFTU. Another problem for the ICFTU has been the visible drive for influence in African labor circles by international communism, thus far with limited success.

Although Africa was predominant in the congress' proceedings, there were other politico-economic issues which figured importantly in the discussions and actions of the delegates, who represented almost 100 labor organizations in virtually every country in the free world. One of these actions called for a consumers' boycott of exports from the Union of South Africa as a weapon of reprisal against that country's continued policy of apartheid. The delegates also decided to find ways and means of enlisting ICFTU-affiliated unions in countries which import South African goods and commodities in the effort to establish an economic blockade.

The ICFTU congress also attacked the Soviet Union for its suppression of freedom in Hungary, and Communist China for its suppression of Tibet, its aggression against India, and its support of pro-Communist insurgents in Laos. President Eisenhower's visit to General Franco in Spain on his December tour was deplored because, the congress felt, it recognizes "the legitimacy of his [Franco's] tyrannical regime and [is] a sign of political friendship."

Internally, the ICFTU moved to strengthen its secretariat by directing the executive board to undertake a six-month study of the problem of "reorganization as it relates to structure, resources, officers and personnel," and to take appropriate action by June 1960. The congress re-elected J. H. Oldenbroek, general secretary of the ICFTU since its inception, for a fifth term, and Arne Geijer, head of the Swedish Federation of Labor, to a second term as president.

ARNOLD BEICHMAN,
Public Relations Representative, ICFTU Office in New York.

INTERNATIONAL COOPERATION ADMINISTRATION. See FOREIGN AID PROGRAMS, U.S.

INTERNATIONAL COURT OF JUSTICE. See INTERNATIONAL LAW; UNITED NATIONS.

INTERNATIONAL DEVELOPMENT ASSOCIATION. Member nations of the International Bank for Reconstruction and Development (q.v.) approved on Oct. 1, 1959, a proposal by the United States to draw up a charter for a new financial agency to be called the International Development Association (IDA). The institution will be closely affiliated with and administered by the World Bank.

The main purpose of IDA will be to channel economic development capital from the industrial nations of the world to the underdeveloped countries. The operating practices of IDA have yet to be drawn up; however, it will finance only sound projects of high developmental priority.

Late in 1959 the charter of IDA was being drafted by the executive directors of the World Bank. This charter will be submitted to the bank's 68 member governments for ratification some time in 1960, and the new association might, therefore, come into being during the year. Informally, it has been agreed that IDA will have initial resources equivalent to about $1 billion, of which the United States share would be about $320 million.

DONALD W. DRESDEN,
Washington, D.C.

INTERNATIONAL FINANCE CORPORATION. The International Finance Corporation has concluded its third year of activities as an international investment institution. The IFC's membership consists of the governments of 58 countries, which together subscribed the corporation's capital of $95 million.

By September 1959, the IFC had made 28 commitments totaling $23,762,000 in 13 member countries. The distribution of the corporation's commitments among various industrial enterprises in these countries was as follows (with the number of separate commitments in parentheses):

Australia (2)	$ 885,000	Iran (1)	$ 300,000
Brazil (6)	6,807,000	Mexico (2)	1,120,000
Chile (4)	5,600,000	Pakistan (2)	1,380,000
Colombia (2)	1,500,000	Peru (3)	1,930,000
El Salvador (1)	140,000	Thailand (1)	300,000
Guatemala (1)	200,000	Venezuela (1)	1,250,000
India (2)	2,350,000	Total	$23,762,000

After the deduction of operating expenses of $1.4 million, the IFC's net income for the fiscal year ended June 30, 1959, was $1.7 million.

J. G. BEEVOR,
Vice President, IFC.

INTERNATIONAL GEOPHYSICAL YEAR. Although the IGY of 1957–58 is history, its legacy of strong international cooperation in geophysics remained alive in the International Geophysical Cooperation —1959 (IGC-59). The agreement to continue worldwide, cooperative research in geophysics was made by the IGY coordinating body, Comité Spécial de l'Année Géophysique Internationale (CSAGI), at its Fifth Assembly, held in Moscow in August 1958. The IGC-59 was conducted on the same general plan as the IGY but on a scale determined by each participant.

A program for IGC-59 was adopted by the International Council of Scientific Unions (ICSU), parent body of the IGY, in October 1958. It also established a Special Committee for Inter-Union Cooperation in Geophysics (SCG) to continue the coordinated studies of the IGY. The United States role in IGC-59 was directed by the U.S. National Committee for IGY (Joseph Kaplan, chairman).

To continue the cooperative research initiated by the IGY, ICSU established several bodies: the Committee on Space Research (COSPAR), Special Committee on Antarctic Research (SCAR), and Special Committee for Oceanic Research (SCOR).

A permanent International World Days Service (IWDS) was set up to continue the warning alert system in solar and upper atmosphere studies. Responsibility for a new World Magnetic Survey was assigned to the International Association for Geomagnetism and Aeronomy, which will study the world's magnetic field for the next few years.

Under the IGY program, 67 nations[1] and over 10,000 scientists participated (from July 1, 1957, to Dec. 31, 1958) in the greatest examination ever made of the planet earth. Tremendous quantities of data—thousands of miles of recordings and thousands of tons of records—have been amassed and deposited in data centers. Data Center A is located in the United States, Center B in the USSR, and Center C is divided among western Europe, Australia, and Japan. Each center houses copies of the original data and provides facilities for research. A complete evaluation of the IGY achievements still awaits large-scale analysis of the data.

Perhaps the greatest accomplishment of the IGY and IGC has been the wholehearted international scientific cooperation that the programs engendered. The studies stimulated thought and research even in fields outside the geophysical sciences (for example, space experiments in physics, and biology research in the Arctic and Antarctic). As a result of the IGY, the ICSU has emerged as the most powerful nongovernmental scientific body on earth.

Space Research.—The most spectacular events of the IGY-IGC were the launching of artificial satellites by the United States and the USSR. Observations on satellites indicated that the earth is very slightly pear-shaped (with the stem end near the North Pole), and that it does not bulge at the equator to the extent previously thought. Sea level in the north polar regions is apparently about 50 feet higher than had been believed. Satellite experiments revealed three intense bands of radiation (the so-called Van Allen belts). These crescent-shaped regions of space contain charged particles trapped in the earth's magnetic field. Three small atomic bombs (Project Argus), detonated at high altitudes in the South Atlantic in August and September 1958, created a temporary radiation belt between the Van Allen layers.

The electron density distribution of the outer ionosphere decreases about five to six times more slowly than the corresponding increase from the bottom of the ionosphere to 300 kilometers. Derived electron concentrations (per $cm.^3$) are as follows: at 400 km., 10^6; at 1,150 km., 10^5; and at 3,100 km., 10^3. At 1,000 km. the atmospheric number density is about 7×10^6 per cm^3. The atmosphere merges with interplanetary space near 3,000 km. from earth.

Observations aboard the third Soviet moon rocket (launched Oct. 4, 1959) showed that the moon possesses only a weak magnetic field and is not enveloped by radiation belts. Ion densities increased within some 10,000 km. from the moon. Photographs of the far side of the moon, taken at a distance of 37,000 to 43,000 miles from the moon, indicated that apparently only 10% of the far side is covered with "seas," as compared with 30 to 35% on the side visible from earth. (See also ASTRONOMY; ATMOSPHERE RESEARCH; SPACE FLIGHT.)

Antarctic.—From an analysis of seismic waves, the 5,100,000 square miles of Antarctica were shown to be mainly continental in character, although the ice also caps a large number of islands. A major geologic division seems to exist between eastern and western Antarctica. Precipitation during the past 50 years was only half that of the Arctic. Estimates of the amount of ice and snow in Antarctica have been revised, bringing the world total from 3¼ million cubic miles to 4½ million cubic miles. The lowest temperature on earth, −87.4°C. (−125.3°F.), was registered at Vostok Station. Significant contributions were made to Antarctic geography, and nonflowering plants (algae, lichens, and mosses) were found to have a remarkably wide distribution throughout the ice-free areas. (See also ANTARCTICA.)

Arctic.—While little life was found on the ocean bottom, several varieties of life (sponge, shrimp, fish, and sea anemone) were photographed on a newly discovered underwater plateau about 8,100 feet above the ocean floor. Signs of life were sparser than in the Atlantic. Rocks of all shapes and sizes, abundantly scattered about the bottom, appear to be a general characteristic of the Arctic Ocean floor. A positive heat balance was found, leading to the belief that if the present Arctic ice pack were melted it might not reform. The four drifting stations which had been established (Stations A and B by the United States and SP6 and SP7 by the USSR) on the floating ice made extensive geophysical measurements. Stations C and SP8 replaced A and SP7, which were closed by ice degeneration. SP6 was abandoned on Sept. 14, 1959; Station C, in January 1960. (See also ARCTIC EXPLORATION.)

Summary of Findings.—Although a considerable portion of the IGY data still awaits analysis, some results are available.

Aurora and Airglow.—The orientation of rays and arcs with respect to the magnetic meridian is different in Antarctica than in the Arctic. These and other puzzling events may arise from the intense magnetic anomalies found near the southern auroral zone. Intense night airglow radiations have been found in the infrared (1.2–1.9 microns) zone. (See also ATMOSPHERE RESEARCH.)

Cosmic Rays.—Bremsstrahlung (electromagnetic radiation) from auroral protons were observed from balloons. Nonrelativistic solar protons were discovered and investigated. The cosmic ray equator, which was expected to follow the geomagnetic equator, was found to be skewed westward by as much as 45°. A background count of 1.8 per $cm.^2$ per second was found outside the Van Allen radiation belts.

Geomagnetism.—An unexpected minimum (of 400 gammas) in magnetic field strength was found about 20,000 km. from the earth. The field increased to 800 gammas at 22,000 km., roughly near the peak intensity of the outer Van Allen radiation zone. High-altitude atomic detonations were found to produce magnetic changes. New magnetic anomalies were found in the Atlantic.

Glaciology.—The Antarctic ice survey, which mapped the terrain below the icecap, revealed about three times more ice than was expected. The ice was 14,000 feet thick in some locations. Cores from the 1,400-foot bore hole in Greenland and the 1,000-foot bore holes in Antarctica are under examination to determine past climatic conditions. (See also ARCTIC EXPLORATION.)

Gravity.—The international network of gravity bases was extended and strengthened. National bases were integrated into a unified network, and their accuracy evaluated. Extensive gravimetric surveys of Antarctica were made. Satellite observations allowed refined determinations of the first and third gravity potential functions (the third har-

[1] The 67 participating nations are: Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Bulgaria, Burma, Canada, Ceylon, Chile, Colombia, Cuba, Czechoslovakia, Denmark, Dominican Republic, British East Africa, Ecuador, Egypt, Ethiopia, Finland, France, German Democratic Republic, German Federal Republic, Ghana, Greece, Guatemala, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Korean Democratic People's Republic, Malaya, Mexico, Mongolian People's Republic, Morocco, Netherlands, New Zealand, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Rhodesia and Nyasaland, Rumania, Spain, Sweden, Switzerland, Taiwan (Nationalist China), Thailand, Tunisia, Union of South Africa, USSR, United Kingdom, United States, Uruguay, Venezuela, Vietnam Democratic Republic, Vietnam Republic, and Yugoslavia. Although Communist China withdrew from the IGY in protest over the inclusion of Nationalist China, a large geophysical program was established and implemented for both IGY and IGC. The meteorological network on the Chinese mainland was expanded considerably, geophysical observatories were established, and research in most geophysical fields was undertaken. Data have been exchanged with some nations.

monic introduces the pear-shaped bulge in the Northern Hemisphere).

Ionospheric Physics.—The existence of the hypothesized equatorial electrojet, a narrow electrical current in the equatorial ionosphere, was verified. Efficient radio wave propagation at 50 megacycles per second was noted in the Japan-Philippines area. Radio waves at 20 mc./sec. and 40 mc./sec. were noticed to focus at the antipode.

Latitude and Longitude.—Data analyses are still under way. The length of the baseline Washington–San Diego–Hawaii has been considerably refined.

Meteorology.—A significant accomplishment was the preparation of the first fairly complete weather maps for Antarctica. Monthly ozone patterns were found in the Antarctic long after the sun had set. A great continental-oceanic air exchange occurs along Antarctica, but with increased intensity during winter. High-altitude sounding balloons provided more information on stratospheric-tropospheric exchanges and stratospheric wind circulations. Explosive warming of the upper atmosphere was observed in the Arctic. (See also METEOROLOGY AND CLIMATOLOGY.)

Oceanography.—In addition to the known 12-hour, 24-hour, and 2-week tides, new tides having periods of 14 months and 18 years were found. Two great currents, the equatorial undercurrent and countercurrent, were mapped in the Pacific. The undercurrent is a large subsurface ocean current even larger than the Gulf Stream in volume. It flows eastward, is 3,500 miles long (disappearing near the Galapagos), 250 miles wide, and lies at a depth of between 100–800 feet. The research submarine *Sovevyanka* studied conditions in the Arctic, Atlantic, and other oceans. (See also OCEANOGRAPHY.)

Seismology.—Earth tides in some locations may move an entire area upwards 50–60 centimeters each 12 hours. Many detailed recordings with precision instruments permit a better understanding of the forces causing seismic activity. (See also SEISMOLOGY.)

Solar Activity.—Photographs of the sun in ultraviolet light were obtained from rockets. Photographs taken in Lyman-alpha radiation on March 13, 1959, showed the sun to be strikingly stormy. (See also ASTRONOMY.)

(For further references, consult the Index entry, *International Geophysical Year.*)

NATHANIEL C. GERSON,
Vice Chairman, Arctic Committee,
U.S. National Committee for the IGY.

INTERNATIONAL LABOR ORGANIZATION. In 1959 this specialized agency, associated with the United Nations since 1946, celebrated the 40th anniversary of its founding. The anniversary was celebrated in many countries of the world, and the United States set aside the period September 15–October 15 to commemorate the 40th anniversary of its membership in the ILO.

Membership in the ILO rose to 80 nations early in 1959 when the newly established Republic of Guinea joined the organization. That country and 74 other members sent tripartite delegations representing their governments, employers, and workers to the annual ILO Conference in June.

The 1959 ILO Conference adopted conventions providing for the minimum age of employment of fishermen and concerning the medical examination of fishermen and fishermen's articles of agreement. The conference also adopted a recommendation providing for the organization of health services in places of employment. Preliminary action was taken on a proposed draft convention dealing with the protection of workers against ionizing radiation.

General conference discussion centered on the tremendous problems of employment and unemployment described in the annual report of the director-general, David A. Morse. The problems of nonmanual workers, such as technicians and supervisory staff, were considered by the conference. It also adopted a budget of $9,300,909 to finance the activities of the ILO during 1960.

The ILO's broad technical assistance program had nearly 200 labor experts recruited from member countries at work in more than 60 countries during 1959. They advised governments on such matters as how to improve training of unskilled workers, conduct manpower surveys, increase productivity in industry and agriculture, and improve safety conditions.

The organization continued to assemble and distribute information on world labor and social conditions. Special meetings during the year dealt with the problems of drivers in highway transport, construction workers, coal miners, women workers, cooperatives in the Middle East, seafarers' welfare, statistics of industrial injuries, and certain aspects of industrial relations.

A special ILO survey team spent three months in the United States and in the Soviet Union making on-the-spot surveys of freedom of association.

RALPH WRIGHT,
Director, Washington (D.C.) Branch Office, ILO.

INTERNATIONAL LAW. International Court of Justice.—The United Nations Charter provides (Art. 93, par. 1) that: "All Members of the United Nations are *ipso facto* parties to the Statute of the International Court of Justice." Liechtenstein, San Marino, and Switzerland have also become parties to the statute although they are not United Nations members. Of these 85 states, 39 currently accept the compulsory jurisdiction of the court on the basis of declarations made pursuant to Article 36, paragraph 2, of the court's statute.

In 1959 (to November 1) the court rendered judgments in three cases: (1) *Interhandel,* Preliminary Objections, (Switzerland v. United States), March 21, 1959, *I.C.J. Reports 1959,* p. 6; (2) *Aerial Incident of July 27, 1955,* Preliminary Objections (Israel v. Bulgaria), May 26, 1959, *I.C.J. Reports 1959,* p. 127; and (3) *Sovereignty over Certain Frontier Land* (Belgium/Netherlands), June 20, 1959, *I.C.J. Reports 1959,* p. 209.

Only in the last case was the court able to decide the case on the merits. It held by a vote of 10 to 4 that the disputed land belonged to Belgium. In the *Interhandel* and *Aerial Incident* cases, the court upheld objections to its jurisdiction. In the *Aerial Incident* case, the court held by 12 to 4 that it lacked jurisdiction to adjudicate on Israel's complaint that Bulgaria was responsible under international law for the destruction of an Israeli aircraft over Bulgaria in 1955. The court held that the Bulgarian declaration of 1921 accepting without time limit the compulsory jurisdiction of the Permanent Court of International Justice had expired with the dissolution of that court and that Bulgaria had not accepted the compulsory jurisdiction of the new International Court of Justice. After this decision, the United Kingdom withdrew its parallel action against Bulgaria; but the United States continued its action against Bulgaria before the court in relation to United States nationals who died in the same plane incident.

The *Interhandel* judgment is interesting to students of international law, even though the court did not adjudicate specifically on the validity of the famous Connally Amendment reservation by which the United States, in accepting in 1946 the compulsory jurisdiction of the International Court of Justice, excluded "disputes with regard to matters which are essentially within the domestic jurisdiction of the United States of America *as determined by the United States.*" On the point of domestic jurisdiction the United States advanced two objections to the jurisdiction of the court to decide the case: first, that because the United States had determined under its Connally Amendment reservation that the sale or disposition of the General Aniline and Film Corp. shares which the United States had seized as enemy (German) property, although claimed by a Swiss company (Interhandel), was a matter essentially within its jurisdiction, the court lacked jurisdiction to consider even the Swiss claim that the issue was governed by treaties and other principles of international law;

and, secondly, that, according to international law, the seizure and retention of the shares by the United States was a matter falling within its domestic jurisdiction.

The court dealt first with the second contention, rejecting it by a vote of 14 to 1, and holding, in accordance with its established precedents, that if a dispute relates to a matter which, on a provisional view (that is, before deciding the merits), appears to be governed by principles of international law or treaties, it cannot, according to international law, fall within the domestic jurisdiction of one of the parties so as to exclude the jurisdiction of the court.

With regard to the determination made by the United States that the court lacked jurisdiction because the United States had so determined under its Connally Amendment reservation, the court held, by a vote of 10 to 5, that it was not necessary to adjudicate on the point. Because the United States had, in oral argument before the court, restricted the application of its "determination" of the court's jurisdiction and declared that it had lost practical significance in view of United States reliance on the failure of Interhandel to exhaust available remedies in United States courts, the court found the United States contention, as "thus presented," no bar to its jurisdiction to consider the admissibility of the Swiss claim. By a vote of 9 to 6, the court then held that the Swiss claim was inadmissible because Interhandel had not exhausted its remedies in United States courts.[1]

The significance of the court's judgment of March 21, 1959, in the *Interhandel* case has not been overlooked. On July 10, 1959, France withdrew her Connally Amendment reservation and deposited a new declaration accepting the compulsory jurisdiction of the court with reservations excluding, *inter alia,* "disputes relating to questions which by international law fall exclusively within the domestic jurisdiction," thus leaving it to the court to determine on the basis of international law whether or not a dispute arose out of a matter of domestic jurisdiction. On Sept. 14, 1959, India deposited a new declaration accepting the court's compulsory jurisdiction except, *inter alia,* for "disputes in regard to matters which are essentially within the jurisdiction of the Republic of India," thus abandoning the Connally Amendment reservation contained in her previous declaration of 1956. This leaves only the United States, Mexico, Liberia, Pakistan, Sudan, and the Union of South Africa with such peremptory reservations.

In the United States, a strong trend is developing for the withdrawal of the Connally Amendment reservation. The "self-judging" reservation has been criticized by the American Bar Association, the American Society of International Law, the Institut de Droit International, and many public officials, statesmen, and lawyers.

In a letter dated Nov. 17, 1959, to Senator Hubert H. Humphrey, President Eisenhower stated in part: "The administration supports elimination of the automatic reservation to the court's jurisdiction by which the United States has reserved to itself the right to determine unilaterally whether a subject of litigation lies essentially within domestic jurisdiction."

A relatively large number of cases were pending before the court in late 1959: *Aerial Incident of July 27, 1955* (United States v. Bulgaria); *King of Spain Arbitral Award of 1906* (Honduras v. Nicaragua); *Barcelona Traction Co.* (Belgium v. Spain); *Radio-Orient* (France v. Lebanon); *Temple of Preah Vihar* (Cambodia v. Thailand); and *Right of Passage over Indian Territory* (Portugal v. India). Also pending was a request by the Inter-Governmental Maritime Consultative Organization for an advisory opinion on a question arising out of certain implications of resort to "flags of convenience."

In October 1959, Ricardo J. Alfaro, a distinguished Panamanian international lawyer, was elected judge of the International Court of Justice to replace the late Judge José Gustavo Guerrero (El Salvador), who had been president of both the Permanent Court of International Justice and of the International Court of Justice.

Arbitration.—On Aug. 23, 1958, an arbitral tribunal composed of Georges Sauser-Hall, Swiss referee; Mahmoud Hassan (for Saudi Arabia); and Saba Habachy (for the Arabian American Oil Company) delivered an award in the case submitted to arbitration by Saudi Arabia and the company. The case, unusual in that one of the parties was a state and the other an oil company, was argued for both parties by distinguished international lawyers. The decision that the oil concession granted to Aramco by Saudi Arabia in 1933 established acquired rights which prevailed over a later contract (1954) between Saudi Arabia and Aristotle S. Onassis, purporting to grant the latter preferential treatment for transporting Aramco oil in Onassis tankers, was in part based upon the principles of international law. The arbitrator for Saudi Arabia dissented but signed the award against that state.

Treaties.—A total of 554 treaties and international agreements were registered or filed and recorded with the U.N. Secretariat during the year ending June 15, 1959, as compared with 718 in 1957–58. A total of 204 certified statements relating to treaties were registered in 1958–59. The total number of treaties thus registered or recorded with the United Nations from Dec. 14, 1946, to June 15, 1959, is 7,114, plus 1,671 certified statements relating thereto. This compares with a total of 4,831 treaties and international agreements registered or filed with the League of Nations over a 25-year period. The three-year accelerated program, initiated in 1957 and aimed at reducing to one year the interval between the registration of treaties and their publication in the *United Nations Treaty Series,* is proceeding on schedule with the publication of 89 volumes of the *Treaty Series* since June 1958. Volume 318 covers materials registered up to the end of 1958.

The number of treaties for which the United Nations acts as depository is 148. During the year 1958–59, a total of 125 new signatures and 164 instruments of ratification, accession, or notification in relation thereto were transmitted to the secretary general. Of such treaties newly entered into force, mention may be made of the Convention on the Nationality of Married Women, done at New York, Feb. 20, 1957, and entered into force Aug. 11, 1958; and the Convention on the Recognition and Enforcement of Foreign Arbitral Awards, done at New York, June 10, 1958, and entered into force, June 7, 1959. Three more states—Finland, Ghana, and Libya—have acceded to the Convention on the Privileges and Immunities of the United Nations, making a total of 61 parties, not including the United States, which have failed to accede.

At Washington, on Dec. 1, 1959, the representatives of 12 nations, including the United States and the Soviet Union, signed a treaty providing for "the use of Antarctica for peaceful purposes only" and the prohibition of all military activities in the area. (For details, see ANTARCTICA; for the full text of the treaty, consult *Department of State Bulletin,* Vol. XLI, No. 1069, Dec. 21, 1959, p. 914.).

In 1946 the U. S. Department of State consolidated the *Treaty Series* and *Executive Agreement Series* into the *Treaties and Other International Acts Series* (TIAS), which includes treaties and international agreements to which the United States is a party. The TIAS, commencing in 1946 with No. 1501, reached No. 4335 toward the end of 1959, indicating an average of about 200 treaties and agreements a year to which the United States is currently becoming bound.

International Law Commission.—The United Nations ILC held its 11th session at Geneva, April 20 to June 26, 1959. Owing to the absence for about half the session of the rapporteur on consular intercourse and immunities (Jaroslav Žourek of Czechoslovakia, who was serving as *ad hoc* judge for Bulgaria on the International Court of Justice during the Israel-Bulgaria plane dispute), the commission was unable to complete the scheduled draft on

[1] In individual opinions, Judges Sir Hersch Lauterpacht (United Kingdom) and Sir Percy Spender (Australia) regretted the unwillingness of the court to declare openly that the Connally Amendment reservation was invalid, incompatible with Article 36, paragraph 6 of the court's statute, and, because discretionary, incompatible with the assumption of a legal obligation accepting compulsory jurisdiction. They regarded the invalidity of the United States reservation as entailing the nullity of the United States declaration accepting compulsory jurisdiction, but were alone in expressing this view. President Helge Klaestad (Norway) and Judge Enrique C. Armand-Ugón (Uruguay) regarded the Connally Amendment reservation as invalid, but the declaration containing it valid.

consuls. The commission tentatively approved 19 articles of that draft and Articles 1–10 and 14–17 of its draft on *The Law of Treaties* (Sir Gerald Fitzmaurice, rapporteur).

The casual vacancy caused by the resignation of Abdullah el-Erian when Egypt and Syria became the United Arab Republic was filled by the commission in accordance with its statute by the election of Nihat Erim of Turkey. Faris el-Khouri, former Syrian member, is now the member from the United Arab Republic. A new vacancy on the commission results from the election of Ricardo J. Alfaro (Panama) to the International Court of Justice.

HERBERT W. BRIGGS,
Professor of International Law,
Cornell University.

INTERNATIONAL MONETARY FUND. The Board of Governors of the International Monetary Fund (IMF), at its 14th annual meeting in Washington, D.C., Sept. 28–Oct. 2, 1959, accepted the annual report of the executive directors and considered other matters. The report stated that the year 1958 had been one of great advance in several important phases of the economy of the free world. Outstanding events were the sharp upswing of industrial production in the United States and renewed expansion in other industrial countries; the continuation of very substantial gold and foreign exchange reserves of western European countries; the move to external convertibility by 14 European countries and the complementary steps taken by 15 other countries; and the proposal made at the 13th annual meeting at New Delhi in October 1958, and the agreements subsequently reached, to expand the financial resources of the IMF. On the other hand, the experience of many of the primary-producing countries which had to deal with difficult problems during the year was much less satisfactory. But despite these difficulties, many of them took steps to introduce and carry out comprehensive stabilization programs.

During the 12 months ended Sept. 30, 1959, purchases of U.S. dollars, pounds sterling, and French francs were made by 10 members for equivalent amounts of their currencies. Totaling the equivalent of U.S.$139,853,542, these purchases were as follows: Argentina, $33,500,000; Bolivia, $250,000; Chile, $2,540,000; Haiti, $3,438,500; Honduras, $2,500,000; Mexico, $22,500,000; Nicaragua, $1,875,042; Peru, $14,500,000; Philippine Republic, $8,750,000; and Spain, $50,000,000.

The IMF agreed to stand-by arrangements, permitting drawings for periods of one year, with Argentina, $75,000,000; Honduras, $4,500,000; Pakistan, $25,000,000; and Spain, $25,000,000; and for periods of six months with El Salvador, $7,500,000, and Mexico, $90,000,000. Because of its improved position, Pakistan was able to cancel its stand-by arrangement three months before it was due to expire, without having made any drawings. One-year extensions of stand-by agreements were agreed to with Bolivia, $1,500,000; Haiti, $4,000,000; Peru, $13,000,000; Paraguay, $2,750,000; and the United Kingdom, $738,530,000. The stand-by agreement with Chile for $8,100,000 was extended on April 1, 1959, to the end of the year.

Total transactions between March 1, 1947, when the IMF commenced operations, and Sept. 30, 1959, were equivalent to $3,348,591,193. A total of 38 members have used the IMF's resources, some of them more than once. Of the total sales of currency by the IMF, $3,015,379,812, or about 90 per cent, has been in U.S. dollars.

During the 12-month period ended Sept. 30, 1959, repurchases of their currencies by member countries totaled a record $453,722,665, of which $50,070,387 was paid in gold and $403,652,278 in U.S. dollars. Repurchases were made by Australia, Brazil, Burma, Chile, Colombia, Denmark, Indonesia, Iran, Israel, Japan, Mexico, the Netherlands, Nicaragua, Paraguay, Philippine Republic, Turkey, Union of South Africa, United Arab Republic (Egypt), and the United Kingdom.

Initial par values were agreed with Ghana: 0.357143 Ghana pounds per U.S. dollar (Nov. 5, 1958); Spain: 60.00 pesetas per U.S. dollar (July 17, 1959); and Libya: 0.357143 Libyan pounds per U.S. dollar (Aug. 12, 1959). Of the 68 member countries of the IMF, 13 have not yet agreed on initial par values. On Dec. 29, 1958, with the concurrence of the fund, France established a new par value of 493.706 francs per U.S. dollar. (See also EXCHANGE RATES.)

The government of Argentina in December 1958 undertook a comprehensive stabilization program, including a reform of its exchange system, which formed the basis for a stand-by arrangement with the IMF, and was supported by additional financial assistance from the United States, and by credits provided by a group of private banks. The support of the IMF was requested by Mexico when it adopted budgetary and credit measures to strengthen confidence in its currency, and the resources made available by the IMF were augmented by credits from the Export-Import Bank of Washington (q.v.) and the U.S. Treasury. Spain in July 1959 undertook a comprehensive stabilization program which was supported by a stand-by arrangement and a drawing from the IMF, and by substantial credits from the Organization for European Economic Cooperation, the United States, and New York commercial banks.

During the year under review the IMF again carried out consultations with members on the retention of restrictions on payments and transfers for current international transactions. The *Tenth Annual Report on Exchange Restrictions* was published in June 1959.

Terms and conditions of membership in the IMF were approved by the Board of Governors for Laos and Portugal, with quotas of $7,500,000 and $60,000,000, respectively.

Pursuant to the resolution adopted in New Delhi in 1958 approving an increase in the resources of the IMF, by Sept. 15, 1959, the required minimum participation in the quota increase had been substantially exceeded. As a result, the fund's total resources are being increased from the equivalent of about $9 billion to about $15 billion.

FRANK A. SOUTHARD, JR.,
United State Executive Director.

INTERNATIONAL TRADE. World trade in 1959, after a slow start in the first quarter, moved rapidly upward from depressed 1958 levels. The total value of exports for the year was expected to equal, or fall very little short of, the record year 1957. Compared with the 1958 total of $96.1 billion, world exports were valued at annual rates of $93.0 billion, $101.9 billion, and $101.0 billion, respectively, in the first three quarters of 1959. Values for the April–September period reflected substantial gains over the preceding year in exports from Continental Europe and sterling area countries, and more moderate increases from the United States and Canada. (See Table 1 for detailed figures.)

As prices of commodities moving in world trade declined through the first half of 1959, the rising export values represented even larger increases in the actual volume of goods moving throughout the world. Compared with the like quarters of 1958, exports from industrial countries in 1959 showed an increase in volume of less than 2% in the first quarter, but they were over 11% greater in the second quarter. Shipments from the

Table 1—WORLD TRADE, BY QUARTERS, 1958 and 1959
(Billions of dollars)

Area	Quarterly figures at annual rates 1958 1st quarter	1958 2d quarter	1958 3d quarter	1958 4th quarter	1959 1st quarter	1959 2d quarter
Exports, f.o.b., total	94.5	94.6	92.7	102.2	93.0	101.9
United States and Canada	22.3	24.1	22.1	24.6	21.1	23.7
Latin American republics	8.1	8.1	7.9	8.6	8.2	8.1
Continental Europe	30.4	30.6	30.9	34.9	30.6	34.1
Related areas of continental Europe	3.7	3.4	3.2	3.5	3.3	3.6
United Kingdom and dependencies	13.2	12.5	12.5	13.3	12.8	13.9
Independent sterling countries	9.4	8.2	8.3	8.8	8.9	9.3
Rest of world	7.4	7.7	7.8	8.5	8.1	9.2
Imports, c.i.f., total	100.4	99.9	97.0	104.7	97.1	107.0
United States and Canada	19.0	19.9	18.9	21.3	21.0	23.7
Latin American republics	8.2	8.5	8.4	8.5	7.0	8.0
Continental Europe	34.5	34.2	32.9	35.6	32.9	36.3
Related areas of continental Europe	5.0	4.6	4.6	5.2	4.4	4.6
United Kingdom and dependencies	14.9	14.5	14.7	15.7	14.7	15.8
Independent sterling countries	10.4	9.6	9.3	9.7	9.0	9.6
Rest of world	8.4	8.6	8.2	8.7	8.1	9.0

Note: Data exclude trade of USSR, European Soviet satellites, and mainland China.

less-developed countries rose in volume by about 4% in the first quarter and 15% in the second. The latter increases reflected a renewal of demand from the industrial countries which are the primary users of the raw materials that form the major exports from less-developed countries.

The increase in demand was based on a general improvement in economic conditions in the major importing countries after nearly a year of recession or widespread stagnation in industrial production. United States manufacturing activity rose from a low of 128 in April 1958 (based on the Federal Reserve Board's seasonally adjusted index) to 158 in June 1959; Canadian factory production in the second quarter of 1959 surpassed that of any previous quarter; and European manufacturing output in June exceeded by 4% its previous record monthly total.

Prices of most classes of goods moving in international trade dropped in the first half of 1959 below levels for the previous several years. Primary commodities, including food, coffee and tea, textile fibers, and minerals, were the lowest in price for a decade. Prices of manufactured goods also fell off in 1959, but remained on the average well above levels for all recent years, excepting 1957 and 1958. Only prices of nonferrous base metals as a group turned upward, after sharp declines in prices beginning in mid-1957 and continuing through the third quarter of 1958.

The general improvement in economic conditions in many areas of the world was reflected in rapid liberalization of trade from controls against dollar imports. Nearly all European countries took major steps in the course of 1959 to eliminate discrimination of this kind. The lead of the United Kingdom in this respect was widely followed both by independent sterling countries and by British colonial territories. Japan abolished the distinction between dollar and sterling in her foreign exchange budget, and increased the list of items automatically approved for import on a global basis. Many Latin American countries, on the other hand, feeling an economic pinch because of reduced prices for exports, tended to intensify controls. These, however, were not discriminatory against dollar goods.

The European liberalization of trade controls followed the continued improvement in foreign exchange reserves in 1958 which continued into 1959. This accumulation had led the major countries of Europe to take an important step at the end of December 1958 toward convertibility of their currencies. The improvement in reserves in turn was largely based on a high—though not a rising—level of exports in 1958, coupled with a level of imports about $2.5 billion lower than in 1957. The year 1959 brought substantial gains in European export sales, with only moderate increases in imports. Although in the first quarter of 1959, shipments were little higher than in the like quarter of 1958, the second and third quarters averaged nearly $3.5 billion more at an annual rate than in the same quarters of 1958. Leading in these export gains were France, West Germany, the Netherlands, and Belgium. Imports rose by only about $1 billion at an annual rate in January–September 1959, compared with January–September 1958.

Of particular interest to the international trading community in 1959 was the formation of a second European trade group similar to that established in 1958 under the name of the European Economic Community (q.v.). The convention for this new group, the European Free Trade Association (q.v.), was initialed in Stockholm on Nov. 20, 1959, by Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom (the so-called Outer Seven). These countries agreed to cut tariffs among themselves progressively until they are abolished by 1970; the first reduction of 20% will be applied on July 1, 1960. It was further agreed that quantitative import restrictions would be relaxed gradually until their abolition by the end of 1969. Portugal, because of its less-developed industrial status, was given until 1980, if it so wished, to complete the abolition of its duties. The difficult problem of duties on agricultural commodities was sidestepped for the present by excluding them from the plan for general tariff reductions. The preamble to the convention indicated that the association was being established in order to bring into being a multilateral organization embracing the 17 countries of the Organization for European Economic Cooperation (OEEC). A plan for such an association failed to receive agreement late in 1958, after prolonged negotiation.

On Jan. 1, 1959, the European Economic Community (EEC), also called the Common Market, took its first steps toward the establishment of a free trade area by the six member countries, according to a previously agreed schedule. Import tariffs among the participating countries—Belgium, Luxembourg, France, Germany, Italy, and the Netherlands—were reduced by 10%. Bilateral import quotas were converted into global quotas open to all member countries and were increased by at least 20% in value. Members of the Common Market took the further step of extending to the

other 11 countries of the OEEC and to all other participants in the General Agreement on Tariffs and Trade the same 10% reduction in import tariffs, provided the tariffs were higher than the EEC common external tariff. A part of the expanded quota was also made available to other European countries. (See also TARIFFS.)

Two other trade associations of countries began to take shape during 1959 in Central and South America (see below, *Latin America*).

United States.—The value of nonmilitary exports from the United States in the first eight months of 1959 totaled $10.6 billion, a slight decrease from $10.9 billion in the same period of 1958 and well below the record export value of $13.3 billion for the comparable months of 1957. Imports, on the other hand, reached a new high of $9.9 billion in the first two thirds of 1959, showing one of their sharpest rises on record. The resultant trade surplus was only $700 million, contrasted with that for January–August 1957 of $4,700 million. It should be remembered, however, that exports in 1957 were the highest ever recorded, the result of many special situations, while imports were well below 1959 levels. The net export balance in 1959 was the lowest recorded in any year since World War II.

Foreign transactions of the United States recorded in the balance of payments (seasonally adjusted) resulted in increases in the gold and dollar assets of foreign countries of about $900 million in the first quarter of 1959 and just under $1,000 million in the second quarter. This continued the accumulation of reserves by foreign countries which had been under way since the autumn of 1957. The increase in foreign gold and dollar assets acquired through transactions with the United States amounted to $1.5 billion in the first half of 1958 and $1.9 billion in the second half.

United States receipts in the first half of 1959 were only fractionally less than in the comparable half of 1958, as declines in exports were nearly balanced by small increases in foreign purchases of American stocks and other long-term investments. Total United States payments increased slightly, for substantial increases in payments for merchandise imports were countered by reductions in government and private capital outflows. The latter reflected largely the continued advance in interest rates in the United States, both absolutely and in relation to European rates.

Table 2—PRINCIPAL COMMODITY EXPORTS AND IMPORTS OF THE UNITED STATES, 1958 AND JANUARY–AUGUST 1959
(Millions of dollars)

Commodity	Year 1958	January–August 1959
Domestic exports, total	15,626	10,102
Wheat and wheat flour	685	505
Coarse grains	465	367
Cotton, raw	656	209
Textile manufactures	600	392
Wood and paper	450	317
Coal	526	256
Petroleum and products	462	273
Iron and steel-mill products	563	296
Metal manufactures	480	295
Electrical apparatus	794	498
Construction, excavating, and mining machinery	695	465
Other industrial machinery	1,567	1,005
Tractors, parts, and accessories	311	243
Commercial-type trucks	294	225
Chemical specialties	517	393
All other merchandise	6,561	4,363
Imports for consumption, total	12,781	9,740
Meat products	337	270
Coffee	1,172	707
Sugar, cane	522	378
Rubber, crude	248	239
Textile semi- and finished manufactures	637	540
Sawmill products	264	232
Woodpulp	278	209
Newsprint	615	422
Petroleum, crude	943	577
Residual fuel oil	459	310
Iron and steel-mill products	231	326
Nonferrous ores and metals	1,023	715
Automobiles, except trucks	489	493
Chemicals and related products	282	226
All other merchandise	5,281	4,096

Note: Commodity export data exclude "special category" exports, which are restricted for security reasons, totaling $2,068 million in 1958 and $1,225 million in January–August 1959.

The year 1959 marked a turning point for United States exports, which, after being in a depressed state from the end of 1957 through the first two months of 1959, began to show signs of recovery in March and rose substantially in the months following. Had it not been for the prolonged steel strike, which affected exports of steel and of many industrial products dependent on steel supplies, total exports would undoubtedly have risen much higher. Compared with the first eight months of 1958, exports in January–August 1959 of the following major commodities registered gains of 10% or more: meat products, wheat and wheat flour, coarse grains, synthetic rubber, soybeans, iron and steel scrap, agricultural implements, automobile parts for assembly, chemical specialties, and industrial chemicals. There were large declines in the exports of certain commodities. Shipments of raw cotton, for which new lower world prices were to take effect late in the year, dropped from $517 million in January–August 1958 to $209 million in January–August 1959. Coal exports fell from $359 million to $256 million in the same months. Iron and steel-mill products declined by $86 million, while industrial machinery exports dropped from $1,550 million to $1,470 million.

The expansion in imports stemmed from two distinct demands within the United States. One was the recovery in demand for crude and semiprocessed materials from abroad. Such requirements had declined during the 1957–58 recession when industrial production fell and business inventory investment was reduced. Among the many commodities involved in this upswing in imports were rubber, wool, industrial diamonds, and wood and paper products. The second demand resulted from the continued expansion in purchases of foreign manufactured goods. Noteworthy increases were recorded for imports of semifabricated and finished steel, as a result of the expected steel strike, and of automobiles, textile manufactures, and a wide range of miscellaneous consumer products.

The revival of United States exports after February 1959 reflected to a considerable degree the general improvement in economic conditions in certain major markets, notably Canada, Europe, and Japan. In the first eight months, shipments to Canada were about 8% above the depressed level of comparable months in 1958. Many exports to western Europe, including food, synthetic textile fibers and manufactures, machinery, and chemicals, showed gains, but sharp losses were recorded in exports of aircraft, steel, coal, and cotton. United States exports to the Latin American market, which remained in a depressed condition, were lower by $400 million than in 1958.

With the exception of the Middle East and Africa, imports from all areas reported increases. Principal among these was western Europe, from which the United States purchased over $800 million more in the first eight months of 1959 than in the corresponding period of 1958. An increase of more than $400 million was recorded for the Far East, while purchases from Canada rose by $200 million and those from Latin America, by $50 million. (For detailed figures on United States trade

Table 3—UNITED STATES TRADE WITH PRINCIPAL COUNTRIES, 1958 AND JANUARY–AUGUST 1959
(Millions of dollars)

Country	Exports, including re-exports		General imports	
	Year 1958	Jan.–Aug. 1959	Year 1958	Jan.–Aug. 1959
Total	17,858	11,448	12,830	9,866
Argentina	249	144	133	91
Australia	190	148	95	124
Belgium-Luxembourg	330	213	270	269
Brazil	530	283	566	400
Canada	3,418	2,507	2,687	1,924
Chile	149	88	156	132
Colombia	185	137	333	215
Cuba	546	284	528	360
France	427	200	302	296
Germany, Fed. Rep. of	734	458	636	574
India	313	264	191	138
Italy	487	256	275	242
Japan	834	588	671	636
Mexico	886	478	458	319
Netherlands	442	317	190	140
Netherlands Antilles	75	39	317	194
Philippines	291	175	274	214
Sweden	195	123	125	116
Switzerland	164	121	157	116
Union of South Africa	249	147	99	72
United Kingdom	838	493	868	740
Venezuela	808	496	892	588
Other countries	3,450	2,264	2,607	1,966
"Special category" exports	2,068	1,225	...	...

Note: Country data exclude "special category" exports.

by commodity and by country, see Tables 2 and 3.)

Canada.—Canadian imports in the first three quarters of 1959 totaled Canadian $4.1 billion, or 11% above the corresponding period of 1958. In the same period, total exports rose by 3%, reaching a value of C$3.6 billion. The deficit on trade account increased from C$200 million in the 1958 period to C$500 million in 1959. This net figure was accounted for by a C$570 million deficit with the United States, a C$150 million surplus with the entire Commonwealth area, and a C$80 million deficit with the rest of the world. As compared with 1958, the increase in Canada's trade deficit was accounted for by an expansion of imports from the United Kingdom, the Comonwealth area, and the rest of the world, while exports to these countries either remained steady or fell. Rises in imports from the United States were almost equaled by increased exports.

In the first six months of 1959, Canada's balance of payments deficit on current account was C$837 million, a 40% increase over the first half of 1958. Most of the increased deficit was in trade, but the account deficit "invisibles" also rose slightly, to reach C$482 million. The largest invisible item represented dividend and interest payments to nonresident individuals and companies, 60–70% of which were American. These dividend payments have been rising each year as investment by Americans and other foreign nationals continues to mount in Canadian oil, mining, and other industries. Contrasting sharply with January–June 1958, when long-term capital inflows completely covered the deficit on current account, in January–June 1959 only two thirds of the shortfall was met in this way.

The mild increase in Canadian exports in the first nine months of 1959 was concentrated primarily in two or three categories of goods—iron, nonmetallic minerals, and wood. In the first category, iron ore and farm machinery showed the only substantial gains; asbestos, artificial abrasives, and other stone products figured largely in the second; and planks and boards, woodpulp, and newsprint were the major items showing increases in the wood group.

All classes of imports joined in the sizable total expansion. Most gains, however, were small, with the exception of iron products where almost two thirds of the total increase from January–July 1958 to January–July 1959 took place. The principal rises were in farm implements and machinery, automobiles and parts, rolling mill products, and business machinery.

Canada's total imports in January–July 1959 from the United States rose by C$190 million, to almost C$2.3 billion, or 69% of Canadian imports; and those from the United Kingdom, the second most important source of supply, increased from C$315 million to C$336 million, or 7%. Canada's close economic ties with the United States were also evidenced by her export trade, 62% of which was with her southern neighbor in the first nine months of 1959. Exports both to Europe and to Latin America fell off during 1959. (For details of Canada's commodity trade, see Table 4.)

Latin America.—Through the first half of 1959 the combined value of exports of the 20 Latin American republics was $8.1 billion at an annual rate, or almost the same as the export value in 1958 but lower by $600 million than the 1957 level. Reduced prices received in international markets for principal Latin American exports —petroleum, lead, nitrates, and especially coffee, sugar, and bananas—together with increased volume in many cases, were largely responsible for the steady export income, compared with the previous year. Total imports of the area for January–June 1959 were estimated to be $7.5 billion at an annual rate, compared with $8.5 billion in 1958 and $9.3 billion in 1957. Imports of most Latin American countries were restricted for balance-of-payments reasons.

All major Latin American countries, with the exceptions of Brazil and Colombia, reported reduced imports in the first half of 1959 as compared with the same months of 1958. Brazil continued to encounter severe balance-of-payments difficulties, brought about by a combination of substantially lower income from coffee (which accounts for about 75% of export earnings) and rising imports to meet the needs of a program of rapid industrialization. Other countries in the area, notably Argentina, Chile, Colombia, and Peru, all of which faced difficult economic situations in 1958, were able to be cautiously optimistic by mid-1959, as deficits were reduced by strict limitations on imports and the downward movement of prices for several key export commodities was reversed. The export earnings of all principal Latin American countries, except Mexico, declined to some extent in the first half of 1959 as compared with the same half of 1958, although several were able to report improvement in second-quarter values over those for the first quarter. (See Table 5 for comparative values of Latin American exports and imports.)

A number of significant moves designed to help improve their economic situations were taken by various groups of Latin American countries during 1959. In September an international coffee agreement was signed by countries accounting for 85% of world production, including all Latin American producers. In an effort to maintain orderly marketing and to establish a more favorable world price in view of surplus supplies, the signatory nations agreed to limit their exports to fixed quotas for the coffee season beginning October 1, to levels representing approximately 90% of their best export totals in the last 10 years.

The Multilateral Treaty of Free Trade and Central American Economic Integration, signed by five Central American countries on June 10, 1958, went into effect for El Salvador, Nicaragua, and Guatemala on June 2, 1959. The aim of the treaty was the establishment of a customs union wherein all trade would move between these three nations and Honduras and Costa Rica without restriction at the end of a 10-year period. The treaty provided for immediate free trade in some 200 items. Further agreements reached included a Central American Convention on Equalization of Import Duties, whereby a common customs tariff must be adopted within five years. Although many details of these and related agreements remained to be worked out, steps taken in 1959, which were the culmination of a long period of study, signified substantial progress toward the goal of Central American trade integration.

Table 4—CANADIAN TRADE BY PRINCIPAL COMMODITY GROUPS, 1958 AND 1959
(Millions of Canadian dollars)

Commodity group	Exports of Canadian produce				Imports for consumption			
	Year 1958		Jan.–Sept. 1959		Year 1958		Jan.–July 1959	
	Total	United States	Total	United States	Total	United States	Total	United States
Total	4,830	2,832	3,638	2,250	5,192	3,572	3,307	2,295
Agricultural and vegetable products	885	180	633	123	653	329	377	203
Animals and animal products	398	291	253	174	129	71	83	48
Fibers, textiles, and products	21	8	17	7	387	195	246	109
Wood, wood products, and paper	1,414	1,163	1,111	926	236	206	151	132
Iron and products	432	249	383	270	1,852	1,520	1,304	1,059
Nonferrous metals and products	1,035	608	794	464	432	287	260	173
Nonmetallic minerals and products	246	189	216	170	683	296	382	160
Chemicals and allied products	197	79	142	62	290	247	190	163
Miscellaneous commodities	202	65	89	54	530	421	314	248

Table 5—TRADE OF PRINCIPAL LATIN AMERICAN REPUBLICS, 1958 AND JANUARY–JUNE 1959

(Millions of dollars)

Country	Year 1958	1959 (annual rates) Jan.–Mar.	1959 (annual rates) Apr.–June
Exports, total	8,218	8,193	[1]8,000
Argentina	994	904	1,057
Brazil	1,243	1,200	1,108
Colombia	461	402	469
Cuba	776	525	[2]...
Mexico	735	872	746
Peru	281	236	293
Uruguay	139	154	110
Venezuela	2,321	2,515	[2]...
Other Latin American republics	1,268	1,385	[1]4,217
Imports, total	8,483	[1]7,000	[1]8,000
Argentina	1,233	559	894
Brazil	1,353	1,323	1,527
Colombia	400	332	477
Cuba	855	[2]...	[2]...
Mexico	1,129	912	1,032
Peru	335	287	286
Uruguay	135	120	197
Venezuela	1,599	[2]...	[2]...
Other Latin American republics	1,444	[1]3,467	[1]3,587

[1] Includes estimates for countries listed separately for which data are not available. [2] Not available.

Seven countries of South America tentatively approved in September a free trade treaty which would provide for a free trade zone to be gradually perfected between them within a 12-year period. The contracting parties—Argentina, Boliva, Brazil, Chile, Paraguay, Peru, and Uruguay—proposed to eliminate gradually duties on imports originating in the zone. Final approval of the plan by these countries was scheduled to be given in February 1960.

United Kingdom.—British trade, after a slow start in the first quarter, and following a year at lowered levels, recovered strongly in the second quarter of 1959. Total exports for January–September were valued at £2,520 million, and imports at £2,908 million. These figures represented increases in British commodity trade of 3 and 5% respectively, compared with the like periods in 1958. In the six months following the pickup of trade in April, there was a 6% increase registered in exports. Export prices generally remained stable in 1959, but average import prices, which had declined in 1958, dropped somewhat further so that there was an increase of about 7% in the volume of imports over that for 1958.

In the first half of 1959 the United Kingdom showed a balance of payments surplus of £142 million, £95 million lower than in January–June 1958. This change was almost entirely due to the rise in imports of both goods and services. Exports of goods and services combined showed no change, compared to the previous year, while net income from abroad less net transfer payments was only £1 million lower. Britain's gold and foreign exchange holdings amounted to £1,080 million at the end of October, or slightly lower than at the end of October 1958, mainly because the British government repaid in full in October—well in advance of the due dates—a $250 million loan floated in October 1957 by the Export-Import Bank of Washington. In March the government repurchased $200 million of $561 million drawn from the International Monetary Fund in December 1956. These actions were made possible by the favorable financial position of the United Kingdom and by the continued strength of the pound sterling.

Table 6—UNITED KINGDOM TRADE WITH PRINCIPAL COUNTRIES, 1958 AND JANUARY–SEPTEMBER 1959

(Millions of pounds sterling)

Country	General imports Year 1958	General imports Jan.–Sept. 1959	Exports, including re-exports Year 1958	Exports, including re-exports Jan.–Sept. 1959
Total	3,780	2,908	3,355	2,520
Commonwealth countries:				
Australia	199	166	237	161
Canada	309	224	193	153
India	139	95	160	125
Kuwait	132	94	22	13
New Zealand	161	142	129	67
Nigeria	80	69	68	54
Rhodesia and Nyasaland	68	65	52	37
Union of South Africa	91	67	187	112
Other Commonwealth countries	392	288	448	313
Foreign countries:				
Argentina	104	79	33	32
Belgium	60	42	64	47
Denmark	116	99	79	65
Finland	68	57	32	27
France	101	73	81	64
Germany, West	136	103	141	116
Iran	56	42	39	29
Ireland	109	75	117	83
Italy	77	69	71	57
Netherlands	159	121	105	89
Norway	56	46	67	43
Sweden	135	93	107	80
USSR	60	43	52	23
United States	352	246	293	284
Venezuela	66	60	37	25
Other foreign countries	554	450	541	421

A series of actions relating to British imports also reflected this improved position. On November 9 most of the remaining controls on imports of goods from the dollar area were abolished. This step followed sweeping reductions made earlier in the summer and in 1958 when more than three fourths of British imports from the United States and Canada were removed from the restricted list. These controls, which had originally been imposed at the outbreak of World War II, had been maintained for balance-of-payments reasons until 1959.

Of the total increase in imports registered through the first nine months of 1959, those from other sterling countries rose by 6%, while imports from the rest of the world also gained, but by a lesser amount. About half of the latter rise was in imports from western Europe. Gains were also recorded in petroleum imports from Latin America and in imports, particularly of timber and furs from eastern Europe. Rises were noteworthy in fuels and in manufactured goods, imports of which increased by £35 million and £87 million respectively in the first nine months of 1959, as compared with the same months of 1958. The largest increases occurred in crude petroleum, copper and other nonferrous base metals, nonelectric machinery, chemicals, and miscellaneous manufactured consumer articles. There were also some important declines, notably in values of imports of iron and steel, iron ore, nickel, raw cotton, crude rubber, live animals, fruits and vegetables, and tea.

Exports from Britain did not show as much buoyancy as imports in 1959, although there were major gains in some key commodities. Engineering products contributed most to the rise. Of especial importance in this group were machinery and automobiles; exports of chemicals, tin, and iron ore also advanced significantly in value. Manufactures of woolen and worsted manufactures increased substantially in volume, but not in value because of lowered prices.

Exports to the sterling area, which had dropped markedly in 1958 from earlier levels, began to recover in the second quarter of 1959, although they remained below 1958 values. Reduced sales to these countries reflected their generally reduced purchasing power, occasioned by lower prices received for their primary products. Exports to nonsterling countries rose above 1958 levels, especially those to North America where a 25% increase was recorded. For example, the value of motor cars exported to the United States rose from £45 million in January–September 1958 to £68 million in January–September 1959, while those to Canada increased from £14 million to £23 million. (Table 6 shows British trade with principal countries.)

(See also articles on the countries named herein, and the Index entry, *International Trade.*)

FRANCES L. HALL,
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INTERSTATE COMMERCE COMMISSION. The Interstate Commerce Commission (ICC) is composed of 11 members appointed by the president for seven-year terms. Commissioner Kenneth H. Tuggle was elected chairman on Jan. 1, 1959.

The transportation industry regulated by the ICC was recovering in the fiscal year 1959 from the general economic recession of the previous fiscal year. Operating revenues of the carriers were estimated at $19.4 billion for the year ended June 30, 1959, or 5.6% greater than in the preceding 12-month period.

Railroad revenues were estimated at $10.4 million, an increase of 2.1% compared with the previous year. However, the mounting deficit resulting from operation of rail passenger service was the subject of an exhaustive commission study. The cost of such service for 1958 is estimated to have exceeded passenger revenues by nearly $610 million. Suburban and commuter rail service continued to present an increasingly serious problem and was the subject of study and investigation by Congress.

Ten applications for federally guaranteed railroad loans provided by the newly enacted Trans-

portation Act of 1958 were received for a total of $78.3 million, of which one for $450,000 was withdrawn, two covering $3.9 million were granted, and two for $9.9 million were tentatively approved. During the fiscal year permission was sought to abandon 1,203 miles of track, compared with 2,062 miles in the preceding year. The commission received requests for authority to construct trackage totaling 136 miles.

The Transportation Act of 1958 contained provisions whereby the railroads could submit to the ICC proposals to curtail or discontinue passenger service, a matter formerly under the jurisdiction of state commissions. The discontinuance of two ferry services and 26 trains was approved prior to June 30, 1959. A number of mergers were considered by railroads seeking solutions for financial problems, but only one major agreement was submitted formally to the ICC for approval during the year ended June 30, 1959. (See also RAILROADS.)

Intercity bus traffic continued to be adversely affected by the growing use of private automobiles for intercity travel, but revenues were higher than those of the previous fiscal year. Improved vehicles, facilities, and service are being introduced to combat the trend. For the 12 months ended June 30, 1959, revenues of ICC-regulated motor carriers of freight reached an all-time high point, about 12% above the previous year, reflecting the improvement in general economic conditions. Repeal of the 3% excise tax on freight is considered responsible in part for this improvement. (See also MOTOR TRANSPORTATION.)

Revenues of intercoastal and inland carriers by water were about 8% higher in the 12 months ended June 1959 than in the preceding 12 months. Traffic offered the St. Lawrence Seaway (q.v.) after its opening was greater than anticipated, causing railroads serving Eastern ports to reduce rates to meet this competition. (See also INLAND WATERWAYS.)

Pipeline mileage subject to ICC jurisdiction, which excludes natural gas and water lines, decreased slightly in 1958, but revenues were 7% higher in fiscal 1959.

The use of containers to eliminate expensive hand-transfer of freight is growing in importance. Emphasis is on containers detachable from highway truck trailer chassis to save weight and space, particularly on the part of carriers by water. Trailer-on-flat-car (piggyback) service continues to expand geographically; such carloadings were 11% higher in 1958 than in 1957.

The ICC continued to conduct an active safety program which, among other things, included the investigation and issuance of reports of the more serious rail and motor accidents. More than 60,000 motor carrier vehicles were inspected during nationwide road checks in the fiscal year 1959.

KENNETH H. TUGGLE,
Chairman, Interstate Commerce Commission.

INVENTIONS. See PATENTS AND TRADEMARKS, and articles on the physical sciences, major industries, and commodities.

INVESTIGATIONS, Congressional. See the Index entry, *Government Corruption and Investigations.*

INVESTMENTS. For foreign investments, see FOREIGN INVESTMENTS; and for other investments, see the Index entry, *Investments.*

IONOSPHERE STUDIES. See ATMOSPHERE RESEARCH; INTERNATIONAL GEOPHYSICAL YEAR; SPACE FLIGHT.

IOWA. Central state, United States; admitted to the Union, Dec. 28, 1846. The "Hawkeye State" ranks 25th in area and 23d in population among the 50 states.

UPI

Premier Khrushchev is in a jovial mood as he and his host, Roswell Garst, hold ears of Iowa corn aloft. The Soviet leader visited Garst's Coon Rapids farm on September 23.

Area and Population.—Area: 56,290 square miles (land, 56,045; inland water, 245), divided into 99 counties. Population: (1950) 2,621,073; (est., July 1, 1958) 2,781,000. Urban places with populations above 10,000 (as estimated by the State Department of Health for July 1, 1958) are:

Ames	29,065	Fort Madison	15,857
Boone	11,886	Iowa City	32,849
Burlington	35,789	Keokuk	17,344
Cedar Falls	19,212	Marshalltown	20,373
Cedar Rapids	86,181	Mason City	29,015
Charles City	11,619	Muscatine	19,903
Clinton	35,259	Newton	13,692
Council Bluffs	51,558	Oskaloosa	11,314
Davenport	84,448	Ottumwa	35,551
Des Moines (*capital*)	212,610	Sioux City	85,755
Dubuque	59,128	Waterloo	82,010
Fort Dodge	27,921		

Executive.—Chief state officers in 1959:
Governor: Herschel C. Loveless (Democrat)
Lieutenant Governor: Edward J. McManus
Secretary of State: Melvin D. Synhorst
Treasurer: M. L. Abrahamson
Attorney General: Norman A. Erbe
Auditor: C. B. Akers
Supt. of Public Instruction: J. C. Wright

Constitution and Judiciary.—The present constitution, which went into effect in 1857, has been amended 21 times. The Supreme Court comprises 9 justices, all popularly elected for six-year terms. Chief justice in 1959 was Robert Larson.

Legislature.—The Iowa General Assembly comprises a 50-member Senate (in 1959, 33 Republicans, 17 Democrats) and a 108-member House of Representatives (58 Republicans, 50 Democrats), which meet in odd-numbered years commencing the second Monday in January.

The 58th Iowa General Assembly met in regular session from January 5 until May 3. A total of 428 laws were enacted, with consideration having been given to 1,314 bills introduced in both houses. At least ten bills that would have reapportioned the General Assembly were introduced but failed to get a constitutional majority necessary in both houses before formal proposal as a constitutional amendment. The record-high budget recommended by Democratic Gov. H. C. Loveless was modified by the Republican majority in the legislature but still emerged basically as proposed by the governor. No major tax rises were effected, although the cigarette tax was raised from 3 to 4 cents a package and the corporation income tax from 2% to 3%. The assembly rejected proposals to increase the general sales tax and income taxes.

With respect to other matters the legislature made members of the Iowa Commerce Commission appointive rather than popularly elective; took no action concerning the controversial right-to-work law which had been enacted in 1947; held state aid for public school districts to the 1957–59 level of approximately 12% of total district school costs; and gave initial approval to a constitutional amendment which would make the judges of the state Supreme Court and district courts appointive rather than elective.

In other measures the legislature established new speed limits for all highways; increased the size of the highway patrol; approved four-year, instead of two-year, terms for most county officers; and guaranteed the right of an arrested person to at least one telephone call to contact his lawyer.

Finance.—In the 1958–59 fiscal year, state revenue of $546,233,158.62 comprised $210,719,114.50 from state tax sources, $112,263,358.68 from the federal government, and $223,250,685.44 from other sources. Tax revenue consisted of $66,430,262.33 from a 2% general sales tax, $35,779,696.62 from individual income taxes, $2,634,973.57 from corporate income taxes, $69,219,201.77 from motor

fuel taxes, $8,199,027.03 from licensing, and $28,455,953.18 from other sources. Expenditures of $510,089,596.96 comprised $64,985,706 for education, $22,574,701 for health, welfare, and safety, $136,424,649.75 for highways, and $286,104,540.21 for other purposes. State long-term indebtedness on June 30, 1959, amounted to $40,900,000.

Banking.—As of March 12, 1959, there were 97 national banks in Iowa with deposits of $968,524,000 and resources of $1,064,829,000. There were also 565 state banks, 163 bank offices, 301 small loan licensees, and 332 credit unions under supervision of the state banking department. Total assets of the state banks as of July 1, 1959, were $2,226,262,196; total deposits were $2,010,678,372.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures in 1959–60 for public elementary and secondary schools were derived as follows: 88% from local school districts, 11% from state grants, and 1% from federal funds. Classroom teachers' salaries averaged $4,311.

In the 1959–60 school year, the state's 27,237 public school teachers instructed 417,519 pupils in elementary schools and 136,704 pupils in secondary schools. Private and parochial elementary and secondary pupils numbered 83,204. There were 16 public junior colleges with 2,932 students, 21 private colleges with 24,562 students, and 3 state colleges and universities with 23,324 students. Instructors in institutions of higher education numbered 2,225.

Social Welfare.—The 1959–60 fiscal year appropriations for social welfare totaled $18,335,000, as compared with $17,385,000 for the previous fiscal year. Contributions to the state unemployment fund as of June 30, 1959, were up to $9,488,510 from $8,528,757 for 1958. For the 1958–59 fiscal year, benefit payments totaled $9,077,289, and the reserve fund amounted to $113,665,427. The state spent $48,547,000 for public assistance and $24,506,000 for public health services and hospitals.

Labor Force.—The state's labor force totaled 1,176,000 in July 1959, including 368,000 agricultural workers. Nonagricultural employment numbered 784,900, compared with 757,000 a year earlier and an average of 767,550 for the 12 intervening months. Of nonfarm employees, 27% were engaged in manufacturing, 25% in trade, and 16% in government. Unemployment in July 1959 was down to 23,100 from 36,200 a year earlier.

Manufacturing.—In 1959 the 3,466 manufacturing plants in the state employed 184,000 persons who received average weekly wages of $86.57 and worked an average of 40 hours weekly in June. Value added by manufacture (1957) totaled $1,561,709,000, and outlays for new plant and equipment amounted to $110,561,000.

MAJOR IOWA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Food and kindred products	51,722	$239,827	$471,228
Nonelectrical machinery	34,887	189,598	344,112
Chemicals and products	6,417	30,137	107,439
Printing and publishing	12,519	51,258	101,372
Primary metal industries	6,115	30,157	75,191
Electrical machinery	9,351	39,875	66,915
Fabricated metal products	6,641	32,369	65,948
Stone, clay, glass products	5,096	21,885	63,025
Rubber products	4,086	22,475	52,737

* For definition see text footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—The value of Iowa's mineral output has increased steadily since 1953. The 1958 value was over $85 million, or 24% above that of the previous year, accounting for 0.52% of the national total and ranking Iowa 29th among the states. The principal mineral products of Iowa are building materials, production of which was stimulated in 1958 by increased highway construction. In marked contrast to the steady output growth of other minerals, bituminous coal mining was 10% less in 1958 than in 1957, continuing a decline of many years. Iowa ranked fourth nationally in 1958 production of gypsum and eighth in cement.

IOWA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	12,675,000	$41,741,000
Coal	1,179,000	4,147,000
Gypsum	1,230,000	4,491,000
Sand and gravel	12,411,000	10,965,000
Stone	21,045,000	26,138,000
Other minerals	...	1,687,000
Total	...	85,356,000*

* Total adjusted to avoid duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—The size of the average Iowa farm is increasing while the number of farms is decreasing. In 1958 there were 186,923 farms, compared with 193,000 in 1954. Total acreage was 34,631,364, with an average of 185 acres per farm. Livestock on farms (Jan. 1, 1959) included 6,536,000 cattle, 12,533,000 hogs, 1,132,000 sheep, and 28,565,000 chickens (excluding commercial broilers). During the week of Nov. 22–29, 1959, 281,000 family and hired workers were engaged in farming.

Cash farm income for the first nine months of 1959 was down slightly to $1,739,773,000 from $1,846,023,000 for the same period of 1958. For the full year 1958, income comprised $2,080,465,000 from livestock and livestock products, $479,534,000 from crops, and $59,429,000 from government payments. Total 1958 cash income was more than $366,494,000 higher than in 1957. Principal income sources in 1958 were: cattle, $902,600,000; hogs, $808,332,000; corn, $230,733,000; and soybeans, $170,205,000.

IOWA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Corn (1,000 bu.)	566,066	664,290	830,346
Flaxseed (1,000 bu.)	650	259	278
Hay (1,000 tons)	6,384	8,304	7,699
Oats (1,000 bu.)	219,274	219,401	186,490
Popcorn (1,000 lb.)	42,623	94,000	37,600
Potatoes (1,000 cwt.)	598*	540	495
Sorghum grain (1,000 bu.)	1,759	13,695	3,685
Soybeans (1,000 bu.)	44,343	79,458	63,441
Wheat (1,000 bu.)	3,961	4,816	2,899

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—Total state and federal funds spent for highways in 1958 amounted to $231,688,758, and 4,487 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 111,683 miles (98,941 surfaced), and registered *motor vehicles* numbered 1,232,286 on Dec. 1, 1958, including 998,410 passenger cars. There were (1958) 11 Class I and 12 other *railroads* operating 8,367 line miles; and (1959) 4 regularly scheduled *airlines* and 187 *airports and airfields* (75 municipal, 3 military-municipal, and 109 commercial and private).

Communications media (1959) included 63 AM and 10 FM *radio stations;* 12 VHF *television stations;* 43 daily *newspapers* (1957 circulation, 923,313) and 394 other newspapers; and (January 1) 219,400 business and 821,700 residential *telephones.*

Principal Events, 1959.—The major issue confronting the 58th Iowa General Assembly (see above, *Legislature*) was that of reapportionment. Since the legislature was last apportioned in 1904, the increase in population and the shift from rural to urban living has caused many areas to be underrepresented, while rural areas are overrepresented. More than 12 plans for reapportionment were considered, but no constitutional amendment was passed by both houses, in spite of recommen-

dations by the governor's nonpartisan study committee. A citizens' committee was formed in 1959 to urge voters to support in 1960 the proposition that is presented to the voters every 10 years: "Shall there be a constitutional convention to rewrite the constitution?" The highest budget in the history of the state was proposed by Democratic Governor Loveless and was passed with minor changes by the Republican-controlled legislature.

In 1959 the number of students in both elementary and secondary schools, as well as in higher educational institutions, reached an all-time high. Appropriations for the three state-maintained institutions of higher learning also reached new highs.

Iowa was the center of national attention on September 22–23, when Soviet Premier Nikita Khrushchev visited Des Moines, the Roswell Garst farm near Coon Rapids, and the campus of Iowa State University in Ames.

The State University of Iowa's football team, which won the Big Ten title in 1958, defeated the University of California in the Rose Bowl on Jan. 1, 1959. The Rose Bowl victory was the second in three years for the Hawkeyes.

Stephen Carter, Iowa's U.S. representative from the 4th District, one of four Iowa Democrats in Congress, died on November 4. Republican John Kyl of Bloomington won a special election on December 15 to fill the vacancy. Kyl captured 12 of the district's 14 counties in unusually heavy voting.

In other developments of 1959, the corn crop was the largest in Iowa's history; the state Treasury was in excellent condition, with an unencumbered balance of nearly $50 million; 70 more deaths occurred on Iowa highways in the first 10 months of the year than in the corresponding period of 1958; and rainfall during 1959 was the heaviest in recent years, totaling more than 45 inches in many sections of the state.

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IRAN. Iran is a constitutional monarchy in southwestern Asia, bounded on the north by the Soviet Union and the Caspian Sea, on the east by the Gulf of Oman and the Persian Gulf, and on the west by Iraq and Turkey. Its area is estimated at over 629,000 square miles. At the 1956 census the population of the country was 18,944,821 (est. 1959, 20,300,000); of the principal cities: Teheran (Tehran), the capital, 1,513,164; Tabriz, 290,195; Isfahan, 254,876; Meshed, 242,165; Abadan, 226,103; Shiraz, 169,088; Kermanshah, 125,181; Ahwaz, 119,828; Resht, 109,493; and Hamadan, 100,029.

Living Conditions.—The majority of the people are Shi'ite Moslems of the Iranian language group; Persianized Turkic elements, comprising about one fourth of the population, are found in the north and northwest. About 2 million nomadic and seminomadic tribesmen, including Lurs, Kurds, Bakhtiaris, Qashqais, Turkomans, Baluchi, Mamassani, Arabs, Shahsavan, and others, move seasonally between hot lowlands and cool mountain valleys.

Approximately 13 million farmers live in some 46,000 small villages, 2 million persons live in villages and towns of between 5,000 and 100,000 inhabitants, and 3.3 million live in cities of over 100,000. The majority of the farmers are sharecroppers, although the sale of crown and state lands is increasing the number of peasant landowners. Measures to improve the health and education of the villagers have been undertaken, and in some 300 towns and villages work is under way to pave streets, install electric light plants, and provide water supply systems.

Government.—Executive power rests with the shah (Mohammed Riza Pahlavi; acceded Sept. 16, 1941) and the Council of Ministers, which is responsible to Parliament. The lower house, or Majlis, consists of 200 deputies elected every four years; the 19th Majlis convened in May 1956 and the 20th Majlis will be elected in the summer of 1960. The Senate, consisting of 60 members (30 appointed by the shah and 30 elected in two stages) serving six-year terms, came into existence in 1950. Dr. Manuchehr Eqbal has been prime minister since April 3, 1957.

WIDE WORLD

The shah of Iran and his bride, 21-year-old Farah Diba, after their wedding in the palace at Teheran, December 21. His two earlier marriages failed to produce a male heir.

In general, national elections have been dominated by the established interests of the monarchy, army, large landowners, and tribal leaders. However, two political parties are now active. The Mellioun (Nation) Party, founded in 1958, is headed by prime minister Eqbal, and the Mardom (People's) Party, led by Asadollah Alam, is the loyal opposition party which supports the foreign policy of the government but urges the interests of peasants, workers, and women. These parties will contest the 1960 elections, with a new prime minister to be chosen from the ranks of the winner. Independent candidates will also contest seats in the Majlis.

Education.—Although primary education is compulsory by law, many sections still lack schools, and the majority of the population is illiterate. In 1958 there were 7,750 primary schools with 1,020,703 pupils and 963 secondary schools with 190,113 students. In 1959, universities and colleges at Teheran, Tabriz, Meshed, Shiraz, Isfahan, and Ahwaz had 14,000 students.

Religion.—Some 93% of the population subscribes to the official religion, the Ithna 'Ashariyah Shi'ite sect of Islam. There are some 850,000 Sunnite Moslems and small communities of Bahais, Jews, and Nestorian, Gregorian, Roman Catholic, and Protestant Christians.

Defense.—Since 1942 a United States military mission has aided in the equipment and training of the armed forces, which now number about 180,000. In March 1959 Iran and the United States concluded a bilateral agreement providing for the defense of Iran against aggression.

Finance.—In the consolidated budget for the Iranian calendar year 1338 (March 22, 1959—March 21, 1960), central government revenue was estimated at 27,565,000,000 rials; expenditures at 29,029,000,000 rials (at the official rate, 75.75 rials = U.S.$1). About 37% of the budget is earmarked for defense and internal security. In 1959 Iran's external debt stood at $326.2 million. In August 1959, gold and foreign exchange holdings totaled $226 million. In 1958 the gross national product was valued at $2.5 billion and the per capita income at $125.

Transportation and Communications.—Iran has 2,370 miles of railways. The principal line runs from the Persian Gulf through Teheran to the Caspian Sea, with branches from Teheran to Meshed and to Tabriz and Julfa. Iranian Airways serves 15 towns, and 14 international airlines serve Mehrabad Airport at Teheran. In 1958 Iran had some 65,000 telephones and was importing 250,000 radios annually. There were 82,000 automobiles in the country.

Economic Development.—During the year 1337 (1958–1959) the Plan Organization, charged with the execution of the second Seven-Year Plan (1956–62), expended 11.3 billion rials, bringing total expenditures to 32 billion rials. In 1959 an earlier decision of the government to assign 60% of annual oil revenues up to a certain figure to the Plan Organization was discarded in favor of a fixed sum of $130 million.

In February 1959 the role of the Plan Organization was reassessed by the government and its hard-driving managing director, Abol Hasan Ebtahaj, resigned when the organization was placed under the office of the prime minister and in a position subordinate to several of the ministries.

In May the International Bank for Reconstruction and Development announced a loan of $72 million for the Plan Organization's program for the construction and improvement of the country's roads.

Petroleum.—In 1957 Iran's oil revenues totaled $213 million and in 1958, $247 million. The country is the world's sixth largest oil producer. In 1959, despite a decline in the world price for crude oil, revenues were expected to reach $260 million. Output for the first eight months of 1959 totaled 29,030,000 metric tons, compared with full-year production in 1958 of 39,780,000 tons. Daily output in August 1959 was 883,000 barrels, or 4,000 barrels more than in August 1958. In 1959 the international consortium of oil companies, with operations centered at Abadan, employed 43,819 Iranians and 591 foreigners.

In the fall of 1959 two joint companies, one of which included the Italian Agip Mineraria and the National Iranian Oil Company and the other, Pan American International Oil Company and the National Iranian Oil Company, had drilling platforms in operation offshore near the head of the Persian Gulf. A new tanker port on the island of Kharg, to be connected by pipeline to the mainland, was under construction.

A pipeline carrying oil from the southern fields to Teheran was in operation, as was a branch line from Azna to Isfahan, and work was undertaken on an extension of the line from Teheran to Resht on the Caspian Sea. Drilling to define the limits of the field at Qum, south of Teheran, continued and a newly defined concession area in central Iran was opened for international bidding.

Other Minerals.—More than 120 mines have been worked for the extraction of coal, chromite, iron ore, copper, lead, sulfur, antimony, tin, nickel, cobalt, and red oxide. The recent influx of foreign concerns interested in the exploitation of these mineral resources was affected by a decline in world prices. Iran's 20-year dream of constructing an iron foundry and steel mill continued to be frustrated, as negotiations with German firms bogged down.

Industry.—Discussions undertaken in 1958 came to fruition in 1959 with the establishment of an Industrial and Mining Development Bank. This bank has a capital of 2.1 billion rials which includes 60% Iranian participation through the government and private investors, with the balance provided by several foreign banks.

At Teheran the rapid construction of factories and processing plants continued, reaching a total of 2,123. In all Iran there were 4,420 plants employing 143,130 workers, while the total labor force, including laborers in the petroleum and construction materials fields, totaled some 350,000. The country's electrical capacity stood at 421,777 kw. New cement plants were opened at Luchan and Dorud, virtually doubling the annual production of cement to 846,000 tons.

Agriculture.—Some 13 million acres were under cultivation, producing an adequate supply of staple foods and fibers with some surpluses for export. Agricultural production figures in metric tons for the Iranian calendar year 1337 (1958–59), with figures for 1336 in parentheses, are as follows: wheat, 2,700,000 (2,900,000); barley, 950,000 (1,200,000); rice, 600,000 (550,000); cotton, 108,000 (80,000); wool, 20,000 (20,000); tobacco, 15,000 (15,000); sugar, 100,000 (105,000); raisins, 60,000 (63,000); dates, 104,000 (104,000); dried apricots, 10,000 (10,000); almonds, 15,000 (14,000); and pistachios, 3,500 (7,000).

Foreign Trade.—Exports in 1337 (1958–59) were valued at $110.6 million; imports, at $607 million. Since these export figures exclude petroleum products, the total balance of trade was not so unfavorable as indicated by these figures. The principal exports other than petroleum were cotton, dried fruit and nuts, carpets, wool, seeds and gums, rice, and animal casings. The chief imports were sugar, machinery, motor vehicles and accessories, tires and tubes, iron and steel products, textiles, tea, and chemicals and pharmaceuticals. The major trading partners included Germany, the United States, Great Britain, the USSR, India, and Japan.

Principal Events, 1959. *Internal Affairs.*—The year 1959 was marked by a continuing influx of people from rural areas into overcrowded Teheran, by signs of inflation most marked in the prices of staples and in rising rents, by a remarkable growth in the number of new industries, and by an increasingly unfavorable balance of trade.

The internal political scene was calm. The two political parties sponsored by the government opened regional offices and competed for members, while the National Security Organization kept close watch on the underground activities of the Communist Tudeh Party and on some of the extreme nationalists.

The potentially explosive situation in neighboring Iraq continued to cause concern which was reflected in travel restrictions imposed on foreigners, in the formation of a civil defense organization, and in the installation of new radio stations for broadcasts in Arabic. There was an improvement in the somewhat uneasy relations between Iran and the United Arab Republic, and the government pursued its policy of inviting heads of the sheikdoms of the Persian Gulf to visit Teheran.

The shah continued to press for his program of social reforms and held several press conferences to explain his plans and reply to questions. Three bills, designed to provide the material required for the prosecution of appointed and elected officials engaged in illegal or corrupt practices, were recommended by the shah and passed by the Majlis. A more vigorous effort was made for the impartial collection of taxes, and there was a shift in emphasis from indirect to direct taxation. The shah continued his program of distributing crown lands to peasants, and a parallel program for the sale of state lands to farmers gained momentum.

On December 21 the shah was married to 21-year-old Farah Diba, and hopes were high that his third marriage would produce a male heir to the throne.

In spite of a generally favorable economic and financial situation there was an undercurrent of feeling that neither the vast economic development program nor the plans for social reforms were moving with adequate rapidity.

External Affairs.—Good relations with the non-Communist world and the open hostility of the USSR toward Iran were features of the year. In January the Soviet Union warned Iran against signing a military pact with the United States, and in the following month, responding to an Iranian invitation, a Soviet mission arrived in Teheran to negotiate a nonaggression pact. Suddenly the talks were broken off and the USSR announced that Iran had joined the ranks of the enemies of the Soviet Union. On March 5, Iran and the United States signed a bilateral agreement which provides for American aid in case of aggression against Iran; at the same time the United States signed parallel agreements with Turkey and Pakistan. The Soviet Union reacted by launching a series of bitter attacks against the shah and government of Iran, employing Soviet radio stations and newspapers and a so-called Free Iran station located within the USSR. The Soviet propaganda

attacks stopped during the visit of Premier Khrushchev to the United States in September, but they were renewed with full intensity a few weeks later.

In December a long-standing dispute with Iraq over the frontier waters of the Shatt-al-Arab at the head of the Persian Gulf flared up, and Iranian forces were rushed to the area.

In May the shah left Teheran on a state visit of a month's duration which took him to England, Denmark, France and the Netherlands.

Early in the year Iraq withdrew from the Baghdad Pact, and in August the secretariat, composed of representatives of Iran, Turkey, Pakistan, and Great Britain, announced that the name had been changed to the Central Treaty Organization (CENTO).

During his visit of six hours to Teheran on December 14, President Eisenhower addressed the Parliament and held a lengthy conversation with the shah. Eisenhower spoke of the contribution Iran was making to regional stability and of its brave stand in the face of a powerful propaganda assault.

The United States continued its programs of military support and economic aid on the levels of earlier years. In the economic field American aid in 1959 totaled $100 million—$47.5 million in loans and the balance in grants.

(See also MIDDLE EAST.)

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IRAQ. A republic in southwestern Asia, Iraq is bounded on the north by Turkey, on the east by Iran, on the south by the Persian Gulf, Kuwait, and Saudi Arabia, and on the west by Jordan and the Syrian Region of the United Arab Republic. Its area is 171,599 square miles.

Population.—Approximately 75% of the 6,700,000 population (mid-year est., 1958) are Arabs, about 20% are Kurds, and the remainder are mostly Iranians and Turks. Baghdad, the capital, together with its suburbs, has a population of 1,086,000 (1957 census). Other important cities (with 1957 populations) are Mosul (179,646) and Basra (164,623), the country's chief port, located in the south on the Shatt-al-Arab; Kirkuk (1956 pop., 89,917); Najaf (1956 pop., 74,089); 'Amara; and Karbala.

Government.—The Iraqi republic was established by a military coup on July 14, 1958. A provisional constitution, published on July 27, 1958, declared the country to be an independent, sovereign, and Islamic republic and an integral part of the Arab nation. It recognized Kurdish "national rights," and emphasized the partnership of Arabs and Kurds in the Iraqi state. A three-member Council of Sovereignty serves as titular head of state. Parliament was dissolved following the 1958 coup, and all legislative and executive power was temporarily vested in a cabinet headed by Gen. Abdul Karim al-Kassem, the leader of the July revolution. On July 14, 1959, Premier Kassem announced that political parties, whose activities were suspended during 1959, would be permitted to resume their functions early in 1960 and that a popularly elected parliament would be assembled by July of that year.

Iraq is a member of the Arab League (q.v.) and of the United Nations. Its new flag (black, white, and green vertical stripes, with an eight-pointed red star containing a yellow circle with a white border in the white stripe) was flown at the United Nations for the first time on July 14, 1959.

Defense.—The armed services of Iraq include an army of five divisions, an air force of five fighter squadrons, and a river flotilla of four gunboats. The regular military establishment numbers about 60,000 men. During 1959 arms were purchased from both the Soviet bloc and from Great Britain. United States arms aid, however, was terminated (see below, *Principal Events*). A civil militia of some 35,000 persons, the People's Resistance Movement, came into being following the 1958 revolution to assure the continuity of the republican regime. Communist-dominated, the militia was placed under direct control of the regular army on July 5, 1959, and, on July 29, arms licenses were cancelled and training of the militia was halted.

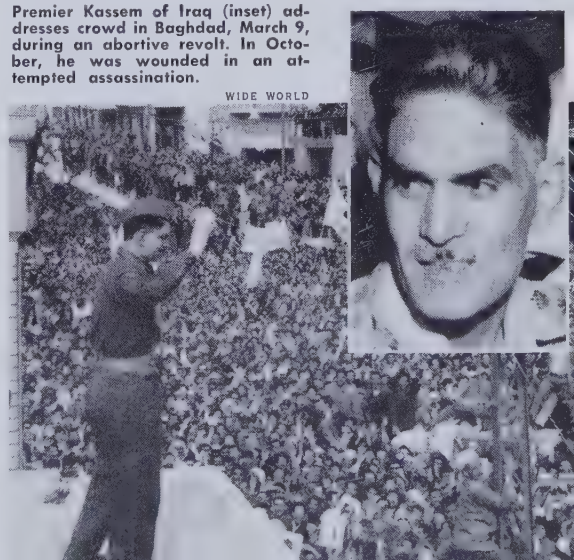
Finance.—The unit of currency is the Iraqi dinar (ID) which is valued (1959) at £1 sterling or U.S.$2.80. On June 23, 1959, Iraq ceased to be a member of the sterling bloc. The monetary supply on June 30, 1959, was ID111.8 million, of which ID34.4 million was deposit money. The government-operated Central Bank of Iraq controls the currency. The budget for the 1959–60 fiscal year called for expenditures of ID102.88 million (compared with ID76.92 million in 1958–59) and anticipated revenues of ID95.34 million. These figures do not include the development budget, which was slated to receive 50%, rather than the customary 70%, of the government's income from petroleum royalties (estimated at ID96 million for the fiscal year). Defense accounted for 33% of the regular budget, education for 11.2%, and health for 6.8%.

Education.—Elementary education is legally compulsory, but school facilities are inadequate and the law is not fully enforced. In 1956–57 there were 1,861 public elementary schools with an enrollment of 378,384 pupils, 210 secondary schools with 60,389 students, 23 vocational and technical schools, 37 teacher-training institutions and sessions of secondary rank, and 14 institutions of higher learning with a total of over 5,000 students. The University of Baghdad, formally inaugurated in October 1958, combines the former colleges of Arts and Sciences, Commerce and Economics, Law, Medicine, Dentistry, Veterinary Medicine, Engineering, Agriculture, Education, and the College for Girls. There are also in the capital theological, military, staff, and police colleges.

Religion.—Shi'ite Moslems, who principally inhabit the towns and villages of central and southern Iraq, form a slight majority of the population. Sunnite Moslems, constituting most of the rest of the inhabitants, include the people of northern Iraq, the nomads, and the urban populations of Baghdad and Basra. A small minority of Christians of the Nestorian, Gregorian, Jacobite, Chaldean, Orthodox Armenian, and Uniate sects is found in the principal cities and towns and in some northern villages.

Transportation and Communications.—The state-owned railroad system comprises about 1,100 miles of track. A standard-gauge line runs from Baghdad through Mosul to the border of the United Arab Republic (Syrian Region) and provides a direct rail link with Europe. Meter-gauge lines connect Baghdad with Basra, Khanaqin, Kirkuk, and Irbil. The government plans to modernize the entire system, replacing the Basra-Baghdad meter-gauge tracks with standard gauge. Roads suitable for vehicular traffic total about 6,800 miles, of which 1,800 are hard-surfaced. There were 25,900 passenger cars and 14,400 commercial vehicles in use in 1957. The government-operated Iraqi Airways provides domestic and foreign service, and a number of international airlines use the airport facilities at Basra and Baghdad. The state owns and operates telegraph and telephone services and conducts radio and television broadcasting. There were 64,637 telephones in use on Jan. 1, 1958.

Economic Development.—The republican regime continued in 1959 to place great emphasis on economic development and the creation of a welfare state. The minister of economics, Dr. Ibrahim Kubbah, on May 14, 1959, defined the social and economic policy of the government as one aimed at: (1) liquidating the Iraqi economy's subordination to foreign interests; (2) eliminating the semifeudal socioeconomic relations which had marked Iraqi society; and (3) building a balanced economy. He announced a program for the establishment of government-owned basic industries in such fields as the production of steel, petrochemicals, and machinery. At the same time he urged the investment of private, local capital in light industries and the production of consumer goods. Funds to finance the government's program are to come from oil revenues and from foreign loans.



Premier Kassem of Iraq (inset) addresses crowd in Baghdad, March 9, during an abortive revolt. In October, he was wounded in an attempted assassination.

WIDE WORLD

In 1959, the Soviet Union made available a credit of 550 million rubles at 2.5% interest, repayable in 12 years, and offered to provide technical assistance for the industrial, agricultural, and transportation development of Iraq. Projects envisaged under the terms of this loan include a steel mill of 600,000-ton capacity, a tractor factory, a nitrate plant, cotton and woolen textile factories, and new hydroelectric plants.

Although considerable progress was made during 1959 both in carrying out development projects of the old royal government and in inaugurating the expanded plans of the new government, full implementation of the program was delayed by political unrest, by a reorganization of the cabinet on July 13 which saw the abolition of the ministries of Economics and Development and of the Development Board, and the institution of a new Ministry of Planning, by the cancellation of the prerevolutionary contracts of some Western firms engaged in work on the development program, and by the withdrawal of the American technical missions following Prime Minister Kassem's denunciation of the Iraqi-American aid agreements on May 30.

Agriculture.—Iraq is primarily an agricultural country, although petroleum is its major source of revenue and industry is growing in importance. The chief crops are barley (953,000 metric tons in 1958), wheat (754,000 tons), and rice (137,000 tons). The country produces some 350,000 metric tons of dates annually, accounting for about 80% of the world's supply. Other agricultural products include cotton, tobacco, corn, millet, and citrus fruits. During 1959 a start was made toward implementing the five-year program, announced in September 1958, to expropriate excess holdings of large landowners and distribute them to landless peasants. On July 17, 1959, Prime Minister Kassem gave out the first parcels of land in a ceremony at Latifiya, 30 miles south of Baghdad.

Industry.—The principal industries are the extracting, transporting, and refining of petroleum, the generation of thermal electric power, building construction, spinning and weaving, the manufacture of tobacco products, baking, milling, cement manufacturing, tailoring, the production of soap and chemical products, date packing, and the manufacture of metal goods, shoes, bricks, glass, and matches. There are about 22,500 industrial establishments in the country, many of them small. The chief manufacturing center is Baghdad.

Petroleum.—The Iraq Petroleum Company, Ltd. and its affiliates, the Mosul Petroleum Company and the Basra Petroleum Company (owned jointly by British, Dutch, French, and United States interests) control most of Iraq's crude oil production at Kirkuk, Ain Zalah, and Butmah in the north and at Zubair in the south. The field at Naft Khaneh in eastern Iraq, where production is entirely for local consumption, is operated by the government.[1] The foreign oil companies pay to Iraq 50% of their profits in royalties and are committed to make available on request to the government 12.5% of their crude oil production for domestic consumption or for sale abroad. About two thirds of Iraq's crude petroleum exports are moved by pipeline to the Mediterranean ports of Baniyas in the Syrian Region of the United Arab Republic and Tripoli in Lebanon. The remainder is shipped by tanker from Basra or the oil port of Fao on the Shatt-al-Arab south of that city.

In 1959 the Basra Petroleum Company let contracts for the construction of two 34-mile submarine pipelines from Fao to a new deepwater terminal at the mouth of the river where facilities will be constructed for berthing two 65,000-ton tankers simultaneously. The project, to be completed in 1961 at a cost of $70 million, will increase the export capacity of southern Iraq from 12 million to 20 million tons annually.

Production of 35,493,000 metric tons of crude petroleum from the fields of the Iraq Petroleum Company group in 1958 resulted in government revenue of ID83.9 million (as compared with ID48.9 million in 1957, when the pipelines in Syria, sabotaged during the Suez crisis in 1956, were still not operating at full capacity, and with ID73.7 million in 1955, the last previous year of uninterrupted export). Total petroleum production, including the Naft Khaneh field, amounted to 35,640,000 metric tons in 1958. Production in the first half of 1959 was 19,563,000 metric tons.

Foreign Trade.—Exports for 1958 were valued at ID202.4 million, an increase from ID128.4 million in 1957 resulting principally from larger petroleum exports. Imports stood at ID100.8 million, a decline from the ID122.4 million of 1957, brought about by more stringent import restrictions. The principal exports were crude petroleum (ID185.3 million), barley (ID4.8 million), dates (ID2.9 million), and raw cotton (ID1.3 million). Major imports consisted of capital goods, including steel, machinery, and automobiles (ID35.4 million), textiles and clothing (ID12.6 million), sugar (ID7.9 million), and tea (ID5.7 million). The main suppliers were Great Britain, the United States, West Germany, Japan, Belgium, Ceylon, France, and India. The main buyers of Iraqi products were Great Britain, Denmark, Kuwait, and West Germany. Trade with the Soviet bloc was negligible in 1958 but increased considerably in 1959. On Jan. 4, 1959, a trade and payments agreement with Communist China was signed. On July 7 a barter deal was announced by which the Soviet Union would purchase 6,000 tons of Iraqi cotton (about 60% of the total yield of the 1958 crop).

Principal Events, 1959.—During the first half of 1959, Iraq forged closer economic and cultural ties with the Soviet bloc and severed some of its political and economic contacts with the West. Iraqi-Soviet negotiations in Baghdad between January 7 and February 5 culminated in a draft agreement on economic and technical cooperation. Further discussions took place in Moscow between February 25 and March 16, at which time a final convention was signed providing for Iraq a 550 million ruble credit for economic development. On May 5 an Iraqi-Soviet treaty on scientific and cultural cooperation was concluded, calling for the exchange of students, teachers, and scientists and the training of Iraqi experts in the Soviet Union.

Meanwhile, in a news conference on March 24, Premier Kassem announced Iraq's withdrawal from the Baghdad Pact (now the Central Treaty Organization), in which his government had taken no part since the coup of July 1958. On May 14 he formally dissociated Iraq from the Eisenhower Doctrine, and on May 30 he canceled all military and economic aid agreements with the United States. Foreign Minister Hashim Jawad, speaking on Radio Baghdad in June, defined Iraqi policy as one of positive neutrality in international affairs. He declared that the government was seeking to make Iraq's independence truly effective by terminating the restrictive foreign entanglements entered into by the previous regime, and that it would endeavor to preserve that independence for the future by a policy of nonalignment between East and West.

[1] On Dec. 3, 1959, Premier Kassem announced that the Iraq Petroleum Company group was being asked to surrender 60% of its concessionary areas, amounting to some 100,000 square miles.

Internally, Iraq was torn by a struggle between pro-Nasser pan-Arabists, who desired closer ties with the United Arab Republic, and the elements which opposed union with the UAR. In this latter group were both supporters of full Iraqi independence and Communists who opposed absorption in Nasser's United Arab Republic but who sought to move Iraq into the Soviet orbit. Prime Minister Kassem, needing Communist support against the pan-Arabists but anxious to avoid Communist domination, walked a tightrope in his determination to maintain independence for the Iraqi state.

On January 24 it was announced officially that Col. Abdul Salam Mohammed Arif, coleader of the July 1958 revolution but a dominant figure in the pan-Arab group, had been secretly tried on Dec. 27, 1958, and had been convicted of an attempt to murder the prime minister. (It was later made known that he had been sentenced to death, but by late 1959 there was no word of his execution.) On February 7, shortly after these revelations, Kassem accepted the resignation of six cabinet members and made eight new appointments in an apparent effort to strengthen the government against pan-Arabist pressures.

Mosul was the center on March 7–10 of a short-lived revolt led by Col. Abdul Wahab Shawaf, commander of the 5th Brigade, who was supported by pan-Arabists and by tribal sheiks and large landowners, alienated by the agrarian reforms of the Kassem regime. The rebellion was speedily crushed with the aid of the Kurds, the peasants, the Communists, and non-Communist liberals. The government, however, accused the United Arab Republic of complicity and on March 10 expelled nine members of the staff of the UAR embassy in Baghdad. Nasser replied by attacking Kassem as a traitor to the concept of Arab unity.

On April 29 the Iraqi Communist Party, despite the premier's request for a suspension of political activities, demanded representation in the cabinet. Kassem, however, did not give way. Instead, in June and July he adopted a number of measures strongly opposed by the Communists, releasing a considerable number of political prisoners, offering amnesty to rebels and dissidents who had fled the country, and curbing the activities of the militia units of the People's Resistance Movement. Although the ministry was reshuffled on July 13, none of the four new appointees was a known Communist Party member.

During the celebration of the first anniversary of the republic in Kirkuk on July 14, riots broke out between Turks and Kurds in which some 79 persons were killed. On July 29 the Prime Minister accused Iraqi Communist leaders of responsibility for the riots and charged them with a plot to create disturbances in all major cities of the country on July 14. Training for the People's Resistance Movement was ended and all arms licenses were canceled. On August 3 the Communist Party admitted errors in its policy and pledged its loyalty to the revolution and to Kassem.

Until the autumn of 1959, only six persons—five army officers and a civilian implicated in the Mosul revolt—had been executed for crimes against the state. On September 20, however, 13 army officers and 4 civilians were executed at Baghdad for their activities during the monarchy or for participation in the revolts and attempted revolts of late 1958 and early 1959. Although none of the more important political prisoners, such as Colonel Arif and former prime ministers Rashid Ali al-Gailani and Fadhil al-Jamali, were involved, these executions aroused a wave of denunciation of the Kassem regime in the UAR and to a lesser degree in other Arab lands. Since Lebanon, Jordan, and Saudi Arabia were then moving toward more cordial relations with Nasser, Iraq became increasingly isolated in the Arab world.

On the evening of October 7, an unsuccessful attempt was made to assassinate Kassem as he drove through the streets of Baghdad. The prime minister, struck by three bullets, was wounded in the shoulder and was hospitalized until December 3, but the country remained relatively quiet.

Relations between Iraq and Iran became strained in December 1959 after the shah of Iran and Premier Kassem had criticized the agreement of 1937 under which Iran controls the anchorage at Abadan in the Shatt-al-Arab, in an area where the frontier in general follows the low-water mark of the east (Iranian) bank of the river. Iran charged that Iraqi soldiers fired on Iranian shepherds near Abadan on December 15. At the end of the year, troop movements were reported to have taken place on both sides of the frontier.

(See also MIDDLE EAST.)

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IRELAND, Northern. See NORTHERN IRELAND.

IRELAND, Republic of (EIRE). Lying west of England and separated from it by St. George's Channel and the Irish Sea, the Republic of Ireland (Eire) is an independent, sovereign state. Its association with the British Commonwealth was severed in 1948. A border fixed in 1925 divides the 26 counties of the republic (occupying 26,602 square miles) from six other counties constituting Northern Ireland, which remains part of the United Kingdom. Dublin (est. pop., 600,000) is the capital and Ireland's largest city and chief port.

Population.—The 1946–51 intercensal period showed an increase of population for the first time in more than a hundred years. A decline was revealed, however, by the 1956 census, when the population was 2,894,822, and the intercensal loss 65,771. Between 1951 and 1956 the natural increase (134,434) was offset by a net emigration rising to 196,763, mostly to the United Kingdom.

Government.—The National Parliament consists of a president (Eamon de Valera, elected June 17, 1959, for a 7-year term); a 60-member Senate (Seanad Eireann), chosen by an electoral college of 900 members; and a 147-member House of Representatives (Dail Eireann), in which 138 members are popularly elected. Sean Lemass, minister of industry and commerce and deputy prime minister, was elected prime minister on June 23, 1959, by a vote of 75 to 51 in the Dail.

At the end of July 1959 the Fianna Fail party held 77 parliamentary seats, giving the government an overall majority of 9 seats. Opposition membership was as follows: Fine Gael, 40; Labour, 12; Clann na Talmhan, 3; Clann na Problachta, 1; Sinn Fein, 4; and Independents, 9.

Finance.—In 1958–59 actual revenue on current account was £126,410,000 (tax revenue, £98,600,000) and expenditure £126,250,000, compared with estimates of £124,733,000 and £124,758,000, respectively. Revenue and expenditure for 1959–60 were expected to balance at about £127.6 million. The capital budget for 1959–60 provided for expenditure of £45,160,000, including £14,420,000 on voted capital services.

Education.—In 1958–59 the state expenditure for elementary free education was £9,225,530. National elementary schools numbered 4,869 in 1957, with total pupil enrollment of 488,197. In 1957–58, recognized secondary schools (conducted in many cases by religious orders) numbered 481, with 66,221 pupils. State expenditures for secondary education during this period were £2,171,840. Trade schools, which in 1957 numbered 260 and had 88,624 pupils, received £1,246,960 from the state in 1958–59. Higher education is given at the University of Dublin (Trinity College), which had 1,967 students in the academic year 1956–57, and at the National University of Ireland, which has 4 constituent colleges (Dublin, Cork, Galway, and St. Patrick's Maynooth) with an aggregate enrollment of 6,973 in 1957. There are also 2 state agricultural schools and 6 state-aided agricultural colleges.

Transportation.—In 1957 there were 50,770 miles of public roads, including 9,854 miles of main roads, and 39,854 miles of county roads. Railways had an aggregate

mileage of 2,492 in 1957. During the year ended March 31, 1958, services operated by Aer Lingus carried 445,626 passengers, 13,138,100 pounds of cargo, and 3,530,280 pounds of mail. Major airports are located at Shannon and Dublin.

Agriculture.—The estimated gross value of agricultural output was £179.3 million in 1958, the decline of £14,378,000 from the 1957 total being due to weather conditions in the latter part of the year. Livestock as at June 1, 1958, included 243,800 horses and ponies; 4,466,300 cattle (an advance of 49,100 over the 1957 total); 4,174,000 sheep; 900,000 pigs; and 14,078,000 poultry. The output of crops and peat was valued at £37,845,000 in 1958 (£46,697,000 in 1957), including wheat (6,167,000 cwt.) valued at £7,671,000. Decreased volumes were recorded for nearly all crops, as well as peat. Total milk production was 596 million gallons in 1958 (in 1957, 617,800,000 gallons).

Industry.—Irish industries, including mining and quarrying, engaged 212,218 persons in 1957. Gross output was valued at £413,751,000 (manufacturing, £344,630,000), as compared with a gross output of £407,153,000 (manufacturing, £329,597,000) in the previous year. Electricity generated in 1958 totaled 1,857,840,000 kw-hr. The manufacture of consumer goods is directed increasingly to the North American market. Tourists visiting Eire in 1958 totaled 3,336,000.

Foreign Trade.—The value of imports in the 1958 calendar year rose to £198.4 million (£184.2 million in 1957). Despite a decrease of £7.2 million in exports of live cattle, exports in 1958 reached a total of £130.7 million, which was only £600,000 lower than the record 1957 figure of £131.3 million. In the first quarter of 1959, the value of imports rose to £54.5 million, the highest of any quarter since 1955. First quarter exports of £30.2 million were down 4.3% in value and 9.7% in volume from January–March 1958. Principal exports (and their value) in the first quarter included live cattle (£9.5 million); foodstuffs of animal origin (£6 million); other foodstuffs (£1.2 million); drink (£1.6 million); and textiles (£1.7 million).

Principal Events, 1959.—Politically, the outstanding event of 1959 was Prime Minister Eamon de Valera's decision to resign his post and seek election to the presidency. Entering Parliament in 1917, Mr. de Valera held the office of prime minister six times, the latest term lasting from March 20, 1957, until his resignation early in 1959. At a presidential election held June 17, he easily defeated the Fine Gael candidate, Gen. Sean MacEoin, but was rebuffed by the electorate (486,989 to 453,322) in his sponsorship of the Fianna Fail party's proposal to abolish proportional representation. Sean Lemass, who succeeded Eamon de Valera as prime minister, had served as deputy prime minister in three successive governments.

Nearing the close of his second 7-year term as president, Sean T. O'Kelly accepted an invitation from President Eisenhower to visit the United States. He was the first president of the republic to make such a visit. Arriving in Washington on March 17, President O'Kelly addressed a joint session of Congress on the following day and later visited eight of the country's principal cities. In New York City he was welcomed with a ticker tape parade on March 21.

The release during March of suspected terrorists of the outlawed Irish Republican Army was protested by the government of Northern Ireland. British Prime Minister Harold Macmillan's endorsement of the protest was greeted with bitter criticism in the Irish press. The newly elected prime minister, Sean Lemass, proposed on July 9 that Northern Ireland join an all-Ireland state, retaining the same powers now delegated to it by the United Kingdom. The offer was rejected.

DONOVAN ROWSE,
Author and Publicist.

IRIAN. See NETHERLANDS NEW GUINEA.

IRON AND STEEL. Significant events in the iron and steel industry in 1959 included record world steel production during the first half of 1959; the steel strike in the United States; expansion and modernization of production facilities in the European Coal and Steel Community countries; and a new method of making strip steel without the use of melting processes.

United States.—On Jan. 1, 1959, the crude steel annual capacity of United States plants was 147,633,670 net tons, an increase of 6,891,100 tons from Jan. 1, 1958. Production of crude steel in 1959 was estimated at 93,446,132 tons; production in the first half of the year amounted to a record 64,278,203 tons, but in the last half the steel strike cut production to 29,167,929 tons.

On July 15, 1959, a 116-day strike of 500,000 members of the United Steelworkers of America began in steel plants which account for 87% of total United States steel output. On Nov. 7, 1959, the Supreme Court upheld an injunction under the Taft-Hartley Act which directed the workers to return to the plants during an 80-day cooling-off period. Although wages, pensions, the cost of living, and inflation were significant issues, the major disagreement between the companies and the union was over proposed changes in work rules. One major steel producer, Kaiser Steel Corporation, and the union negotiated a contract on October 26; two other companies, Detroit Steel and Granite City Steel, soon signed similar contracts. A settlement between the union and the other steel producers was announced on Jan. 4, 1960, following lengthy bargaining sessions presided over by federal mediators. The final agreement was reportedly based on recommendations made in late December 1959 by Vice President Richard M. Nixon and Secretary of Labor James P. Mitchell. According to the terms of settlement, union members received increases estimated to be at least 32.8 cents per hour over a 30-month period (to July 1, 1962), and proposed changes in work practices were referred to a joint union-management committee.

In the first half of 1959, imports of steel mill products totaled 1,911,797 tons, and exports, 1,042,102 tons. It was reported that one of the chief reasons for the excess of imports over exports was that foreign steelworkers' wages were only one third to one seventh as much as those of steelworkers in the United States.

Expenditures scheduled in 1959 by iron and steel companies for new equipment and construction, estimated at over $1 billion, were intended to meet growing needs for more and better steels and to keep ahead of the competition of other materials and other countries.

Jones & Laughlin Steel Corporation planned to construct two of the world's largest basic oxygen steelmaking furnaces at its Cleveland Works, Cleveland, Ohio. Each furnace was expected to produce 160-ton heats and to have an annual capacity of 600,000 tons. That company also planned to build at the Cleveland Works a blast furnace having the largest hearth diameter (32 feet) in the United States. It was designed to produce 2,500 tons of iron daily.

The Kaiser Steel Corporation completed a $240 million expansion program at Fontana, Calif.,

which includes three oxygen furnaces with a combined capacity of 1,440,000 tons annually. The new installation is the first in the West which uses the oxygen process, and is the largest of its kind in the world. The National Steel Corporation announced plans for a $300 million expansion which will include a large steel finishing mill near Gary, Ind. A $375 million program of capital improvements in existing facilities, extending through 1963, was announced by the Republic Steel Corporation.

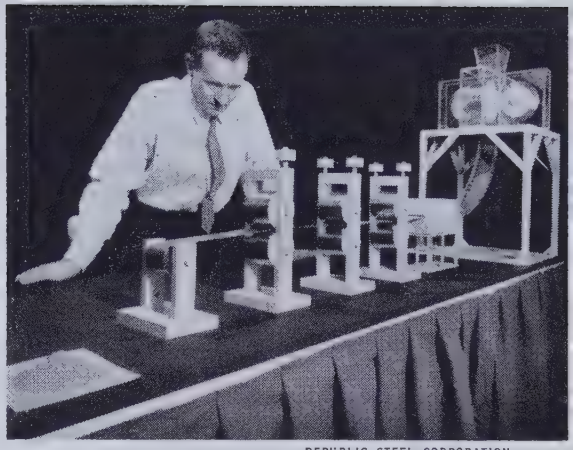
Canada.—Shipments of iron ore from the Labrador mines of Iron Ore Company of Canada began moving in May 1959 through the St. Lawrence Seaway to plants of The Youngstown Sheet & Tube Company in the United States.

The Iron Ore Company of Canada planned to open a mine in its Carol Lake iron ore deposit, about 220 miles north of Sept Îles (Seven Islands), Quebec, and to build a concentration plant, power house, and a town to house about 3,500 people. The completed project, estimated to cost $150 million, was designed to produce 6,000,000 tons of high grade iron mineral concentrates a year, beginning in late 1962.

On Feb. 11, 1959, Premier Joseph R. Smallwood of Newfoundland announced that Pickands Mather & Company of Cleveland, Ohio, and its associates in the Wabush Iron Company had agreed to pay $28,500,000 to Canadian Javelin, Ltd., for its 10 per cent stock interest in Wabush Iron Company and Wabush Lake Railway in Labrador.

The beginning of construction of a $20 million iron and steel plant by Consolidated Mining and Smelting Company at Kimberley, British Columbia, was announced on May 3, 1959, by Premier W. A. C. Bennett. Production was scheduled to begin early in 1961.

Other Countries.—A Peking (Communist China) radio broadcast on Aug. 26, 1959, of a communiqué of the Central Committee of the Communist Party admitted that its 1958 production figures, issued earlier in 1959, had been grossly overstated. The broadcast said that only 8,000,000 metric tons of the previously announced 11,080,000 tons of steel produced in 1958 were suitable for industrial purposes; that 3,080,000 tons of "metal" (pig iron) produced in 1958 in primitive furnaces were suitable only for requirements of rural areas; that such metal would no longer be a factor in the country's economic plans; and that the 1959 steel goal of 18 million tons had been reduced to 12 million.



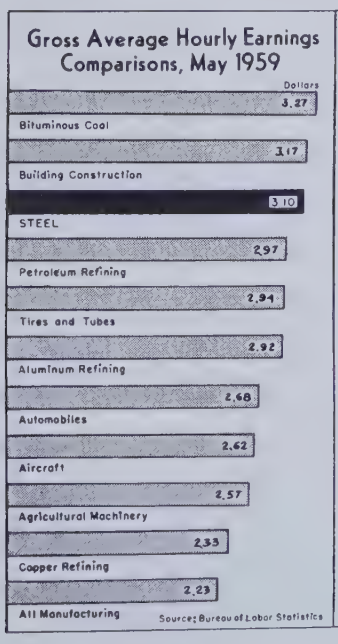
REPUBLIC STEEL CORPORATION

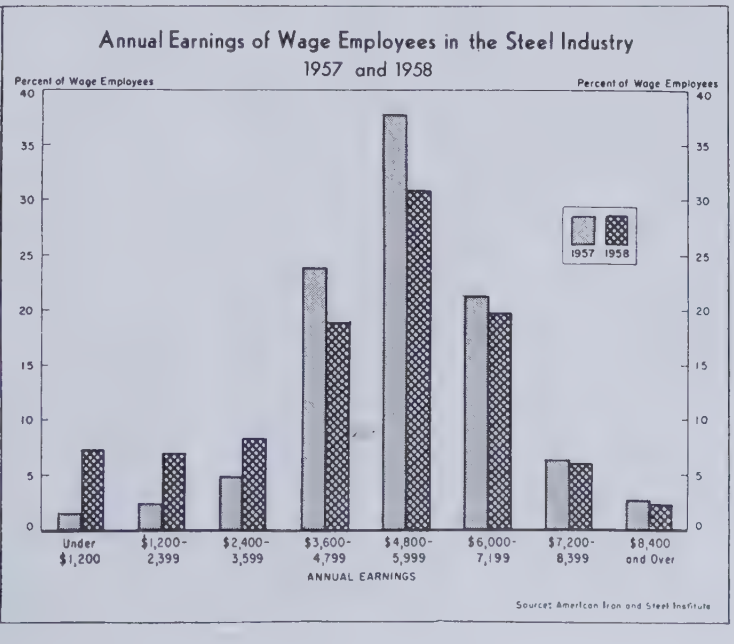
Operating sequence of a new process (announced by Republic Steel in June) which produces strip steel without melting is shown in this model. Iron powder, poured into funnel at upper right, is compressed between rolls atop the platform into semisolid strip, which is then passed through a heating furnace and hot-rolling stands to the desired gauge and full density. It emerges finally as hot-rolled steel in coils.

The Soviet Union's production figures for the first six months of 1959, as reported on July 14, 1959, by the Central Statistical Administration, included 29,300,000 tons of steel, 21,000,000 tons of pig iron, and 46,300,000 tons of iron ore. (The reported figures for the comparable 1958 period were 27,000,000, 19,300,000 and 43,000,000 tons, respectively.) Plans for producing at least 86 million tons of steel in 1965 involved the expansion of existing plants or the building of new plants in western Siberia (at Karaganda and near Stalinsk) and eastern Siberia (at Irkutsk and in the Krasnoyarsk region).

The European Coal and Steel Community (q.v) countries (Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany) planned to spend an estimated total of $1,144,000,000 in 1959 for expansion and modernization of production facilities for iron, steel, coal, and

BUREAU OF LABOR STATISTICS; AMERICAN IRON AND STEEL INSTITUTE





iron ore, of which $585 million was planned for iron and steel plants.

The High Authority of the European Coal and Steel Community announced on Jan. 6, 1959, that it had approved the application of Alfred Krupp to buy Bochumer Verein für Gussstahlfabrikation A.G., which has an annual crude steel capacity of 1,600,000 tons. At that time the Allied Control Council's deconcentration order, giving Krupp five years to dispose of large portions of the Krupp family's industrial holdings, was technically valid. Krupp's application for a one-year extension of the deadline was in effect granted on February 2 when the Allies agreed to set up a commission to study the 1953 deconcentration order.

The French government decided to accelerate preparations for the building of Algeria's first steel plant (of 600,000 tons annual capacity), at Bône, by proposing a financial plan to enable steel production to begin in 1962. Proposed raw materials included domestic iron ore and Sahara natural gas for reducing the ore and for generating power.

Ground was broken in 1959 for a large steel plant in eastern Slovakia, near Košice, midway between the Krivoi Rog (Krivoy Rog) iron ore deposits of the Ukraine and the Ostrava coal region of Czechoslovakia. The new plant, along with the expansion of older plants, was expected to increase the annual steel output of Czechoslovakia by about 3,000,000 tons, to 9,200,000 tons in 1965.

The Liberian government announced on May 10, 1959, that it had approved a plan for the development of Liberia's Nimba Mountains iron ore deposit in Central Province by the Liberian American-Swedish Minerals Company and Bethlehem Steel Corporation. That deposit was reported to be one of the world's largest of high-grade iron ore.

PRODUCTION OF IRON ORE, PIG IRON AND FERROALLOYS, AND CRUDE STEEL, 1958

(In net tons of 2,000 pounds each)

Country	Iron ore	Pig iron and ferroalloys	Crude steel*
Algeria	2,529,779	...	...
Argentina	...	...	256,615
Australia	5,292,000	2,546,313	3,515,235
Austria	3,812,856	2,030,437	2,647,394
Belgium	129,850	6,071,468	6,666,710
Brazil	3,094,156	1,300,000	1,750,000
Canada	15,878,000	3,170,333	4,329,116
Chile	4,127,011	399,000	...
China (Communist)	21,415,000	6,500,000	8,963,000
Czechoslovakia	3,320,128	4,145,750	6,009,740
Finland	...	111,663	...
France	65,410,482	13,386,331	16,165,230
Germany (East)	1,788,151	1,932,332	3,312,412
Germany (West)	19,832,960	18,768,862	25,458,720
Greece	459,000	...	...
Hungary	332,895	1,211,207	1,787,931
India	6,081,389	2,303,807	2,003,981
Italy	1,472,783	2,394,196	6,966,536
Japan	2,225,544	8,277,171	13,130,598
Liberia	2,396,390	...	...
Luxembourg	7,307,147	3,621,056	3,724,672
Malaya	3,147,067	...	...
Mexico	596,124	525,466	887,241
Morocco	1,785,726	...	...
Netherlands	...	993,062	1,581,470
Norway	1,926,600	553,906	...
Peru	3,084,235	...	...
Philippines	1,304,903	...	...
Poland	2,339,081	4,140,239	6,100,128
Rumania	798,000	675,000	1,000,000
Saar	...	3,422,642	3,836,000
Sierra Leone	1,512,356	...	...
South Africa, Union of	2,364,434	1,696,219	2,023,823
Spain	5,397,963	1,431,888	1,632,396
Sweden	20,592,066	1,443,131	2,668,668
Tunisia	1,250,780	...	...
Turkey	619,713	255,954	172,069
USSR	97,884,240	41,666,940	59,524,000
United Kingdom	16,365,440	14,520,000	21,919,520
United States	75,699,680	57,764,100	85,254,885
Venezuela	15,926,030	...	...
Yugoslavia	2,226,646	855,605	1,231,600
Other countries	4,926,000	865,000	1,702,500
Total	426,652,605	208,979,078	296,222,190

* Ingots and steel for castings. (Sources: Bureau of Mines, U.S. Department of the Interior; Dominion Bureau of Statistics, Canada; *Monthly Bulletin of Statistics*, Statistical Office, United Nations; British Iron and Steel Federation, London; American Iron and Steel Institute, New York.)

World Production.—The U.S. Department of Commerce reported on Aug. 27, 1959, that world steel production rose to a record annual rate of 346 million tons in the first half of 1959. World production in 1958 of iron ore, pig iron and ferroalloys, and crude steel is shown in the accompanying table.

Technical Developments.—An experimental method of making steel strip without melting processes was announced on June 18, 1959, by Republic Steel Corporation, Cleveland, Ohio. Under the new system, iron ore was purified, reduced to metallic powder without melting, and the powder compressed by rollers into "semisolid strip." The strip was heated to 2,200°F. in a reducing atmosphere, hot-rolled to increase its density, cleaned, cold-rolled, annealed, and cut into desired lengths. The process did not require coke ovens, blast furnaces, steelmaking furnaces, soaking pits, and blooming mills.

Brymbo Steel Works Ltd., Brymbo, Wales, developed a process of removing silicon and phosphorus from blast furnace iron (containing 0.6% to 0.8% phosphorus) by blowing oxygen and powdered lime, limestone, and iron oxide into the molten metal. Iron that is difficult to convert into steel by conventional processes is thus "prerefined" and finally refined in an electric furnace. (See also METALLURGY.)

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IRRIGATION. See Index entry.

ISLAM. See Index entry.

ISLE OF MAN. Lying in the Irish Sea off the coast of Cumberland, this British possession (area, 227 square miles; pop., 55,437 at 1951 census; est. 55,000 in 1957) is administered in accordance with its own laws and distinctive institutions. Douglas (pop., 20,361 in 1956) is the capital; Ramsey (4,621), Peel (2,612), and Castletown (1,755) are its chief ports.

Queen Elizabeth II is represented by a lieutenant governor (Sir Ambrose D. F. Dundas, assumed office Sept. 8, 1952), who is assisted by a 7-member executive council. The United Kingdom Parliament has power to legislate for the Isle of Man, although it is not represented there. It has its own legislature, consisting of a 10-member Legislative Council and an elected 24-member House of Keys; when sitting together, these bodies compose the Court of Tynwald. A commission on the Manx constitution presented its report in 1959.

Total revenue in 1956–57 was £3,427,887; expenditure, £3,269,766. In 1958 there were 31 primary schools (4,385 pupils), 5 secondary schools (2,604 pupils), and 10 other schools. The total area under crops was 76,866 acres in 1958; livestock included 26,703 cattle and 98,561 sheep. There is a thriving tourist industry. Railways total 70 miles; roads, 410 miles.

ISOTOPES. See Index entry.

ISRAEL. A republic of the Middle East, situated on the Mediterranean coast and bordered by the United Arab Republic, Jordan, and Lebanon. Area, 7,993 square miles; pop. (Jan. 1, 1958), 2,031,672 (including 221,524 non-Jews, chiefly Arab Moslems). Chief cities and populations (est. 1958): Jerusalem (the capital), 156,000; Tel Aviv-

Jaffa, 380,000; and Haifa, 170,000. Hebrew is the official language.

Government.—The president of the republic, whose functions are mainly of a formal character, is elected by the Knesset (Assembly) for a 5-year term. Itzhak Ben-Zvi has served as president since 1952, having been re-elected in 1957. The Knesset, Israel's unicameral legislature, has 120 members elected for a 4-year term by proportional representation. The national elections of Nov. 3, 1959, resulted in the following seating in the Knesset for the principal parties (seating based on the 1955 elections given in parentheses): Mapai (Israel Labor Party), 47 (40); Herut (rightist nationalists), 17 (15); National Religious Front, 12 (11); Mapam (leftist Socialists), 9 (9); and General Zionists, 8 (13). David Ben-Gurion (Mapai) heads a Mapai-led coalition cabinet approved by the Knesset on Dec. 17, 1959.

Education.—Illiteracy is negligible among the Jewish population and is declining among the Arabs. In the 1957–58 school year there were 1,099 Hebrew elementary schools (321,216 pupils) and 71 Hebrew secondary schools (16,728); 119 state-sponsored Arab elementary schools (26,401) and 5 secondary schools (945). About 95% of Arab boys and 50% of Arab girls attended school. Kindergartens in Israel had over 77,000 pupils in 1957–58, and there were also several thousand students in evening and continuation classes, vocational and agricultural schools, teachers colleges, and other special schools. Higher institutions include the Hebrew University in Jerusalem (4,357 students in 1957–58), the Israel Institute of Technology at Haifa (2,344), the School of Law and Economics at Tel Aviv (1,500), and Bar-Ilan University (346).

Religion.—The majority of the population is of the Jewish faith, though freedom of worship exists for all groups. The Ministry of Religious Affairs aids and safeguards the various religious communities, but there is no established church. For the Jewish population, certain matters of personal status, such as marriage and divorce, are exclusively within the jurisdiction of the rabbinical courts. The main non-Jewish groups are Moslems (152,500), Christians (47,500, chiefly Greek Catholics and Greek Orthodox), and Druses (21,500).

Immigration.—In the period May 15, 1948–Dec. 31, 1958, a total of 922,274 immigrants entered Israel, of whom 44.6% came from Europe, 29.6% from Asia, and 24.9% from Africa. Immigrants in 1958 numbered 27,287 (72,634 in 1957).

Finance.—The budget for the fiscal year beginning on April 1, 1959, totaled I£1,472 million, including I£481 million for development. Projected expenditure for defense services and reserves, the chief item in the ordinary budget, totaled I£371 million. Among major allocations for development were I£179 million for housing, I£150 million for agriculture, I£55 million for industry and crafts, and I£45 million for communications and public works. Israel's current balance of payments deficit of $334 million in 1958 was almost entirely covered as follows: United States grants in aid, $11 million, and agricultural surpluses paid for in local currency, $28 million; German reparations, $70 million, and restitution payments to individuals, $65 million; United Jewish Appeal and other collections and transfers in cash, $86 million, and in goods, $18 million. At the principal exchange rate, the Israeli pound (I£) equals U.S.$0.5536.

Transportation and Communications.—Israel's state-owned railways included 258 miles of main lines and 134 miles of branch lines in operation in 1958. Main roads maintained by the government totaled 1,860 miles, with an additional 396 miles maintained by local authorities. Israel's merchant fleet (41 vessels with an aggregate displacement capacity of 278,000 tons deadweight at the end of 1958) carries about 30% of the nation's sea-borne trade. Lod Airport is a major international air terminus. El Al Israel Airlines Ltd. operates regular services to New York, London, and other centers. Passenger cars numbered 25,509 in 1958; telephones, 90,681; licensed radio sets, 360,000; and daily newspapers, 22 (7 in foreign languages).

Production.—The Israeli economy, lacking the natural resources for a heavy industry, features the production of diversified light items, such as metal and electrical appliances, electrical and electronic equipment, foodstuffs, textiles, chemicals, rubber goods, paper and cardboard, ceramics and glass, building materials, cut and polished diamonds, leather, and shoes. Industrial output rose about 10% in 1958, with foodstuffs, minerals, vehicles, clothing and footwear, and electrical goods showing the greatest gains. Persons employed in industry numbered 142,000 in 1958, or about 20% of the estimated labor force of 698,300. Israel's principal minerals and output in the 1958–59 fiscal year were: potash, 110,000 tons; phosphate rock, 211,000; bromine, 1,665; and petroleum, 105,000.

WIDE WORLD

Informal portrait of Israeli Prime Minister Ben-Gurion at work. Resigning in July over the disputed sale to West Germany of Israeli-made arms, he returned to office after the victory of his Mapai Party in elections on November 3.

A record 75,110 tourists visited Israel in 1958, and the $25 million in revenue from tourism (including income of Israel's sea and air carriers) constituted the nation's second largest source of foreign currency. Israel's gross national product was estimated at I£3,530 million in 1958, a rise of about 8% in constant prices.

Israeli agriculture, organized largely along cooperative or collective lines, engages 17.6% of the labor force (1958), provides about 70% of domestic food requirements, and contributes over 40% of the value of exports. In the 10-year period from 1948–49 to 1957–58, the area under cultivation rose from 400,000 acres to about 1 million, and irrigated area from 66,000 acres to 270,000. Israel's chief agricultural products are citrus, grapes, bananas, and other fruits; wheat, barley, oats, and hay; vegetables and potatoes; milk, eggs, meat, and poultry; and olives, cotton, peanuts, and sugar beets. The total value of agricultural output (in 1956 prices) was I£667 million in 1957–58. The important citrus crop amounted to 14 million cases in 1958–59, yielding 9.5 million for export.

Foreign Trade.—Exports in 1958 totaled I£259.8 million; imports, I£780.4 million. The export coverage was thus 33.2% of imports, as compared with 32.4% in 1957. Citrus and other agricultural produce provided 41.8% of 1958 exports; diamonds, 23.2%; textiles, 6.8%. Imports are mainly industrial and agricultural raw materials, equipment and other investment goods, and foodstuffs and other goods for direct consumption. Britain, the chief market for Israel's citrus sales, purchased 20% of Israeli exports in 1958; the United States, 14%; and West Germany, 8%. The United States provided 28.5% of Israeli imports; West Germany, 14.8%; and Britain, 12.3%.

Principal Events, 1959.—Israel's fourth general election, which took place on November 3, resulted in substantial gains for Prime Minister David Ben-Gurion's Mapai. The Mapai, which has been the dominant party in Israel since the establishment of the state in 1948, obtained 38% of the popular vote (32% in 1955) and 47 seats in the Knesset, an increase of 7. The Herut, the chief opposition party which advocates the expansion of Israel beyond her present borders, received 17 seats, a gain of 2. The main losers were the General Zionists and the small Communist Party. After several weeks of negotiations, a new Ben-Gurion cabinet was approved by the Knesset on December 17. The Mapai-led coalition again included the National Religious Front, Mapam, Achdut Ha'avodah, and Progressives.

Although the election was marked by a certain apathy on the part of the voters, the results indi-

cated a general endorsement of Mapai policies. Within Ben-Gurion's coalition government, the two leftist socialist parties (Mapam and Achdut Ha'avodah) had joined issue with the prime minister in June over a contract for the manufacture and sale of grenade launchers to West Germany. The leftists, who oppose strong Israeli ties to the West, charged that it was wholly unfitting for Israel to provide arms to a nation responsible for the death of six million Jews. Ben-Gurion answered that he distinguished between the West Germany of the present and the Germany under the Nazis, and that the failure to make such a distinction was contrary to Israeli interests as well as to the cause of world democracy. Backed by a Knesset vote on July 1, Ben-Gurion sought to oust the four leftist members of his coalition for a breach of cabinet discipline. When they refused to resign, Ben-Gurion handed his resignation to President Itzhak Ben-Zvi on July 5, but continued to head a caretaker government until after the November election.

Israel's problems of immigrant absorption were reflected in a series of riots in July at Haifa, Beersheba, and Migdal Haemek, by North African immigrants who charged that they were subjected to discrimination in housing and employment. Government and police officials attributed the disorders to hooliganism and denied the charges of discrimination, though conceding that problems of adjustment had played a role. Earlier in the year, Israelis had once again begun preparations to receive a heavy influx of immigrants, this time from Rumania, where the Communist regime in late 1958 had suddenly lifted restrictions on Jewish emigration. Following protests by the United Arab Republic, however, the Bucharest government closed the gates once more, and the flow virtually ceased by March 1959.

The Israeli economy continued to show gains in 1959, although the failure significantly to reduce the import-export gap in 1958 had proved disappointing. Unemployment dwindled further, and the cost of living, which had risen only about 3% in 1958 (compared with more than 6% in 1957), remained virtually stationary in the first half of 1959, despite the ending of rationing early in the year. Work proceeded on a railroad extension to Dimona, on expansion of the port of Eilat (Elath), and on other large-scale projects in industry, minerals exploitation, transportation, and land-improvement. On July 17 an agreement was signed with an international financial group for the construction of a $20 million 16-inch oil pipeline from Eilat to Beersheba, to replace the existing 8-inch line. The Knesset on August 6 voted a new law for the encouragement of foreign investment by permitting full repatriation of profits, certain tax exemptions, and other advantages.

Relations with the bordering Arab states continued to be Israel's chief concern in the sphere of foreign relations. For several years, Israeli ships had been barred from the Suez Canal (q.v.) by the Egyptian government, despite a U.N. Security Council resolution of 1951 opposing such action. In 1959, United Arab Republic President Gamal Abdel Nasser further extended this restriction to non-Israeli ships carrying Israeli cargoes. On February 26 and March 13, two foreign-flag ships bound for Asian ports were halted and their cargoes of Israeli cement, potash, and other goods confiscated. On May 21 the UAR halted the Danish vessel *Inge Toft* and ordered its Israeli cargo confiscated as a prize of war. Following Israeli protests, the matter was taken up by U.N. Secretary General Dag Hammarskjöld in talks with UAR leaders in Cairo, July 1–2, but the talks appeared inconclusive. At the U.N. General Assembly on September 24, Israeli Foreign Minister Golda Meir denounced the UAR actions as a breach of international law and a potential threat to the shipping of all nations using the canal. In December, a Greek freighter carrying Israeli cement was detained in the canal by UAR authorities.

Border strife continued in 1959, although on a considerably smaller scale than in the years before the Israeli attack on Sinai in 1956. An Israeli shepherd was killed by UAR forces near the Syrian border on January 23, and on January 30 Israel complained to the U.N. Security Council of continuing border violations. On February 4, two Bedouins were killed by an Israeli force, and on February 17 two Egyptian police officers were killed by Israelis; both incidents occurred within the Egyptian border, and Israel was condemned by the U.N. Egyptian-Israeli Mixed Armistice Commission, which Israel has boycotted since 1956. Israel reported the killing of Arab infiltrators in the Negev on March 7, April 27, and July 15; the killing of an Israeli Army captain in the Negev on September 7; and the killing of three Bedouins in the Negev on September 20. A new element in the border strife was the occurrence of brief air clashes along the southern frontier between French-built Israeli Mystère jets and Soviet-built UAR MIG-17's on January 8, April 28, June 7, and November 4.

Abba Eban, Israel's ambassador to the United States and chief delegate to the United Nations, resigned to enter Israeli politics, and was succeeded as ambassador by Avraham Harman on July 2. Ogden R. Reid, the new United States ambassador to Israel, presented his credentials to President Ben-Zvi on July 2.

M. J. G.

ITALIAN LITERATURE. The 1959 Nobel Prize in literature was awarded to the Italian poet, Salvatore Quasimodo (q.v.), whose collections of poems, including *Ed è subito sera* (1942), *Giorno dopo giorno* (1947), *La vita non è sogno* (1949), and, most recently, *La terra impareggiabile* (1958), display a rare combination of fine craftsmanship and intense feeling for man's spiritual yearnings. The homage to Quasimodo was also a tribute to Italian poetry, which during the past quarter of a century has exhibited numerous signs of vitality and diversity. After World War I, such poets as Giuseppe Ungaretti and Eugenio Montale introduced *poesia pura* into Italian verse—poetry that tends to be lyrical, allusive, and elusive—a movement in which Quasimodo played an important role.

Fiction.—In 1959 the Strega Prize, Italy's highest literary award, went to the posthumously published *Il gattopardo* by Giuseppe Tomasi, Duke of Palma and Prince of Lampedusa. The award highlighted the spectacular career of this historical novel, which in a short space of time sold an unprecedented (for fiction in Italy) 70,000 copies. The book brilliantly tells the story of a Sicilian nobleman during the early 1860's, when Garibaldi invaded Sicily and united it to the young kingdom of Italy. *Il gattopardo* is scheduled for American publication in the spring of 1960; the translation, by Archibald Colquhoun, is tentatively entitled *The Leopard*.

While many critics link *Il gattopardo* with the tradition of the Italian classics of the 19th century, it is the writers of the postwar generation who continue to occupy the forefront of the literary scene. Alberto Moravia published a new volume of his *Racconti Romani*—tales which are not specifically Roman but, rather, dwell mostly on the psychological twists and amorous adventures of the Italian middle class. With his usual psychological sophistication, Mario Soldati, novelist and film director,

wrote a series of sketches and short stories which were collected under the title *Messa dei villeggianti.*

As suggested by the foregoing, short literary pieces loom large in Italian letters, and, significantly, they occupy a place of honor. The 1959 Viareggio Prize, second in importance after the Strega, was given to Marino Moretti, the 74-year-old author, for all his work in the field of the short story. Italo Calvino, a young but already distinguished writer, won the first Bagutta Prize for his collection of short stories written from 1947 to 1959. The second Bagutta award was given to Romano Bilenchi, a venerable storyteller.

Among the novels by young authors, *Una vita violenta,* by the highly talented Pier Paolo Pasolini, aroused controversy and attracted general attention. Like other Pasolini works, *Una vita violenta* deals with the roughnecks and juvenile delinquents of the area around Rome, and is written in a colloquial style. Pasolini's use of slang and dialect is more than a naturalistic device, for he heads a movement that is trying to revitalize Italian literature by introducing into it various dialectal forms. Another successful novel to make large use of the colloquial idiom (in this case the Lombard dialect) is *Il calzolaio di Vigevano* by Lucio Mastronardi.

The best novels of the season, however, were not part of Pasolini's movement. In *Una posizione sociale,* Giose Rimanelli studies human relationships through a child's eyes. Glorifying jazz, the novel has an appendix of four musical scores and is distributed with a jazz phonograph record. Sexual and moral deviates, members of Italy's "beat" generation, are successfully represented in *La finta sorella* by Massimo Franciosa. *La pietra bianca* by Carlo Coccioli, a novelist in the Roman Catholic tradition, is overburdened with psychological conflicts, theological implications, and melodramatic surprises.

The neorealistic current in Italian fiction continues to run strong. Among the works to be included in this vast category are *Donnarumma all'assalto,* a striking documentary novel about the Italian south by Ottiero Ottieri, and *Primavera di bellezza,* in which Beppe Fenoglio depicts the disintegration of the Italian Army after the Badoglio armistice of 1943. In *Mille tradimenti,* Ugo Pirro uses Fenoglio's theme, but in a more melodramatic fashion. *Pace a El-Alamein* by Giulio Palladino gives a restrained and poetic picture of Italy's African campaign in World War II.

Also of importance during the year were *Una vampata di rossore* by Domenico Rea, a popular chronicler of Neapolitan life, and *Una e una notte* by Ennio Flaiano, a Roman journalist. *Mamma marcia,* the posthumously published novel by Curzio Malaparte, which depicts the decline of Europe, is considered by many critics to be crude and sketchy.

Nonfiction.—Novelist Carlo Levi added to his travelogues with *La doppia notte dei tigli,* in which he attempts to analyze the postwar German mentality. In *La casa della vita,* scholar Mario Praz describes his life of artistic refinement and intellectualism. A renewed interest in futurism, the artistic movement that began in Italy about 1910, contributed to the success of Walter Vaccari's *La vita e tumulti di Marinetti,* a biography of Emilio Marinetti (1876–1944), the founder of the futurist movement, and to A. M. Ripellino's *Mayakovsky e il teatro Russo d'avanguardia,* about Vladimir Mayakovski (1893–1930), the Russian futurist poet.

Translations.—The following is a selected list of Italian books translated into English and published in the United States in 1959: Calvino, Italo, *The Baron in the Trees,* tr. by Archibald Colquhoun from *Il barone rampante; The Comedy of Dante Alighieri* (3 vols.), tr. by Mary Prentice; de Cespedes, Alba, *The Secret,* tr. by Isabel Quigly from *Quaderno proibito;* Dolci, Danilo, *Report from Palermo,* tr. by P. D. Cummins from *Inchiesta a Palermo;* Morante, Elsa, *Arturo's Island,* tr. by I. Quigly from *L'isola di Arturo;* Pavese, Cesare, *Among Women Only,* tr. by D. D. Paige from *Tra donne sole;* Pavese, C., *The Devil in the Hills,* tr. by D. Paige from *Il diavolo sulle colline;* Pirandello, Luigi, *Short Stories,* tr. by Lily Duplaix.

MARC SLONIM,
Sarah Lawrence College;
Editor of "Modern Italian Short Stories."

ITALIAN SOMALILAND. See SOMALILAND.

ITALY. A republic of south central Europe, Italy extends in a southeasterly direction into the Mediterranean Sea. Including Sicily, Sardinia, and about 70 smaller islands, it has an area of 116,319 square miles. The country is divided into 19 regions, which are subdivided into 92 provinces. The former territory of Trieste now constitutes a province in the region of Friuli–Venezia Giulia. Under a United Nations trusteeship scheduled to end on Dec. 2, 1960, Italy administers its former colony of Somaliland (q.v.).

Population.—On June 30, 1959, the population was estimated at 48,952,000. In 1958 there were 873,530 births and 457,915 deaths, resulting in a net increase of 415,615; in the first half of 1959 the net increase was 218,867. A total of 334,000 Italians emigrated in 1958, while 210,000 returned to Italy.

In April 1959, Rome, the capital, had an estimated population of 2,000,000. Other large cities, with estimated populations (Dec. 31, 1956), are Milan, 1,355,410; Naples, 1,096,755; Turin, 853,179; Genoa, 727,012; and Palermo, 557,468.

Government.—Parliament consists of a Chamber of Deputies of 596 members elected for 5 years, and a Senate of 253 members, of whom 246 are elected for 6 years and 7 (2 ex officio and 5 appointed) are life members. In the Parliament elected on May 25–26, 1958, party membership is as follows:

	Chamber of Deputies	Senate
Christian Democrats	273	123
Communists	140	59
Italian Socialists	84[1]	36
Italian Social Movement	24	8
Democratic Socialists	22[1]	5
Liberals	17	4
Popular Monarchists[2]	14	5
National Monarchists[2]	11	2
Republicans	6	0
South Tirol People's Party	3	2
Others	2	2
Total	596	246[3]

[1] On July 24, 1959, 5 Democratic Socialist deputies switched to the Italian Socialist Party, increasing its total to 89. [2] The two Monarchist parties merged in April 1959. [3] Plus 7 senators for life.

On April 29, 1955, Giovanni Gronchi was elected to a 7-year term as president of the republic at a joint session of Parliament in which 3 delegates from each region also participated. Antonio Segni, a Christian Democrat, became premier on Feb. 15, 1959. (See also below, *Principal Events, 1959.*)

Religion.—Italy is essentially a Roman Catholic nation, although there are about 150,000 Protestants, 40,000 Jews, and several thousand persons who profess the Greek Orthodox faith. The constitution of 1948 provides for absolute freedom of worship. As of 1957, there were 282 Roman Catholic dioceses and 25,333 parishes.

A ceremonial visit by President Gronchi to Pope John XXIII on May 6, 1959, emphasized the harmony that exists in church-state relations. On the previous day, the president had received the Vatican's highest honor, the Supreme Order of Christ.

Education.—In the 1956–57 school year enrollment was as follows: kindergartens, 1,072,233; elementary schools, 4,775,442; junior high schools, 481,572; vocational and technical schools, 799,026; classical, scientific, and normal schools, 301,499. Universities and other institutions of higher education had 157,117 regular and 49,075 special students in 1958–59. Of the 487.5 billion lire (620.6 lire = U.S. $1) provided in the 1959–60 budget for education, 41% was earmarked for elementary education.

Budget.—The 1957–58 budget provided for expenditures of 3,704.4 billion lire and revenue of 3,442.8 billion, leaving a deficit of 261.6 billion. The deficit was reduced substantially in the budget for 1958–59, which estimated expenditures at 3,258 billion lire and revenue at 3,123 billion; and in that for 1959–60, in which the corresponding figures were 3,473 billion and 3,344 billion.

Transportation and Communications.—At the beginning of 1958, Italy had 13,412 miles of railways, of which 10,392 miles were operated by the Italian State Railways; and 112,479 miles of roads. The first section of the Autostrada del Sole, a 459-mile highway from Milan to Naples, was completed in December 1958. There are two

regularly scheduled Italian airlines: Alitalia and Linee Aeree Italiane (LAI). The gross tonnage of the Italian merchant marine was increased from 4,965,261 in 1958 to 5,123,852 in 1959, making it the sixth largest in the world. A new luxury liner, the 32,000-ton *Leonardo da Vinci*, was launched at Genoa on Dec. 7, 1958.

Telephones numbered 2,871,000 as of Jan. 1, 1958. In 1958 there were approximately 7,000,000 radios and 880,000 television sets in the country.

Economic Conditions. *National Income and Foreign Aid.*—The gross national income increased from 14,962 billion lire in 1957 to 15,875 billion in 1958, or 6.1%, as shown in the accompanying table.

	1957[1]	1958
	(billions of lire)	
Net private product	10,066	10,704
Net public product	1,477	1,584
Net domestic product at cost	11,543	12,288
Taxes on value of goods and services	1,940	2,049
Net product at market prices	13,483	14,337
Net income from abroad	50	56
National income	13,533	14,393
Amortization	1,429	1,482
Gross national income	14,962	15,875

[1] Revised.

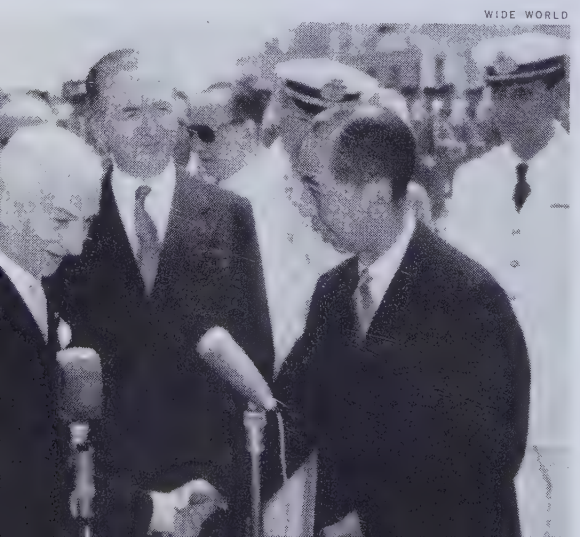
In June 1959, Italian shipping and steel interests borrowed $25 million from three New York banks. The money was to be used to help finance the new building program of the Italian Line and the expansion program of the Società Finanziaria Siderurgica. In September, the Fund for the South borrowed $40 million from the International Bank for Reconstruction and Development (IBRD) to help finance a 150,000-kw. atomic power plant on the Garigliano River, and in November the Export-Import Bank of Washington lent $34 million toward the cost of a 165,000-kw. atomic plant in the north. (See also below, *Fund for the South.*)

Labor.—With a labor force of 20,000,000, Italy had an average of 1,755,000 unemployed in 1958 and 1,789,000 in the first half of 1959. While the government is doing its best to improve the employment situation, so far it has only been able to find work for the 200,000 who enter the labor market annually for the first time.

In 1958 there were 1,937 strikes involving 1,283,301 workers, who lost 33,375,000 work-hours, as compared with a loss of 36,950,000 work-hours in 1957. Labor disputes in 1959, some of which were accompanied by violence, involved seamen, railway and urban transit employees, and workers in steel and other metal plants, spaghetti factories, cement mills, quarries, and banks.

Prime Minister Nobusuke Kishi (right) of Japan is greeted on his arrival for visit in Rome, July 19, by Italian Premier Antonio Segni (left) and Foreign Minister Giuseppe Pella.

WIDE WORLD



Consumption and Prices.—At current retail prices consumption increased from 10,124 billion lire in 1957 to 10,564 billion in 1958, or 4.3%. At the same time per capita income rose by 4.1%.

The general wholesale price index (1953 = 100) was 97.1 in July 1959, as compared with 100.8 in July 1958. The general retail price index (1953 = 100) also declined, from an average of 113.3 in the first half of 1958 to 112.2 in the same period of 1959. The cost-of-living index (1938 = 1) declined slightly, from 66.93 in the first half of 1958 to 66.30 in the first half of 1959.

Industrial Production.—The general index of industrial production (1953 = 100) increased from 137.7 in 1957 to 141.4 in 1958 and to 149.6 in the first half of 1959. Indices for the main branches of industry were as follows:

	1957	1958	1st half of 1959
Mining	156.1	158.7	163.1
Manufacturing	138.4	141.4	150.2
Electricity and gas	126.6	132.7	137.3

Production increases were noted in most fields, although there were declines in the iron and steel and textile industries. The output of important products, in thousands of metric tons, was as follows in 1958 (1957 figures in parentheses): iron ore, 1,291 (1,603); coal and lignite, 1,539 (1,417); crude petroleum, 1,534 (1,262); crude steel, 6,269 (6,787); pig iron and ferroalloys, 2,172 (2,208); gasoline, 4,670 (4,355); fuel oil, 11,900 (9,621); cement, 12,600 (11,952); ammonium nitrate, 556 (334); chemical fertilizers, 608 (513); cotton, 200 (212); and artificial fibers, 141 (150). Production of motor vehicles rose from 351,799 in 1957 to 403,548 in 1958; that of typewriters and calculating machines, from 527,729 to 640,062; electrical energy, from 42,726 million to 45,150 million kw.-hr.; and natural gas, from 4,987 million to 5,182 million cubic meters.

In 1958, 275,971 new dwellings were built, as compared with 273,535 in 1957. In the first half of 1959, 137,111 dwellings were completed.

Agriculture.—Agricultural production was valued at 2,656 billion lire in 1958, or 7.6% more than the 1957 total of 2,469 billion. The output of most products increased, although that of cotton declined (from 8,270 to 7,530 metric tons), as did the peach, prune, and almond crops. Production of major crops in 1958 (in thousands of metric tons with 1957 figures in parentheses) was as follows: wheat, 9,715 (8,478); corn, 3,674 (3,496); barley, 296 (296); oats, 596 (582); potatoes, 3,664 (3,157); tomatoes, 2,541 (1,961); sugar beets, 7,689 (6,176); grapes, 10,531 (6,900); apples, 1,627 (971); and pears, 519 (356). In 1958–59, 1,600 million pounds of rice and 254,000 short tons of olive oil were produced; in 1958, 26,770,000 boxes of oranges and tangerines and 11,600,000 boxes of lemons.

The general increase in production was due to the introduction of new scientific methods of cultivation; a greater use of chemical fertilizers (3,615,800 metric tons in 1956–57, as compared with 2,857,600 tons in 1952–53); and a rise in the number of tractors, from 66,371 in 1951 to 207,131 in 1958. Under the agrarian reform program, which is designed to produce a more equitable distribution of farm land, the government acquired by Sept. 30, 1958, 1,977,000 acres, of which 1,507,000 acres were assigned to 108,000 families.

Fund for the South.—From its inception in 1950 through Dec. 31, 1958, the Fund for the South (Cassa per il Mezzogiorno), a 15-year program for the rehabilitation of depressed areas in southern Italy, Sicily, and Sardinia, approved 118,000 proj-

ects costing a total of 1,035 billion lire. About 9,000 of these were public projects (795 billion lire), and 109,000 were private projects (240 billion). Projects completed by the fund at that date cost 350 billion lire and provided 160 million work-days.

On April 22, 1959, the fund borrowed $30 million on the United States investment market, with repayment guaranteed by the Italian government. At the same time, the IBRD and the European Investment Bank (EIB) entered into agreements with the fund whereby each would lend it up to $20 million. (The IBRD had previously granted five loans, aggregating $239,628,000, to the fund.)

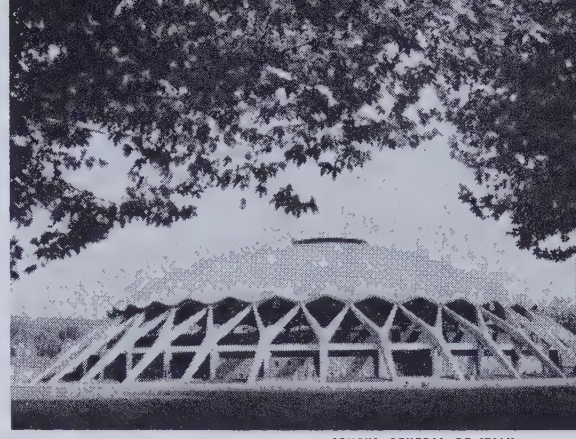
Foreign Trade.—In 1958 imports were valued at 1,980,595 million lire, and exports at 1,585,154 million, leaving a deficit of 395,441 million, as compared with a deficit of 702,427 million in 1957. For the first half of 1959 imports were valued at 997,044 million lire, and exports at 794,493 million, producing a deficit of 202,551 million.

In 1958 there were substantial reductions in imports of wheat, cotton, wool, lumber, coal, fatty oils, and brass. At the same time, there were large increases in exports of automobiles, chemical products, petroleum, and steel products. While imports from countries in the sterling area rose, those from France, West Germany, the United States, and the USSR declined markedly. Exports to Egypt, Venezuela, West Germany, and the United Kingdom increased, and those to France, Spain, and the USSR decreased. Imports from the United States declined by 24.8%, while exports to it increased by 6.8%.

Italy's official gold and foreign exchange holdings rose from $1,532 million on Dec. 31, 1957, to $2,321 million on Dec. 31, 1958, and to $2,829 million by June 30, 1959. A total of 15,287,037 tourists entered Italy in 1958, as compared with 14,629,020 in 1957. The largest percentages came from West Germany (25), Austria (15), Switzerland (14), France (10), England (7.5), and the United States (5).

Principal Events, 1959. *Political Developments.*—As a result of a split in the governing coalition, Premier Amintore Fanfani handed his government's resignation to President Giovanni Gronchi on January 26. Antonio Segni, also a Christian Democrat and a former premier, was invited to form a new government. He and his cabinet, which was composed entirely of Christian Democrats, were sworn in by the president on February 16. On February 24, Premier Segni presented the new government's program to the Chamber of Deputies and Senate. It included: (1) furtherance of economic progress with the immediate aims of overcoming the current recession and of reducing unemployment; (2) adherence to principles of cooperation with other North Atlantic and western European countries and dedication to Western solidarity; (3) continuation of friendship and collaboration with Somaliland; (4) growth of close trade and cultural relations with other Mediterranean countries; and (5) resistance to Austrian demands for greater autonomy for the German-speaking population of the South Tirol (Alto Adige). This program was approved by the Chamber on February 27, by a vote of 333 to 248, with 1 abstention; and by the Senate on March 6, by a vote of 143 to 97.

Meanwhile, on January 31, Fanfani also resigned his position as secretary of the Christian Democratic Party, since it had become evident that his leftist views clashed with those of the majority, and especially of the right-wing Roman Catholic deputies. Italy's role in the North Atlantic Treaty Organization (NATO) became an important issue



CONSUL GENERAL OF ITALY

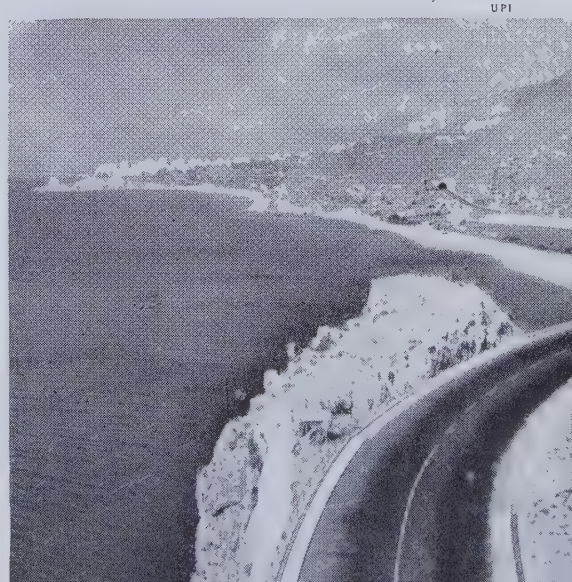
This modern sports arena, the Palazzetto dello Sport, is one of three stadiums designed by Pier Luigi Nervi for the 1960 Olympic Games in Rome. The structure is of reinforced concrete, with its roof spanning a diameter of 194 feet.

in July, when Segni's leadership was again challenged by Fanfani. While Segni was strongly pro-Western, Fanfani and his followers had neutralist leanings and favored cooperation with the left-wing Italian Socialist Party of Pietro Nenni. The rift within the Christian Democratic Party had become wider than at any time since the end of World War II, and party leaders feared that the controversy might result in a permanent schism. In the election of delegates to the 7th Congress of the party, held in Florence on October 23–29, it appeared that Fanfani's faction was gaining strength at Segni's expense. Nevertheless, when Fanfani spoke on October 27, he refrained from making the expected serious attack on the premier's regime, and in a surprisingly moderate manner reiterated his belief that the party should invite the support only of the center democratic parties. At the end of the Congress, Segni's supporters won 52 of the 90 elected seats in the party's National Council. As a result, his government was prolonged for the time being.

The situation of the other Italian parties also was confused. Meeting in Naples on January 18, the Italian Socialist Party voted by a large majority to change its policy from one of cooperation with the Communists to a closer relation with the democratic parties. On February 8, the left wing of

Opened in 1959, this section of the "Highway to the Sun" curves along the Italian coast at Sperlonga, south of Rome. When completed, the highway will be part of a system extending from Milan, through Florence and Rome, to Naples.

UPI



the Democratic Socialist Party, which favored a merger of the two Socialist parties, seceded and formed an autonomous group. In May that group joined the Italian Socialist Party. The result was to weaken the Democratic Socialists, who under Giuseppe Saragat's leadership had participated in the Fanfani government.

At a joint meeting of the Central and Control committees of the Communist Party held on March 10, a new policy was announced. The Communists urged all left-wing groups to unite as a means of defeating Premier Segni's government and of preventing the possible formation of a Gaullist regime in Italy.

On April 3, the National Monarchist and Popular Monarchist parties, which had separated in 1954, announced that they had agreed to reunite in a single party, which was given the name of the Italian Democratic Party. The National Monarchists had been allied with the Italian Social Movement (neo-Fascists), whose strength declined as a result of the new merger.

Elections.—In May and June, local and regional elections were held. The election of the regional Parliament of Valle d'Aosta, held on May 17, produced a victory for a coalition of autonomists and extreme left-wing parties, which together obtained 25 seats, as compared with 10 for the center democratic parties. A Vatican decree of April 13 had forbidden all Roman Catholics to vote for candidates or parties that collaborated with Communists, and following the election Corpus Christi processions were canceled in the diocese of Aosta.

In local elections held on May 31 and June 1, an alliance of Communists and left-wing Socialists made slight gains despite the efforts of the center parties, which were supported by the Vatican. A week later, on June 7, the Sicilians went to the polls to choose a new 90-member regional Parliament. Until October 1958, the regional government had been in accord with the central government in Rome. On October 31, however, dissident Christian Democrats headed by Silvio Milazzo, a Sicilian landowner, broke with their party and, charging "bureaucratic interference" in the island's affairs, formed a new regional government with the support of extreme left-wing and right-wing groups. In April 1959, Milazzo formed a new party, the Christian Social Union, which was disapproved by the church because of its collaboration with the Communists. Although the results of the June election indicated only minor changes, the Christian Social Union emerged as a powerful political force, holding the balance of power in the Sicilian Parliament. The distribution of seats in the new Parliament, with those of the previous Parliament in parentheses, was as follows: Christian Democrats, 34 (37); Communists, 21 (20); left-wing Socialists, 11 (10); Italian Social Movement, 9 (9); Christian Social Union, 9 (0); Monarchists, 3 (9); Liberals, 2 (3); and Democratic Socialists, 1 (2). With left-wing support, Milazzo was re-elected head of the government by the Sicilian Parliament on July 28, and on August 12 a strongly autonomist administration was elected over Christian Democratic opposition. Milazzo's government was defeated (45–44) on December 7, but on December 18 he was re-elected (50–40) to the premiership.

Foreign Affairs.—On Jan. 6–9, 1959, Premier Fanfani visited the United Arab Republic for official talks with President Gamal Abdel Nasser. A joint communiqué stressed the importance of periodic conversations to help solve problems of mutual interest and the necessity for closer economic and cultural relations between the two countries. Similar economic and cultural agreements were arrived at in talks with Premier Constantine Karamanlis of Greece (January 9–10). A visit of President Celâl Bayar of Turkey to Rome on June 8–11 also resulted in economic and cultural agreements.

The German question and East-West relations were discussed during visits by Premier Antonio Segni and Foreign Minister Pella to Paris (March 18–20) and Bonn (March 20–22). On June 23–28, President Charles de Gaulle paid a state visit to Italy during which the two countries affirmed their political and economic solidarity. The French president suggested to President Gronchi a plan for a security alliance in the western Mediterranean. East-West relations were also the topic of discussion when Segni and Pella paid an official visit to London on December 1–3.

Announcement was made on March 30 that Italy and the United States had reached agreement on the establishment of a missile base on Italian soil. The agreement was approved by the Italian Senate on April 17 by a vote of 133 to 87, and a Soviet note of protest (April 28) was rejected on May 11. Premier Segni and Foreign Minister Pella had talks with President Dwight D. Eisenhower on September 3 in Paris and on September 30 in Washington. A communiqué issued on the latter date reaffirmed the close bonds of friendship between the two countries and warned that any relaxation of Western defenses was premature. On October 1, in a speech in Washington, Segni said that "a handshake and a few smiles" were not "sufficient to justify too much optimism"; he insisted on firm Soviet guarantees. His policy of Western solidarity and adherence to NATO was endorsed overwhelmingly by the Chamber of Deputies on October 16, and it was reaffirmed in talks with President Eisenhower when the latter visited Rome (December 4–6) on his 11-nation tour.

Relations with Austria deteriorated in 1959 because of the demands for greater autonomy by the German-speaking population of the South Tirol. Addressing the U.N. General Assembly on September 21, the Austrian foreign minister, Dr. Bruno Kreisky, requested that Italy create an autonomous province of Bozen (Bolzano) for the German-speaking inhabitants and said that, unless conditions improved, the matter might be put formally before the United Nations. On September 23, speaking to the assembly in his turn, Foreign Minister Pella rebuked Austria for raising a domestic question in the United Nations. He assured the assembly that Italy had granted the people of the area "a treatment the liberality of which has been exceeded in no other region of the world. . . ."

HOWARD R. MARRARO,
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IVORY COAST. The Republic of Ivory Coast is an autonomous republic of the French Community (q.v.), situated on the western coast of Africa near the Gulf of Guinea. Estimated area, 124,503 square miles; pop. (est. 1958), 3,090,000, including (in 1956) 11,638 nonindigenous persons, mainly French. French is the official language. Chief cities are Abidjan, the capital (est. pop., 127,000), and Bouaké (30,800).

Government.—A former French overseas territory included within the federation of French West Africa (q.v.), Ivory Coast chose the status of a member state of the French Community on Dec. 4, 1958. As an autonomous republic, Ivory Coast has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Ivory Coast adopted its constitution on March 26, 1959. The Legislative Assembly consists of 100 members elected by universal suffrage for a five-year term. The

premier is invested by a majority of the assembly. Félix Houphouët-Boigny, leader of the Union for the Economic and Social Development of the Ivory Coast (local branch of the African Democratic Rally), took office as premier on May 1, 1959.

Education and Religion.—In 1958 there were 1,012 schools with a total of 130,831 pupils (27.3% of the school-age population). Expenditure on education amounted to 2,160 million francs CFA, or about 19% of the budget. The natives are mostly animists; a small minority are Christians and there are some Moslem tribes in the north.

Finance.—The ordinary budget for 1958 totaled 10,294 million francs CFA; the extraordinary budget, 1,492 million (the franc CFA equals 2 metropolitan francs). In the period 1947–57, funds granted by France under the Economic and Social Investment Development Fund (FIDES) were equivalent to $109 million.

Transportation.—The republic's only railroad runs from the southern port of Abidjan to the northern border and on into Upper Volta; the length within Ivory Coast is about 388 miles. Roads and trails total 10,470 (1956), including 984 miles of highways. The principal airport is at Abidjan and handles international traffic.

Production.—Ivory Coast is the richest of the former territories of French West Africa by virtue of her cash crops, which include coffee, cocoa beans, bananas, palm kernels, and cotton. Subsistence crops are chiefly maize (corn), rice, manioc, millet, yams, peanuts, and tropical nuts and fruits. The thick forests yield mahogany, rubber, and other forest products. Cattle, sheep, and goats are raised in the interior highlands. Diamonds and manganese ore are mined on a small scale.

Foreign Trade.—Exports in 1958 totaled 31,492 million francs CFA; imports, 22,827 million. Chief exports were green coffee, 112,505 metric tons (18,780 million francs CFA); cocoa beans, 46,333 (6,415 million); hardwoods, 402,178 (3,316 million); and fresh bananas, 46,129 (1,274 million). France purchased about 60% of exports and provided 63% of imports.

Principal Events, 1959.—In the elections of April 12, 1959, Félix Houphouët-Boigny's Union for the Economic and Social Development of the Ivory Coast won all 100 seats in the Legislative Assembly. None of the seats was contested, however, since the opposition leader, Camille Adam, had been expelled from the Ivory Coast in 1958. Houphouët-Boigny, who had spent considerable time in Paris as a member of the French cabinet, took office as premier on May 1. The premier is noted for his espousal of close French ties and has played a dominant role in the opposition to the federation movement among the new African republics of the French Community. During a visit to the United States, Houphouët-Boigny conferred with President Eisenhower in Washington on November 12, declaring to the president that the African members of the French Community seek close ties with the West.

M. J. G.

JAMAICA. See WEST INDIES FEDERATION.

JAPAN. The most advanced industrial nation in Asia, Japan is a constitutional monarchy consisting of the four main islands of Hokkaido, Honshu, Shikoku, and Kyushu and of over 3,000 smaller islands. Its total area is 142,726 square miles. Administratively, it is divided into 45 prefectures and the region of Hokkaido, each with its own governor and legislature.

Population.—On June 30, 1959, Japan's population was estimated at 92,740,000, or 980,000 more than a year earlier. The population density of 650 persons per square mile is one of the highest in the world. The birth rate, which had dropped steadily in the post-World War II period to a low of 17.2 per 1,000 in 1957, rose to 18.0 in 1958, while the death rate continued to decline, dropping from 8.3 to 7.5 per 1,000.

On Oct. 1, 1959, the population of Greater Tokyo, which claims to be the world's largest city, was 9,102,929. Populations of other major cities were as follows as of October 1958: Osaka, 2,808,000; Nagoya, 1,459,000; Yokohama, 1,254,000; Kyoto, 1,242,000; and Kobe, 1,062,000.

Government.—Under the 1947 constitution executive power rests with the prime minister, elected by the national Diet or Parliament, and his cabinet. The Diet is divided into a lower house, the House of Representatives, whose 467 members are elected every 4 years unless the Diet has been previously dissolved; and an upper house, the House of Councilors, half of whose 250 members are elected every 3 years, partly from prefecturewide constituencies and partly from the nation as a whole. Lower house elections were held on May 22, 1958, and upper house elections on June 2, 1959.

The powers of Emperor Hirohito are restricted largely to ceremonial functions. On April 10, 1959, Crown Prince Akihito was married to Michiko Shoda, daughter of a businessman. (See also below, *Domestic Affairs, 1959.*)

Defense.—In May 1959, Japan's self-defense forces, as the armed forces are known, comprised a ground force of 162,000 men, a maritime force of 27,667 men and 402 ships, and an air force of 33,225 men and 1,064 planes. The defense budget for the fiscal year ending March 31, 1960, totaled 154 billion yen (U.S.$1 = 360 yen), including an 18 billion yen contribution to the support of United States forces, compared with 146 billion yen in the previous fiscal year.

Education.—Education is compulsory for 6 years of elementary school and 3 years of junior high school. As of May 1, 1959, there were 13,374,700 students in 26,916 elementary schools. 5,180,319 students in 13,135 junior high schools, 3,216,152 students in 4,615 senior high schools, and 597,698 students in 239 colleges and universities.

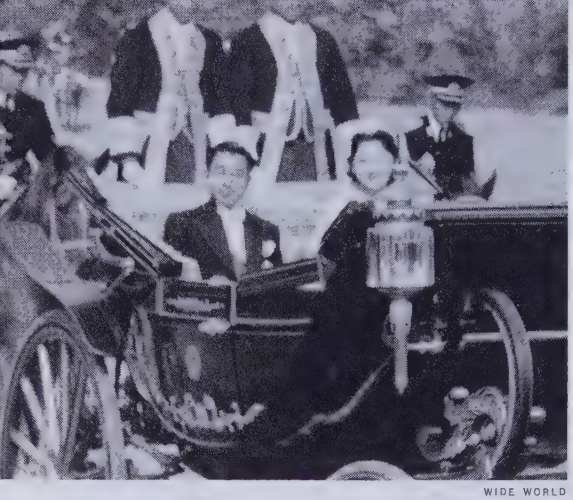
Religion.—Buddhism and Shintō are the dominant religions. Many Japanese believe in both, and in December 1958 the number of Shintoists was reported to be 76,844,827, and that of Buddhists 48,974,838; Christians numbered 652,518.

Transportation and Communications.—In April 1959 there were 12,647 miles of national railway lines and 4,658 miles of private lines. A major achievement as part of a long-range railway improvement plan was the completion on June 15, 1959, of the Mikuni Tunnel shortening the distance between Tokyo and Niigata by 44 miles. In March 1958 there were 90,936 miles of roads. Construction was under way in 1959 on Japan's first high-speed highway, connecting Nagoya and Kobe. As of March 1959, registered motor vehicles included 1,026,617 trucks, 935,641 motorcycles, 245,882 passenger cars, and 117,789 buses.

Japanese airlines carried 568,392 domestic and 65,244 international passengers in 1958. In April 1959 the merchant fleet included 1,723 vessels of 5,430,000 gross tons.

There were 3,886,327 telephones in March 1958. As of July 1, 1959, there were an estimated 3,300,000 television sets and 16,500,000 radio sets served by 75 television and 313 radio stations. Newspaper circulation in 1958 was estimated at 24,329,000.

Economic Conditions.—By the end of 1958 the Japanese economy had fully recovered from a short recession, and it continued to surge ahead throughout 1959. The index of industrial productio (1955 = 100) rose from 139.7 in June 1958 to 176.6 in June 1959. National income for the fiscal year 1958 totaled 8,471 billion yen, as compared with 8,341 billion yen in the previous fiscal year. The wholesale price index (1952 = 100), which



WIDE WORLD

Crown Prince Akihito of Japan and his bride, Princess Michiko, ride through Tokyo following their wedding, April 10.

had remained almost stable for a year, increasing from 97.9 in June 1958 to 98.5 in June 1959, rose to 99.7 by August 1959. In the same month the consumer price index (1955 = 100), which had averaged 103 in 1958, rose to 107.1. Currency in circulation increased from 701.2 billion yen on June 30, 1958, to 788.3 billion yen in June 1959.

The national budget for the 1959–60 fiscal year was 1,419 billion yen, as compared with 1,312 billion yen for 1958–59, but the total was expected to be increased by a supplementary budget for typhoon relief. Between Jan. 1 and Nov. 12, 1959, Japan received credits totaling $54 million from the International Bank for Reconstruction and Development, to be used for electric power and steel development; and $33 million from the Export-Import Bank of Washington, including $30 million of cotton credits.

Production.—Electric power production in 1958 aggregated 83,103 million kw.-hr., as compared with 79,545 million in 1957. Of the total, 58,122 million were produced in hydroelectric plants. In the first half of 1959 production totaled 41,877 million kw.-hr. Coal production declined from 51.7 million metric tons in 1957 to 49.7 million tons in 1958, as many industries continued to switch from coal to other sources of energy. Production in the first half of 1959 totaled 23.4 million tons, as compared with 24.3 million in the first half of 1958. The output of refined petroleum increased from 6,963,000 kiloliters in the first half of 1958 to 9,042,000 kiloliters in the first half of 1959; production for the full year 1958 was 15,112,000 kiloliters.

In 1958, 8,765,000 metric tons of finished steel were produced, or slightly less than the 1957 output of 8,885,000 tons, but in the first half of 1959 production rose to 5,101,000 tons, as compared with 4,281,000 tons in the first half of 1958. Japan led the world in ship launchings in 1958, with 2,066,669 gross tons. Production of other goods in the first half of 1959, with production for the full year 1958 in parentheses, was as follows: cotton yarn, 226,100 metric tons (433,000); cotton fabrics, 1,350 million square meters (2,640 million); rayon staple, 124,410 metric tons (241,680); and cement, 7,926,000 metric tons (14,988,000).

Japan expected to enjoy its largest rice crop in history in 1959, with production estimated at 12,399,000 metric tons on December 5 (in 1958, 10,914,000 tons were produced). The wheat crop totaled 1,412,000 metric tons, as compared with 1,281,000 tons in 1958. The output of common barley was 1,241,000 metric tons (1,132,000 in 1958); that of naked barley, 1,164,000 metric tons (1,229,000 in 1958); and that of soybeans, 15,708,000 bushels (14,374,000 in 1958). In 1958, 164,438,000 pounds of tea and 330,500 bales (132 pounds each) of raw silk were produced. The fish catch was 5,670,000 metric tons in 1958.

Foreign Trade.—During 1958, Japan checked the drain on its foreign exchange by means of a tight monetary policy and a drastic reduction in imports, which decreased from $4,284 million in 1957 to $3,033 million; exports rose from $2,858 million to $2,877 million in the same period. Special dollar receipts, derived largely from spending by United States forces in Japan and procurement in Japan with funds of the International Cooperation Administration, amounted to $484 million in 1958, as compared with $548 million in 1957. Foreign exchange reserves continued to rise in 1959, reaching a record $1,250 million at the end of October.

In the first half of 1959 exports attained a record $1,542 million, or 10.8% above the $1,391 million of the first half of 1958, while imports increased by 10%, from $1,579 million to $1,736 million. Principal exports (in millions) for the first half of 1959, with figures for the full year 1958 in parentheses, were machinery, $358.1 ($627.4); ships, $178.8 ($331.8); cotton fabrics, $130.9 ($277.0); iron and steel products, $116.2 ($249.9); pharmaceuticals and chemicals, $89.2 ($137.8); clothing, $86.4 ($148.9); and fish and fish products, $67.9 ($171.1). Major imports (in millions) included petroleum and petroleum products, $217.5 ($411.7); machinery, $202.1 (341.3); raw cotton, $182.4 ($360.9); pharmaceuticals and chemicals, $103.3 ($166.3); raw wool, $101.9 ($194.3); and wheat, $77.5 ($154.2).

As in past years, the United States was Japan's chief trading partner in 1958, taking 23.6% of its exports and providing 34.8% of its imports. Japan's leading customers (in millions) for the first half of 1959, with figures for the full year 1958 in parentheses, were the United States, $447.3 ($680.4); Liberia (mostly ships), $116.2 ($236.7); Hong Kong, $54.1 ($100.1); Canada, $52.6 ($76.3); the Philippines, $50.2 ($89.5); and Thailand, $49.4 ($83.8). The principal sources of imports were the United States, $560.3 ($1,053.9); Saudi Arabia, $123.4 ($144.8); Malaya and Singapore, $76.5 ($127.1); Australia, $136.3 ($225.6); Canada, $70.6 ($123.4); the Philippines, $63.2 ($99.8); and Mexico, $55.7 ($93.6).

Domestic Affairs, 1959. *Political Developments.*—The overwhelming victory of the leading Liberal-Democratic Party (LDP) in both upper house and local elections and a split in the Socialist Party (JSP) were the principal political events of 1959. Prime Minister Nobusuke Kishi's leadership of the LDP was confirmed on January 24 at a special party convention, which re-elected him to a two-year term as party president by a vote of 320 to 166 over Kenzo Matsumura. Earlier, on January 12, Kishi had reshuffled the top LDP posts and filled several cabinet vacancies. Takeo Fukuda was named secretary general of the party; Shuji Masutani, chairman of the Executive Board; Umakichi Nakamura, chairman of the Policy Board; and Shigejiro Ino, director general of the Defense Agency.

The 31st regular Diet session reopened on January 26 after a holiday recess. The first of several clashes between the LDP and the Socialists developed over a JSP draft resolution that Japan would never arm itself with nuclear weapons. When the LDP refused to cosponsor the measure, the Socialists boycotted proceedings for one day. On February 19, the JSP left the Diet for five days

because it objected to the government's handling of a minimum-wage bill. This measure, which provided for a series of minimum-wage agreements either by area or by industry, was passed (234–126) by the lower house on February 25 and enacted into law on April 7. On March 28 the lower house defeated (253–142) a Socialist motion of nonconfidence in Prime Minister Kishi. The motion attacked Kishi's handling of negotiations on the United States–Japan Security Treaty and relations with Communist China (see below, *Foreign Affairs, 1959*) and charged the government with scandal in connection with the Philippine and Indonesian reparations agreements.

The session was shorter than usual because of a lengthy recess during the wedding of the crown prince and the local elections (see below), and because of the need to adjourn by the expiration (May 2) of the terms of half of the members of the upper house. Besides the minimum-wage bill and the budget, which was adopted on March 31, important measures included a national annuity bill, a bill expanding the national insurance system, revision of the Social Education Law, and two defense bills adopted on the closing day, May 2, providing for small increases in the armed forces.

The wedding of Crown Prince Akihito on April 10 was celebrated as a jubilant national holiday and attracted worldwide attention. A series of local elections, on April 23 and April 30, for 19 governors, prefectural assemblymen, mayors, and other local offices resulted in a conservative sweep. The LDP had already won 10 consecutive gubernatorial contests between January and April, and on April 23 it captured all but 2 of the 10 posts contested by the JSP. Its most significant victories were those of Ryutaro Azuma in Tokyo, Gisen Sato in Osaka, and Kingo Machimura in Hokkaido. Of 2,657 prefectural assembly seats, the LDP won 1,593; the JSP, 561; and independents, 419 (the balance went to minor parties).

Local issues were of major importance in most of these elections. In the June 2 upper house election and in the major gubernatorial contests, however, the JSP stressed foreign relations, while the LDP stood on its constructive legislative record and charged the Socialists with subservience to the pro-Communist trade union federation, Sohyo (General Council of Japanese Trade Unions). At stake in the upper house were 75 seats from local constituencies and 52 (including 2 vacancies) from the nation as a whole. The LDP made an unexpectedly strong showing, increasing the number of its seats from 127 to 132 and raising its percentage of the popular vote from 48.4 in 1956 to 52.0 in 1959, while that of the JSP dropped from 38.0 to 34.1. Only 1 Communist was elected by a slim margin in the national constituency, but 6 representatives of Soka Gakkai, a religious organization, were elected as independents. The voting rate was 58.7%, as compared with 61.2% in 1956. The accompanying table shows the composition of the upper house before and after the 1959 election and as of December 1959, as well as that of the lower house on the latter date.

Bolstered by this new mandate from the people, Kishi reorganized his cabinet on June 18. Foreign Minister Aiichiro Fujiyama and Finance Minister Eisaku Sato retained their posts, but all other ministers were replaced. Major posts were filled as follows: Shuji Masutani, deputy prime minister; Hayato Ikeda, international trade and industry; Munenori Akagi, defense; and Takeo Fukuda, agriculture and forestry. At the same time, Bamboku Ono was renamed deputy president of the LDP; Mitsujiro Ishii, chairman of its Executive Board; Shojiro Kawashima, secretary general; and Naka Funada, chairman of the Policy Affairs Research Committee. The 32d extraordinary Diet session (June 22–July 3) confined itself to organization (the LDP filled all vacant committee chairmanships in the upper house over JSP protests) and passage of a bill to increase the personnel in a number of ministries.

Party	House of Councilors May 2, 1959	House of Councilors June 2, 1959	House of Councilors December 1959	House of Representatives December 1959
Liberal-Democrats	127	132	137	288
Socialists	78	85	70	134
Socialist Club	...	...	13	21
Democratic Socialist Club	...	...	...	10
Ryokufukai[1]	20	11	10	...
Communists	2	3	3	1
Independents and minor parties	13	19	17	2
Vacancies	10	...	...	11
Total	250	250	250	467

[1] Green Breeze Society, a conservative party existing only in the upper house.

In a startling decision on March 30, the Tokyo District Court had acquitted seven defendants charged with illegal entry into the U.S. Air Force base at Tachikawa in 1957, declaring that the presence of United States forces in Japan was unconstitutional. The prosecution appealed the decision to the Supreme Court, which ruled on December 16 that there was no conflict with the constitution and ordered a retrial of the case.

One of the most significant political developments in recent years was the decision of a group of right-wing Socialists under the leadership of Suehiro Nishio to leave the JSP because of dissatisfaction with its failure to adhere to democratic parliamentary methods and with its tendency to adopt pro-Communist policies. The split occurred in the midst of the JSP annual convention, held on September 12–16. Unable to complete its business, the convention recessed until October 16–17, when new officers were elected. All except the secretary general were from the party's left wing. Mosaburo Suzuki and Inejiro Asanuma were reelected chairman and secretary general, respectively. The Nishio group announced plans to form

Supplies are dropped by air on Nagoya in the wake of typhoon Vera, which struck central Honshu on September 26–27. More than 4,400 died in the worst storm in Japan's history.

EUROPEAN

a new party at the beginning of 1960. Meanwhile, on October 18, 33 Diet members of the group resigned from the JSP and formed a separate Socialist Club in the Diet. On November 25, they were joined by an additional group of right-wing Socialists, who formed themselves in the Diet as the Democratic Socialist Club.

On September 26–27, central Japan, particularly Aichi, Mie, and Gifu prefectures, was struck by typhoon Vera, leaving in its wake the greatest human loss and material damage of any typhoon in recorded history. Over 5,000 persons were dead or missing, and 500,000 homes were flooded or destroyed. The major business of the 33d extraordinary Diet session, which convened on October 26, was to pass a supplementary budget providing relief for victims of this disaster as well as for those of typhoon Georgia, which had taken a toll of 274 lives on August 14.

The Diet grounds were the scene on November 27 of violent demonstrations by 20,000 left-wing students and union members against the United States–Japan Security Treaty. Over 500 persons were injured, and the LDP drew up a bill prohibiting such demonstrations near the Supreme Court and Diet buildings.

Communism.—Communist Party (JCP) prestige remained low in 1959, and the party received only 1.9% of the popular vote in the national constituency in the upper house election. However, it participated in many front organizations and, with Sohyo and the JSP, played a leading role in organizing rallies against the security treaty. On July 28 the LDP exposed the World Conference Against Atomic and Hydrogen Bombs as being Communist dominated, and declared that 7 of its 34 directors were Communists. On August 10 the Supreme Court ordered a retrial, on grounds of insufficient evidence, of Communists accused of derailing a train in 1949.

Labor.—Of the 7,000,000 members of organized labor in Japan, 3,597,000 belonged to Sohyo and 779,000 to Zenro (Japanese Trade Union Council) in June 1959. Talks to merge the two federations began in January, but were broken off at Zenro initiative on August 18. Under pressure from pro-Communist elements, Sohyo's annual convention rejected on August 26 a resolution to support the JSP and instead took no stand on political support.

Labor unrest in 1959 centered on the depressed coal industry. A two-week strike against 14 companies began on March 23, and there were further strikes later in the year. A major achievement for labor was a minimum-wage agreement obtained by a Zenro affiliate, the Textile Workers Union, on August 23. It provided for a minimum wage of 6,000 yen for workers 15 years old and one of 8,000 yen for those 18 years old.

Foreign Affairs, 1959.—During the year, Japan continued to cooperate closely with the United States and other countries of the free world. A blue book on Japanese foreign policy, issued in May, stated: "It is clear that this country cannot survive independently as a free and democratic nation by taking a neutral stand under present world conditions." From July 11 to August 11, Prime Minister Kishi traveled to Great Britain, West Germany, France, Austria, Italy, Brazil, Argentina, Chile, and Mexico to strengthen Japan's ties with these nations.

United States.—Negotiations on the revision of the United States–Japan Security Treaty of 1951 and the accompanying administrative agreement were continued in Tokyo between Ambassador Douglas MacArthur II and Foreign Minister Fujiyama. The original treaty was drawn up while Japan was still under occupation, and a major objective of the revision was to clarify the fact that relations between the two countries were on an equal footing and to define the relation of the treaty to the U.N. Charter, while taking into full account the requirements of the Japanese Constitution. As explained by Fujiyama in a report to the Diet on November 10, the government was convinced that the tendency to attempt settlement of problems through talks among the major powers had not diminished the need for a stable collective security system among the nations of the free world. The signing of the new treaty was attended by Prime Minister Kishi in Washington on Jan. 19, 1960.

Fujiyama took advantage of his attendance at the opening of the 14th session of the U.N. General Assembly in New York to have a helpful exchange of views with Secretary of State Christian A. Herter on September 23. A tuna conference of the two governments, held in Tokyo on September 30–October 2, discussed mutual conservation measures and marketing problems in an effort to meet the objections of United States tuna fleets to Japanese inroads into the American market.

Korea.—On January 30, Foreign Minister Fujiyama announced that Japan would ask the International Committee of the Red Cross to supervise a program whereby Korean residents in Japan could return voluntarily either to North Korea or to South Korea, and this decision was confirmed by the cabinet on February 13. On April 13, talks opened in Geneva between representatives of the Japanese and North Korean Red Cross societies, and an agreement on repatriation procedures was signed by the two bodies in Calcutta on August 13. Registration of residents wishing to go to North Korea, which began on September 21, was hampered by demands for procedural changes by the North Korean Residents Association. After the government and the Japanese Red Cross Society had acceded to some of the changes, the number of registrants increased to about 5,000 by November 15. Delegates of the International Committee of the Red Cross were to assure that no coercion was exerted on repatriates in deciding whether to remain in Japan or to leave. The first repatriation ships sailed on December 14.

The Republic of Korea reacted violently to the repatriation plan, claiming that the repatriates were being sent into "Communist slavery," and on June 15 it announced that it was suspending trade with Japan. Nevertheless, it agreed on July 30 to resume discussions with Japan on a large number of unsettled problems, including the exchange of Japanese fishermen seized by Korea and illegal Korean immigrants held by the Japanese.

USSR.—The Soviet Union took an especially tough position in fishery negotiations that lasted from January 12 to May 13, 1959. The final agreement permitted Japan to take 85,000 tons of salmon, or about half of the Japanese demand and 23% less than the 1958 quota. Exploiting controversy within Japan over the security treaty revision, the USSR also conducted a vigorous campaign to encourage Japanese neutralism. On April 21, in a move apparently timed to exert influence on the elections, Premier Nikita S. Khrushchev sent a letter to the pro-Communist Japan Press Service in which he urged Japan to support a policy of neutrality. A Soviet note of May 4 warned Japan against the introduction of nuclear weapons. In its reply of May 15, Japan firmly rejected this "intervention in its domestic affairs."

Communist China.—A series of missions to Communist China in 1959 failed to break the stalemate that had prevailed since the Chinese

broke off trade relations with Japan in May 1958. A Sohyo mission in February obtained Communist Chinese permission to import a small amount of much-needed lacquer, but this niggardly gesture aroused more criticism than gratitude. Secretary General Asanuma, heading a JSP delegation, made a visit to Peking on March 4–23, in the course of which he said that "the United States is the common enemy of Japan and Communist China." This statement was roundly criticized in Japan and probably hurt the JSP in the elections. Delegations in the autumn, headed by former LDP Prime Minister Tanzan Ishibashi, former JSP Prime Minister Tetsu Katayama, and LDP leader Kenzo Matsumura, had little effect on Chinese policy.

Other Countries.—On May 13, 1959, Foreign Minister Fujiyama signed in Saigon an agreement with South Vietnam that provided for $39 million in outright reparations, $7.5 million in a three-year loan for power projects, and $9.1 million in loans and credits on a private basis for a fertilizer plant. The agreement was approved by the Diet on December 23.

Japan's membership in the U.N. Security Council expired at the end of 1959, but on October 13 it was elected to the Economic and Social Council, and a Japanese delegate served on the investigating team sent to Laos. The 15th session of the contracting parties to the General Agreement on Tariffs and Trade, which met in Tokyo on October 26–November 20, was the largest intergovernmental conference ever held in Japan.

ALBERT L. SELIGMANN,
U.S. Department of State.

JARVIS. One of the Line Islands in the Central Pacific about 1,350 miles south of Hawaii, on the direct air route between Hawaii and New Zealand. Area, 2.2 square miles. Jarvis has no permanent population. It is under the U.S. Department of the Interior, and has a small airfield and weather station.

JAVA. See INDONESIA.

JAZZ. See MUSIC; RECORDS, PHONOGRAPH.

JEHOVAH'S WITNESSES. Preaching by these Christians began in the 1870's; their legal agency, the Watch Tower Bible and Tract Society of Pennsylvania, was incorporated in 1884. The group's headquarters are located at 124 Columbia Heights, Brooklyn 1, N.Y., and branch offices are maintained in 85 countries.

During 1959 a total of 871,737 ministers (adherents) preached in 175 lands. Organized into 19,982 congregations, these ministers meet five times weekly to study and train for their ministerial work. During 1959 they spent more than 126,317,124 hours preaching; placed more than 15,424,294 Bibles and study books; distributed over 92,310,778 copies of *The Watchtower*, which is published in 54 languages, and *Awake!*, which is published in 19 languages; and conducted more than 606,075 weekly Bible studies in the homes of interested persons. In the last ten years more than 188,148,000 books and booklets (not including magazines) in 128 languages and dialects have been distributed.

A new branch office and printing plant were opened in England in 1959, with additional printing operations extending to Canada and South Africa. In Laos and Cambodia, despite unsettled internal conditions, preaching activity was carried on for the first time. In Communist countries, continuing arrests and persecution were marked by intensified opposition to Jehovah's Witnesses in the Soviet press.

On Jan. 27, 1959, in a 6–3 decision, the Supreme Court of Canada decided in favor of two Jehovah's Witnesses for alleged violations of their civil rights.[1]

N. H. KNORR,
President, Watch Tower Bible and Tract Society of Pennsylvania.

JET PROPULSION. See Index entry.

JEWELRY. United States consumers spent slightly less than $3 billion on jewelry of all kinds (including watches and clocks) in 1958—about 6% less than in the record year of 1957. Preliminary estimates of sales for 1959 indicate a possible gross of $3.3 billion, based on a substantial increase in diamond sales and slight increases in the sale of watches and other jewelry.

The retail value of world diamond production in 1958 was $830,267,392, down about $460,000,000 from the 1957 figure ($1,289,771,478). International diamond producers report that the United States, long the principal market for both gem and industrial diamonds, currently receives 95% of all diamonds produced.

For the first 6 months of 1959, the retail sales value of gem diamonds graded in the rough amounted to $515,367,432, an increase of 44% over the same period in 1958. Diamond producers expected record sales for 1959, with continuing high sales in the second half of the year.

Sales of industrial diamonds amounted to $40,656,390 in the first 6 months of 1959, 82% higher than sales for the same period in 1958. The marked increase in sales of natural industrial diamonds in 1959 is believed to indicate that synthetic diamonds (marketed since 1957) have not made the serious inroads at first thought possible.

Outstanding developments in jewelry styling in 1959 included designs for women's wrist watches (see also WATCHMAKING) in which handsome bracelets completely conceal the timepieces, and the further development of diamonds colored artificially by irradiation in a cyclotron.

ORVILLE R. HAGANS,
Editor and Publisher, "American Horologist and Jeweler."

JEWISH AFFAIRS. During late 1958 and the year 1959, the Jewish migration of the past few years steadily decreased. Emigration from Rumania stopped; there was only a limited flow from Poland to Israel; and emigration from Egypt involved mostly cases of family reunion. There was therefore no substantial change in the geographic distribution of world Jewish population, with the total estimated at about 12,200,000. Of these, about 6,180,000, or more than one half, were in North, Central, and South America. Europe had 3,440,000; Asia, 1,970,000; Africa, 550,000; and Australia–New Zealand, 68,000.

Europe had about 3,440,000 Jews—approximately 2,000,000 in the Soviet Union and some 390,000 in countries of the Soviet bloc, of which Rumania (with 220,000) and Hungary (with some 100,000) were the two largest. Western Europe had approximately 1,000,000—mainly in England (450,000) and France (350,000). Germany had about 30,000 Jews; the Jewish repatria-

[1] In the first instance, the late Maurice Duplessis, former premier of Quebec, was ordered to pay $33,123 and costs to restaurateur Frank Roncarelli because in 1946 Duplessis unjustifiably revoked Roncarelli's permit to sell liquor. The premier's action, taken after Roncarelli had signed bonds to effect the release of arrested Witnesses, was, in the language of the court, ". . . a punishment which inflicted on him [Roncarelli], as it was intended to do, the destruction of his economic life. . . ." In the second instance, Louise Lamb was awarded $2,500, plus costs, for false arrest by a Verdun, Quebec, police official in 1946.

tion to that country showed a considerable decrease, with the number of returnees at the lowest figure since 1952.

The Jewish population of the United States was about 5,520,000, of whom 2,300,000 resided in the New York metropolitan area, 400,000 in Los Angeles, and 331,000 in Philadelphia. There were 250,000 Jews in Canada and 680,000 in Latin America (some 400,000 of them in Argentina). Israel, with 1,837,000, had the largest Jewish population outside of the United States and the USSR.

There was continued anxiety over the status of the Jewish community in the Soviet Union, which lived under a regime of discrimination and oppression. In spite of Soviet official denials, the evidence was incontrovertible that Jews were deprived of cultural, religious, and educational facilities, as well as the right to communicate with coreligionists in Western countries. An increasing number of their synagogues were closed, and prayer meetings, ceremonials, and cultural institutions forbidden.

In 1959 the Canadian Jewish community celebrated its 200th anniversary. This marked the third major anniversary celebration of an English-speaking Jewish settlement in the past five years, having been preceded by American Jewry's 300th year in 1954 and British Jewry's 300th year in 1956. In France, the Jews celebrated in 1958 the 150th anniversary of the establishment by Napoleon I of the Consistoire, the official religious representative body.

One of the concerns of the Jewish communities of the western European countries continued to be the rebuilding of Jewish religious and cultural institutions and the development of educational programs that would help bring Jewish youth back to Judaism. Toward this objective considerable aid was received from the Conference on Jewish Material Claims against Germany, the agency distributing funds received as a result of the 1952 agreement with West Germany which provided for collective German indemnity in redress of Nazi wrongs. The Claims Conference, in its five-year summary, reported the distribution of almost $50 million on relief and rehabilitation, cultural and educational reconstruction, commemoration and documentation projects, and legal aid programs. Each year these funds aided about 100,000 individuals in 35 countries and about 200 communities. To a considerable extent, Claims Conference grants to many European war-devastated communities have made continued Jewish communal existence possible.

In the United States the Jewish community provided funds and services through a whole complex of agencies—national and local—set up to meet health, welfare, recreational, religious, cultural, community relations, and educational needs, as well as to assist needy Jews overseas. Federated philanthropic agencies, that is, the central Jewish welfare funds affiliated with the Council of Jewish Federations and Welfare Funds (CJFWF), raised approximately $130 million in 1959, compared with $124 in 1958, or a rise of 6.6%. In addition, approximately $50 million was raised independently in 1958.

The United Jewish Appeal (UJA) and the American Joint Distribution Committee (JDC) were the principal agencies conducting programs of fund-raising and relief on behalf of Jews in Israel and other countries. The major coordinating agencies furnishing national services were: National Jewish Welfare Board (service to Jewish community centers and Jewish military personnel), American Association for Jewish Education (service to local bureaus of Jewish education), the Synagogue Council of America (representative body of synagogue and rabbinical organizations), National Community Relations Advisory Council (service to local as well as national community relations groups), and the Council of Jewish Federations and Welfare Funds. Among the major membership agencies offering specialized programs in the Jewish community were: American Jewish Committee (intergroup and community relations), B'nai B'rith (largest Jewish fraternal order), Hadassah (women's Zionist organization), National Council of Jewish Women (membership and civic activity), and the National Jewish Hospital and City of Hope (health). (For discussion of other agencies, see RELIGION—*Judaism.*)

In 1958–59 the CJFWF completed a study of national cultural programs. Its survey report, released in November, recommended the establishment of a Jewish Cultural Foundation "to serve as a focus of the national cultural effort," and the establishment of a Council of Jewish Cultural Agencies related to the foundation.

MORRIS FINE,
Editor, "American Jewish Year Book."

JOHN XXIII (ANGELO GIUSEPPE RONCALLI), pope of the Roman Catholic Church: b. Sotto il Monte, near Bergamo, Italy, Nov. 25, 1881. Elected the 262d supreme pontiff of the Roman Catholic Church on Oct. 28, 1958, this son of humble farm workers spent much of his life in the church as a diplomat. At various times after 1925 he represented the Vatican in Bulgaria, Turkey, and Greece; in 1944 he was sent as apostolic nuncio to France; and on Jan. 12, 1953, he was elevated to the College of Cardinals.

On Jan. 25, 1959, Pope John announced that he would call an ecumenical council, the first since 1869–70, to discuss the return of the "separated" churches to Rome. He seemed to be primarily concerned with the reunification of the Eastern Orthodox branches of Christianity with Rome.

Some observers interpreted Pope John's appointment of four new Polish bishops on Jan. 28, 1959, as a sign that the Vatican accepted Cardinal Wyszyński's relationship with the Polish Communist government as a satisfactory *modus vivendi.* He remained uncompromising, however, in his general attitude toward communism. In a statement of April 13, he forbade Roman Catholics to vote for candidates or parties that supported or gave comfort to the Communists.

He made two important pronouncements on public morals in December 1959. On December 8 he called for laws to curb the freedom of the press to print stories (particularly, detailed accounts of crime) that in the Roman church's view tend to poison religious and moral life. On December 14 he reasserted his church's condemnation of artificial methods of birth control and denounced them as a means of solving the problem of population pressure on food supplies. To deal with the problem of hunger, he recommended a better distribution of the world's wealth.

Two saints were proclaimed on April 12: Carlo of Sezze, a 17th century Franciscan mystic, and Joaquina de Vedruna de Mas, the 19th century founder of the Institute of the Carmelite Sisters of Charity. Pope John created three cardinals in March and eight more in December. The latter group included Aloisius Joseph Cardinal Muench, bishop of Fargo, N. Dak., and Albert Gregory Cardinal Meyer, archbishop of Chicago, both installed as cardinals on December 17.

(See also RELIGION—*Catholicism;* ROMAN CATHOLIC CHURCH.)

JOHNSON, Edward (80), Canadian-American opera manager and singer: b. Guelph, Ont., Aug. 22, 1878; d. Guelph, April 20, 1959. Following a highly successful career as an operatic tenor, he served from 1935 to 1950 as general director of New York City's Metropolitan Opera Association.

In 1900, after deciding on a career as a professional singer, Johnson went to New York City. He appeared as tenor soloist in church choirs, concerts, and light opera, the latter including the romantic lead in Oskar Straus' *A Waltz Dream*, which opened on Broadway in January 1908 and ran for 111 performances. In 1909 he went to Italy to study voice, notably with Vincenzo Lombardi, former teacher of Enrico Caruso. At Padua three years later, under the adopted name Eduardo di Giovanni, he made his operatic debut in Giordano's *Andrea Chénier*. He soon became one of Italy's most popular tenors, and was chosen in 1914 to sing the title role in the first Italian-language production of Wagner's *Parsifal*, at La Scala, Milan. He remained with La Scala for five years.

In 1919 Johnson returned to the United States, reassumed his real name, and joined the Chicago Opera Company. His Chicago debut was as Avito in Montemezzi's *L'amore dei tre re*, with Mary Garden as Fiora. He first appeared with the Metropolitan, again as Avito, on Nov. 16, 1922, and later as Canio, Pelléas, Faust, Romeo, and Peter Ibbetson.

In 1935 Johnson was named to succeed Herbert Witherspoon as manager at the Metropolitan. Giving up his singing career, he continued in that post until his retirement in 1950, when he was succeeded by Rudolf Bing.

During Johnson's tenure, an unprecedented number of leading American-born singers were added to the Metropolitan's roster of stars. These included (with dates of debuts) Risë Stevens (1938), Helen Traubel (1939), Leonard Warren (1939), Eleanor Steber (1940), Jan Peerce (1941), and Richard Tucker (1945).

Johnson, who became a United States citizen in 1922, was married to Beatrice da Verga d'Arneiro, a Portuguese noblewoman, in 1909. She died in 1919. Their only child, Fiorenza, became the wife of George A. Drew, premier of Ontario (1943–48) and Canadian high commissioner to the United Kingdom at the time of Johnson's death.

JOHNSON, Lyndon Baines, U.S. senator: b. near Johnson City, Texas, Aug. 27, 1908. Elected on Jan. 7, 1959, as Senate Democratic majority leader in the third consecutive Congress, Johnson at the end of the year appeared to be a leading contender for his party's presidential nomination.

After graduating from Southwest Texas State Teachers College in 1930, Johnson taught for two years in Houston's public schools, then went to Washington, D.C., as a member of the staff of Texas Congressman Richard Kleberg. He returned to Texas in 1935 to serve as state director of the National Youth Administration, resigned in 1937 to run for Congress in a special election, and won. Except for duty with the U.S. Navy in 1941–42, Johnson served continuously in the House of Representatives until 1948, when he won his seat in the Senate. He was elected majority whip in 1951 and in 1953 became, as minority leader, the youngest Senate party leader in history.

Johnson's role in 1959 was again that of moderator and strategist, guiding opposing elements within his own party in what he called "constructive opposition" and achieving with Republicans a working compromise aimed at "realistic" legislative goals. Johnson's leadership derives from the classic definition of politics as "the art of the possible," and even unfriendly critics grant his uncanny sense of what can be done and acknowledge his masterly grasp of the techniques of getting it done.

In 1959, however, a growing criticism arose from party liberals disappointed in the legislative record achieved (see UNITED STATES—*The United States in 1959*). In the opening weeks of the session, Johnson skillfully forestalled efforts to impose a rigid curb on filibustering (winning approval instead of his own milder modification of the Senate rule) and to enact more vigorous civil rights legislation. Critics in and out of Congress charged him with lack of sufficient boldness for a leader whose party controlled Congress by the largest margin since 1936 and held that his cautiousness had allowed the administration to take the initiative in exploiting its demands for economy at the expense of needed social legislation throughout the year.

House Speaker Sam Rayburn, the senator's old friend and fellow Texan, opened a "Johnson for President" drive in Dallas on October 17. At the end of the year Johnson insisted, as he had earlier, that he was not a candidate for the presidential nomination. Nevertheless he was booked to make more than 60 personal appearances in the last two months of 1959 and in December toured the Midwest delivering hard-hitting speeches to traditionally Republican audiences.

JORDAN. An Arab monarchy in southwestern Asia, the Hashemite Kingdom of Jordan is bounded on the north by the Syrian Region of the United Arab Republic (UAR), on the northeast by Iraq, on the east and south by Saudi Arabia and the Gulf of 'Aqaba, and on the west by Israel. Its area is about 37,300 square miles, of which approximately 85% is desert. The latest official estimate (mid-1958) gives a population of 1,607,000, including 517,888 Palestinian refugees, registered as of June 1957. The vast majority of the people is composed of Moslem Arabs of the Sunnite sect. There are also about 180,000 Christian Arabs; 10,000 Moslem Circassians, Chechens, and Turkomans; and a few Iranian Bahais. Amman, the capital, has a population of 202,000 (1954 est.). Jerusalem (Jordanian sector, 75,000), Nablus (45,000), Hebron, and Jericho are important cities in western Jordan. 'Aqaba, on the Gulf of 'Aqaba, an arm of the Red Sea, is the country's only port.

Government.—King Hussein I (b. Nov. 14, 1935; acceded to the throne under a regency, Aug. 11, 1952; enthroned, May 2, 1953) reigns under a constitution of the British type. The king delegates legislative authority to a cabinet responsible to the lower chamber of the legislative body. The legislature is composed of a Council of Representatives (lower chamber) of 40 members (20 from East Jordan and 20 from West Jordan), who are elected for maximum terms of four years by direct vote of adult, male citizens, and a Council of Notables (upper chamber) of 20 members, who are appointed by the king for eight-year terms. The last general elections were held on Oct. 21, 1956. Jordan is a member of the Arab League and the United Nations.

Defense.—The Jordanian Army is organized into four infantry brigade groups and one armored brigade. There is also an air force, consisting of two fighter squadrons, a training wing, and a communications flight. The small naval arm is composed of three motor-torpedo boats on the Dead Sea. The regular military establishment numbers about 20,000 men; the national guard, 30,000. The United States provides arms aid under the Mutual Security Program.

Education.—Jordan maintains a system of free public education, but school facilities are inadequate. In 1957, government schools numbered 1,206, employed 7,432 teachers, and enrolled 252,990 students. Education for refugee children is provided by the United Nations Relief and Works Agency for Palestine Refugees. There are also private and religious schools.

Finance.—The unit of currency is the Jordan dinar (JD). Jordan belongs to the sterling area, and the dinar is valued at £1, or U.S.$2.80. The monetary supply is con-

trolled by a Currency Board sitting in London; however, in 1959 the Jordanian Parliament approved the establishment of a state bank which in the future will assume the functions of issuing and managing the currency. Money in circulation on June 30, 1959, amounted to JD25.22 million, of which JD16.06 million was in currency, with the remainder in demand deposits. Eight commercial banks operate in Jordan.

Government expenditures habitually exceed local revenues. Until 1956–57, annual grants-in-aid and loans from the British Treasury permitted nearly balanced budgets. Since then, United States economic aid and monetary grants to Jordan have increased greatly. Foreign aid (principally American and British) amounted to JD22.8 million in 1958. Budget estimates for 1959–60 called for expenditures of JD38.2 million, with JD19 million for defense, JD4.3 million for the economic programs of the Development Board, JD3.9 million for education, and JD2.3 million for public security. Anticipated revenue (including foreign aid) was set at JD30.8 million, with only JD9 million derived from domestic sources. It was hoped that the deficit of JD7.4 million would be covered by increased foreign aid. During a visit to the United States in March 1959, King Hussein reportedly sought a commitment for an annual grant of $50 million to support the Jordanian budget. American allocations to Jordan in 1958–59 had amounted to about $43 million.

Transportation and Communications.—Jordan has approximately 2,500 miles of roads, of which some 1,500 are hard surfaced. The principal routes link Amman with the major cities of the country, and with the road networks of Iraq and the Syrian Region of the UAR. On June 14, 1959, it was announced that engineering surveys on a new desert highway from Amman to 'Aqaba were about to be undertaken.

The section of the old Hejaz Railway controlled by the Jordanian government is in operation from the Jordan-UAR frontier in the north to a railhead at Naqb Ashtar between Ma'an and 'Aqaba. An agreement in principle was reached during 1959 between an American firm and the director of the Hejaz Railway (representing the UAR, Jordan, and Saudi Arabia) for the long-deferred restoration of the entire Damascus-Medina line at a cost of $21 million; however, many details remained to be settled.

International airports are located at Amman and Jerusalem. The port facilities at 'Aqaba, are being expanded to reduce Jordan's dependence on the port of Beirut in Lebanon, use of which requires the transit of goods across the Syrian Region of the UAR. The oil pipeline from Dhahran in Saudi Arabia to Saida in Lebanon, operated by the Trans-Arabian Pipeline Company, a subsidiary of the Arabian-American Oil Company, crosses eastern Jordan.

The government maintains radio broadcasting services at Ramallah and Amman and operates the telephone system in conjunction with the post office. There were 15,125 telephones as of Jan. 1, 1958.

Production.—About 85% of the workers are engaged in agricultural or pastoral pursuits. The chief crops are wheat (220,000 metric tons in 1957), barley (81,000 tons), corn, millet, sesame, beans, tobacco, animal fodder, grapes, olives, figs, dates, and nuts. Goats (788,000 head in 1956), sheep (723,000 head), cattle, and donkeys are significant in the economy. A severe drought in 1958 and early 1959 damaged crop prospects for 1959 and resulted in serious losses (possibly as high as 50%) in the animal herds. Phosphate rock (294,000 metric tons in 1958), manganese, kaolin, marble, and gypsum are mined.

Statistics compiled by the Jordanian government showed that in 1958 there were 1,038 industrial establishments, employing 13,543 workers. Manufactures include cement (114,120 metric tons in 1958), cigarettes, matches, soap, olive oil, wine and spirits, canned vegetables, textiles, shoes, and furniture.

Development Program.—Since 1952 the government's economic development program has been under the supervision of the Jordan Development Board, although the board's work has been mainly limited to the fields of transportation and agriculture. Even in these areas, projects have also been undertaken by both the United States Operations Mission and the United Nations Relief and Rehabilitation Agency, as well as by various other departments of the Jordanian government, operating on a largely uncoordinated basis. The encouragement of industry has taken place chiefly through the investment of public funds in private ventures. During 1959 the Development Board established a special committee to study and coordinate the entire development program.

On Feb. 10, 1959, the United States announced a loan of $1.2 million from its Development Loan Fund to the Transjordan Electric Power Company for the renovation and expansion of the Amman power system. In April the fund granted a $2.5 million loan to the Jordan Phosphate Company to finance the expansion of its productive capacity from the current level to an annual production of 500,000 tons by 1963. During 1959 the East Ghor Canal Authority was established to administer the Yarmuk-Jordan valley irrigation project, begun in 1958 with American funds. To complete the project, additional credits of $13.5 million will be needed.

Foreign Trade.—In 1958, Jordan's chronic unfavorable balance of trade was the largest in the country's history. Exports were valued at JD3.53 million (JD5.5 million in 1957); imports amounted to JD34.03 million (JD30.5 million in 1957). The marked decline in exports resulted chiefly from the UAR's closing of Jordan's northern frontier from July to October 1958 during the Lebanese and Jordanian political crises, and from the breach in relations with Iraq following the overthrow of the Iraqi monarchy.

Principal exports in 1958 were phosphates (JD900,000), olive oil (JD60,000), fresh fruits, raw wool, skins and hides, and live animals. Major imports included petroleum products, iron and steel, cement, manufactured goods, sugar, tea, coffee, and cereals. Principal purchasers of Jordanian exports (despite the disruption of trade in the second part of the year) were the Syrian Region of the UAR, Iraq, and Lebanon. The major suppliers of Jordanian imports were Great Britain, West Germany, the United States, the Syrian Region of the UAR, Iraq, and Japan.

Jordan's trade difficulties continued into 1959, when the northern frontier was again closed by the UAR in June and July. As a result, Jordan endeavored to increase the use of the port of 'Aqaba for the export and import of goods in an effort to avoid UAR embargoes. To this end, the government designated 'Aqaba as the sole port of entry for goods of American origin. The same provision was applied to imports from most European countries.

Principal Events, 1959.—In contrast with the preceding year, 1959 was a period of relative calm in the history of Jordan. Between March 8 and May 2, King Hussein was on a world tour which took him to Formosa, the United States, Great Britain, and Iran; and later he spent the period from November 10 to December 28 on vacation in western Europe. On May 5, Prime Minister Samir al-Rifai (who had held office since May 15, 1958) resigned for reasons of health, and was replaced on May 6 by Hazza Majali, the minister of the royal court. Majali's ten-member cabinet reflected little change in the generally pro-Western orientation of the Jordanian government. On May 10 the new prime minister announced in a policy statement that Jordan would participate in no military alliances except the collective security pact of the Arab League. On June 4 he informed Parliament that Jordan's foreign policy favored neither East nor West, but that the government would vigorously fight communism at home.

Relations with the UAR remained strained despite the fact that King Hussein in an interview on Jan. 25, 1959, indicated his willingness to end the estrangement. A number of clashes took place along the Syrian frontier, and on April 23 the UAR charged that Jordanian armored cars had attacked a village two miles inside Syria. During June and

July the frontier was closed by the UAR authorities, and all rail and road traffic to and from Jordan was embargoed.

In the second half of the year, however, relations between Jordan and the UAR grew better, as the UAR's President Nasser sought to improve his position relative to the other Arab states in the face of his continuing dispute with Premier Kassem of Iraq. Efforts by the secretary-general of the Arab League to mediate between Amman and Cairo proved successful, and on July 26 the Syrian frontier was reopened. On August 16 restoration of Jordanian-UAR diplomatic relations (broken in July 1958) was announced.

That political unrest still existed in Jordan was revealed on May 21, when Maj. Gen. Sadiq Sharah, the chief of staff of the Jordanian armed forces, was arrested for plotting against the monarchy. On August 12, 18 persons, including General Sharah, were placed on trial before a military court at Amman and accused of participation in a conspiracy to establish a republic during the absence of the king from the country in the spring. King Hussein, the prosecution stated, had learned of the plot and forced General Sharah to accompany him abroad, thereby foiling the conspiracy. On August 20, General Sharah confessed his part in the abortive scheme, and on October 17 was sentenced to death.

Conditions along the Jordanian-Israeli frontier were generally quiet during 1959. However, on January 26 an Israeli soldier was killed in Jerusalem by Jordanian gunfire, and on April 14 an Israeli night watchman was murdered, apparently by marauders from Jordan.

The attitude of the Jordanian government toward the Palestine problem showed no change during the year. On May 17, Premier Majali told a delegation that his government would do everything possible to restore usurped Arab rights in Palestine. On September 23 the Jordanian delegate to the U.N. General Assembly, speaking in the general debate on the Suez Canal question, backed

WIDE WORLD

Arriving in Taiwan on March 9 for a state visit, King Hussein (left) of Jordan is met by President Chiang Kai-shek.

the UAR's refusal to allow use of the canal by Israel. In his opening address to Jordan's Parliament on October 1, King Hussein said, "The Palestine question is our prime question, and our entire efforts will be mobilized to regain our rights in Palestine." On November 15 the prime minister expressed concern over reported Israeli plans to take water from the Jordan River in the vicinity of the Sea of Galilee for irrigation projects in southern Israel. On December 25 the Jordanian government announced that it had proposed to Lebanon and the UAR as a countermeasure the diversion of the sources of the Jordan into the Arab-controlled Yarmuk River.

(See also ARAB LEAGUE; MIDDLE EAST.)

PAUL L. HANNA,
Professor of Social Sciences,
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JOURNALISM. See NEWSPAPERS; MAGAZINES.

JUDAISM. See JEWISH AFFAIRS; RELIGION—*Judaism.*

JUVENILE DELINQUENCY. See Index entry.

KANSAS. Central state, United States; admitted to the Union, Jan. 29, 1861. The "Sunflower State" ranks 14th in area and 29th in population among the 50 states.

Area and Population.—Area: 82,276 square miles (land, 82,108; inland water, 168), divided into 105 counties. Population: (1950) 1,905,299; (est., July 1, 1958) 2,114,000. Urban places with populations above 10,000 (as estimated by the State Board of Agriculture for March 1, 1958) are:

Arkansas City	14,581	Kansas City	131,245
Atchison	13,007	Lawrence	23,889
Chanute	10,499	Leavenworth	22,812
Coffeyville	18,291	Liberal	11,945
Dodge City	12,304	Manhattan	19,223
El Dorado	12,580	Newton	14,434
Emporia	15,283	Ottawa	10,784
Fort Scott	10,203	Parsons	13,362
Garden City	10,623	Pittsburg	19,418
Great Bend	17,184	Prairie Village	16,828
Hays	10,864	Salina	36,209
Hutchinson	36,863	Topeka (*capital*)	110,648
Independence	11,622	Wichita	250,099
Junction City	18,842	Winfield	10,923

Executive.—Chief state officers in 1959:
Governor: George Docking (Democrat)
Lieutenant Governor: Joseph W. Henkle, Sr.
Secretary of State: Paul R. Shanahan
Treasurer: George Hart
Attorney General: John Anderson, Jr.
Auditor: George Robb
Supt. of Public Instruction: Adel F. Throckmorton

Constitution and Judiciary.—The present constitution went into effect in 1861. The Supreme Court comprises seven justices; chief justice in 1959 was Jay S. Parker.

Legislature.—The Kansas Legislature comprises a 40-member Senate (in 1959, 32 Republicans, 8 Democrats), and a 125-member House of Representatives (69 Republicans, 56 Democrats), which meet annually commencing the second Tuesday in January. The 1959 legislature reapportioned seats in the House of Representatives, with the result that the two largest counties gain 2 seats each, 3 other counties gain 1 seat each, and 7 counties each lose 1 seat. (See also below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state operating revenue of $351,859,300.04 comprised $216,588,287.60 from state tax sources, $97,133,198.99 from the federal government, and $38,137,813.45 from other sources. Tax revenue consisted of $72,022,008.69 from a 2½% general sales tax, $22,054,146.43 from individual income taxes, $7,098,733.60 from corporate income taxes, $48,448,027.78 from motor fuel taxes, $4,314,243.30 from licensing, and $62,651,127.80 from other sources. Expenditures

of $348,574,802.04 comprised $91,867,843.50 for education, $85,049,283.47 for health, welfare, and safety, $121,737,728.19 for highways, and $49,919,946.88 for all other purposes. There was no state long-term indebtedness.

Banking.—As of June 10, 1959, the state's 169 national banks had $1,275,942,000 in assets, $920,633,000 in demand deposits, and $225,856,000 in time deposits. The 426 state banks had assets of $1,104,391,185.16, demand deposits of $553,416,714.61, and time deposits of $240,934,980.10.

Education.—School attendance is compulsory between the ages of 7 and 15, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $127,738,833 ($297.08 per pupil in grades 1–8; $477.77 per pupil in grades 9–12), comprising $94,782,214 from local school districts, $28,868,976 from the state, and $4,087,643 from the federal government. Outlays for construction and improvements amounted to $36,163,571, financed partially from the sale of bonds. Teachers' salaries (1958–59) averaged $4,124 (high school, $4,485; junior high, $4,778; elementary, $3,844).

KANSAS SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–8)	2,360	14,281	312,067
Public secondary (9–12)	580	6,603	108,590
Private and parochial elementary and secondary	248	1,552	43,494
Junior colleges	21	487	6,095
Teachers colleges	3	522	8,171
Colleges and universities	18	2,315	29,909

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $44,023,393, including $27,734,464 for the aged, $8,874,590 for dependent children, and $4,103,122 for the permanently and totally disabled. A monthly average of 66,835 persons received public assistance. State expenditures for mental health activities totaled $13,173,878; for correctional and penal programs, $3,823,393.

Labor Force.—Wage and salaried workers employed in nonagricultural establishments on June 15, 1959, numbered 552,100, slightly above the 541,600 total for the previous June 15, and also above the 540,200 average for 1958. The largest number was employed in wholesale and retail trade (124,200), followed by manufacturing (118,800) and government (105,200). Unemployment in 1958 was up to an average of 36,000, compared with 25,600 in 1957. The state paid $14,173,045 in unemployment compensation during the year ending June 30, 1959.

Manufacturing.—There were 3,540 manufacturing plants in the state in 1958. Value added by manufacture totaled $1,224,998,000 in 1957, and outlays for new plant and equipment amounted to $89,229,000. During the first 11 months of 1958, 94 new industrial plants were started, principally for chemicals, mobile homes, vending machines, helicopters, and restaurant equipment. Expenditures for plant expansions alone in 1958 totaled $67.8 million, with the largest single investment ($53 million) being made by the Boeing Airplane Company at Wichita.

Production workers, who in 1957 numbered 129,689 and earned $612,359,000 in wages, averaged $93.47 in August 1959 for an average workweek of 40.6 hours.

President Eisenhower turns over first spadeful of earth in ground-breaking ceremonies, October 13, at the Eisenhower Library, Abilene, Kans. The library will be part of a center which includes a museum and the president's boyhood home.

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MAJOR KANSAS MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Transportation equipment	53,688	$282,248	$494,515
Food and kindred products	20,797	92,747	184,082
Chemicals and products	7,420	36,053	109,213
Printing and publishing	10,607	40,864	92,258
Petroleum and coal products	4,477	26,068	82,742
Fabricated metal products	6,004	26,058	48,183
Pulp, paper, and products	1,986	8,851	18,948

* For definition, see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Kansas ranked ninth among the states in the value of its diverse mineral output, with 3.02% of the national total. It was third in output of helium (which was produced for the United States government at Otis); fifth in marketed natural gas; and seventh in salt output.

KANSAS MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)[1]	9,600,000	$ 30,047,000
Clays	875,000	1,145,000
Coal	823,000	3,711,000
Helium (cu. ft.)	27,888,000	432,000
Lead	1,299	304,000
Natural gas (1,000 cu. ft.)[2]	561,816,000	64,047,000
Natural gasoline (bbl.)	2,628,146	6,229,000
Petroleum (bbl.)[2]	118,188,000	354,564,000
Petroleum gases (bbl.)	2,742,262	5,193,000
Salt, common	1,073,000	11,348,000
Sand and gravel	10,317,000	6,769,000
Stone[3]	12,424,000	15,036,000
Zinc	4,421	902,000
Other minerals	...	1,627,000
Total	...	$498,526,000[4]

[1] Excluding natural cement, value for which is included in "Other minerals." [2] Preliminary. [3] Excludes certain stone, value for which is included in "Other minerals." [4] Excludes duplication of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $848,228,000 from $894,393,000 reported for the corresponding period of 1958. For the full year 1958, income comprised $563,662,000 from livestock and livestock products, $619,936,000 from crops, and $34,965,000 in federal payments. Principal income sources in 1958 were wheat, $426,288,000; cattle, $380,504,000; and sorghum grain, $127,094,000.

There were 117,000 farms in the state in 1958. Total acreage (1954) of 40,024,000 included 21,-

KANSAS CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	259	180	230
Barley (1,000 bu.)	6,747	18,009	21,777
Corn (1,000 bu.)	55,554	73,122	81,630
Hay (1,000 tons)	3,234	4,587	3,557
Oats (1,000 bu.)	23,653	13,416	15,663
Potatoes (1,000 cwt.)	247*	353	230
Sorghum grain (1,000 bu.)	44,988	128,964	137,082
Soybeans (1,000 bu.)	4,094	9,262	9,114
Wheat (1,000 bu.)	169,289	296,548	209,700

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

440,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 4,476,000 cattle, 1,067,000 hogs, 503,000 sheep, and 10,329,000 chickens (excluding commercial broilers). There were 137,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $85,995,736, and 2,183 miles of new construction were completed.

Highways and roads on June 30, 1959, totaled 124,481 miles (69,407 surfaced). Registered *motor vehicles* numbered 1,112,298 on Jan. 1, 1958, including 829,381 passenger cars. There were (1958) 13 *railroads* with 8,575.83 miles of main and branch lines and (1959) 8 regularly scheduled *airlines* and 199 *airports and airfields* (107 commercial and municipal, 8 military, and 84 private).

Communications media (1959) included 46 AM and 2 FM *radio stations* (3 radio stations are devoted to education); 11 VHF *television stations*, including 1 educational outlet; 51 daily *newspapers* (circulation, 700,000) and 291 other newspapers (390,000); and (January 1) 198,100 business and 631,900 residential *telephones*.

Principal Events, 1959.—Another good crop-growing year helped produce an estimated gross farm income of $1.175 billion in 1959, the fourth highest in the state's history. Production of wheat, the number one crop, approximated 210 million bushels, the seventh largest in Kansas history. The corn crop, estimated at almost 82 million bushels, was the largest since 1950; barley, the second largest in Kansas history; soybeans, second largest; and sorghums (137 million bushels), the largest.

For the first time in years, Kansas expected to finish a fiscal year (1959–60) with a surplus, an estimated $15 million. This prospective favorable balance was mostly achieved by the upward adjustment of the income tax and the ½% increase in the sales tax (to 2½%) accomplished by the 1958 legislature. Because of the expected favorable balance, no new general taxes were authorized by the 1959 legislature.

A stricter drivers' licensing law was passed, and another measure provided for more severe penalties for convictions for drunken driving. An effort was also made to bring the Kansas vehicle code into greater conformity with the national code.

Public schools fared well in the 1959 session, elementary school aid being $17.4 million and high school aid, $7.9 million. "Emergency" aid of $2.6 million, which allows $6 per pupil to all elementary and high schools, was also granted.

Workmen's compensation benefits were increased, shoplifting penalties were strengthened, a substantial reapportionment of the House of Representatives was authorized (see above *Legislature*), and a start was made on a state program for educational television. A controversial public employees' retirement act was vetoed by the governor.

Provision was made to submit two constitutional amendments to the voters in 1960. One would grant powers of city home-rule, allowing the assignment of cities into as many as four classes for purposes of limiting or prohibiting their taxing authority. The other would authorize the legislature to set up procedures insuring the continuity of state and local governmental operations in periods of emergency resulting from enemy attack.

On February 27 the executive board of the Agricultural Hall of Fame selected a building site near Kansas City, Kans., on which to erect the proposed national memorial to agriculture and related industries. Funds were being raised for construction expected to commence in 1960.

Dwight D. Eisenhower returned to Kansas on October 13 for ground-breaking ceremonies for the new Eisenhower Presidential Library to be erected south of the Eisenhower home and museum at Abilene.

Principal Events by: NYLE H. MILLER, *Secretary, Kansas Historical Society.*

KASHMIR (JAMMU AND KASHMIR). Although included in the Indian constitution, this Himalayan state (area, 92,780 square miles; pop., 4,410,000 in 1951), famous for the beauty of its central valley, has been the subject of dispute for 12 years between India and Pakistan. A cease-fire line under observation of the United Nations divides the territory, part of which (in Ladakh Province) also is claimed by Communist China (see below, *Principal Events, 1959*).

Jammu and Kashmir was incorporated with the rest of India at the reorganization of states in 1956, the Hindu ruler, Maharajah Hari Singh, having ceded the territory to that government in 1947. Srinagar (pop., 207,787 at the 1941 census) is the Indian capital. Azad (Free) Kashmir comprises northern and western areas (aggregating between a third and a half of the state), which contain approximately a quarter of Kashmir's predominantly Moslem population. Muzaffarabad, in Azad, is the seat of government.

India-Controlled Kashmir.—Jammu and Kashmir has 6 seats in the Indian House of the People, and there are 100 seats in the state legislature under the new constitution. Revised budget estimates for 1958–59 showed revenue receipts of Rs.111,800,000 (1 rupee = U.S. $0.21); revenue expenditure, Rs.94,200,000; and capital expenditure, Rs.56,400,000. Revenue account expenditure under the 1959–60 budget was put at Rs.81,600,000, which included civil works and road transport, Rs.23,200,000; education, Rs.19,100,000; irrigation, Rs.16,418,000; and power development, Rs.13,571,000. A surplus of Rs.36,100,000 was indicated, estimating receipts from internal sources at Rs.11,770,000. The state's annual share (for 5 years begun in 1957) of Indian taxation and central grants is Rs.42,500,000.

Educational facilities in 1957 aggregated 743 schools (including 590 primary schools). In 1958, plans were announced for the opening of 340 new basic schools and 2 new postmatriculation training schools. In addition to the University of Jammu and Kashmir (opened in 1948) there are 12 arts and science colleges, 3 professional, and 9 special educational institutions. A state medical college was to be inaugurated in 1959; 10 new health centers are planned for construction in Jammu in 1959–60.

Besides agriculture, the chief industry is the production of raw silk. Forestry is also important. Five-year plan projects in progress in 1958 included the establishment of new factories to produce cement, bricks and tiles, and veneer and ceramics. A survey was completed in 1959 for a major hydroelectric project in Jammu.

Kashmir is linked with the railway system of India by the newly constructed Jammu-Pathankot road. The widened western tube of the Banihal Tunnel was opened to all-weather traffic on Dec. 21, 1958, reducing the distance between Jammu and Kashmir by 18 miles. The eastern tube was to be ready for light traffic by the end of 1959. Under the 1959–60 budget, Rs.8 million was allocated to the construction of 146 miles of new roads; existing road mileage was 278.

Azad (Free) Kashmir.—The government is headed by a president (K. H. Kurshid, who took office on May 1, 1959). While the United Nations holds Pakistan responsible for supervising one side of the 1948 cease-fire line, the territory of Azad Kashmir has not been legally incorporated into that of Pakistan. The latter government, however, supports many development, health, and other projects initiated by the native administration and makes yearly grants toward the setting up of new schools. Higher education is provided by degree-granting institutions at Mirpur and Muzaffarabad, and by two other colleges. In addition, seats are reserved for Azad Kashmir students in Pakistan institutions teaching engineering, agriculture, administration, and other subjects; Rs.69,580 were spent on technical scholarships in 1958–59, and 53 stipendiaries completed their medical studies.

Agriculture and forestry are paramount in the economy. Cooperative societies organized to furnish agricultural credit through branches of the National Bank of Pakistan numbered 500, with 8,000 members, in 1959.

There are 950 miles of motorable roads; a project to increase road mileage by 30% was begun in 1959.

Principal Events, 1959.—Kashmir came prominently into the news on August 28 when Prime Minister Nehru accused the Chinese Communists

of aggression against India's Northeast Frontier Agency, and at the same time revealed that Chinese troops had established a camp in the Spanggur area of Kashmir's Ladakh district in 1957, apparently without India's knowledge. He announced that the entire northeast frontier had been placed under military control, directed by Lt. Gen. K. S. Thimayya, chief of staff of the Indian Army; previously the Kashmir border had been guarded only by a police force. Detailing Chinese border incursions, Nehru said that China had completed nearly a year earlier a motor road linking Gartok in western Tibet with Yarkand in Chinese Turkestan and cutting through a section of Ladakh. Indian countermeasures included the recruiting of a second battalion of Ladakhis in the state militia, and a speed-up in construction of the state's first motor road to Leh, capital of Ladakh, designed to strengthen strategic communications in the area.

The first major clash between Chinese and Indian forces in Ladakh came on October 21, when nine members of an Indian police patrol were killed and seven captured. Three Indians were taken prisoner the day before. According to New Delhi, the fighting took place 40 miles within Indian territory. In November, Chinese troops were reported to be entrenching themselves for the winter in sections of Ladakh.

As India and Pakistan moved toward accord on lesser issues, and in view of the Chinese border pressures, some hope was expressed late in 1959 that an agreement might be reached on the thorny Kashmir dispute. There were indications that Pakistan might relax its position on the dispute, and President Mohammed Ayub Khan, on October 23, said that a settlement was essential. United Nations Secretary General Dag Hammarskjöld had visited the Kashmir cease-fire line on March 21.

In a trial begun on March 14, Sheik Mohammed Abdullah, former prime minister of Indian Kashmir, was found guilty of conspiracy to overthrow the Kashmir government. Seven subsequent appeals taken by the defendant, who favors a plebiscite to determine the political alignment of the state, proved unsuccessful.

(See also FAR EAST; INDIA.)

DONOVAN ROWSE,
Author and Publicist.

KENNEDY, John Fitzgerald, U.S. senator: b. Brookline, Mass., May 29, 1917. Elected United States senator in 1952 (re-elected, 1958), he emerged in 1959 as a leading contender for the 1960 Democratic presidential nomination.

He is the son of Joseph P. Kennedy, American financier and former United States ambassador to Great Britain (1937–40). After attending the London School of Economics (1935–36), he entered Harvard University, from which he was graduated in 1940. During World War II he served with the U.S. Navy.

Kennedy entered national politics in 1946, when he was elected as a Massachusetts representative to Congress; he was re-elected in 1948 and 1950. In 1952 he defeated the Republican incumbent, Henry Cabot Lodge, for a seat in the Senate, where he was quickly identified with the moderate liberal faction. In the upper house, Kennedy—youthful, handsome, personable—became one of his party's most popular congressional leaders, and in 1956 he was Sen. Estes Kefauver's leading but unsuccessful competitor for the Democratic vice-presidential nomination. In May 1957, Kennedy won the Pulitzer Prize in biography for his volume, *Profiles in Courage,* a study of acts of courage and integrity in the lives of several American political figures.

In 1959, Senator Kennedy was involved in a major congressional controversy over passage of a labor bill. In January he introduced a bill aimed in part at eliminating abuses and racketeering among unions, but certain officials, including the president, criticized the bill as too mild. Meanwhile, a stricter measure, the Landrum-Griffin bill, was introduced into the House. In September, a Senate-House conference committee, with Senator Kennedy as chairman, worked out a compromise measure that was approved by Congress and signed by the president (see also LABOR).

Kennedy was one of the first Democrats mentioned as a possible presidential candidate in 1960, and it was increasingly apparent in 1959 that he was strongly interested in the nomination, particularly in view of his frequent nationwide tours, which began in April with a trip to Wisconsin, a key state in the 1960 presidential primaries. Finally, on Jan. 2, 1960, at a news conference in Washington, Kennedy announced that he would enter his name in state primaries.

Senator Kennedy faced a potential obstacle in securing the nomination. Some political observers believed that his being a Roman Catholic would seriously weaken his candidacy, while others claimed that the importance of the religious issue in politics had diminished to the point where it would no longer be a major factor in determining the electorate's choice for president. In *Look* magazine (Feb. 3, 1959), Kennedy stated his personal views on the issue of Catholicism in public life, writing in part that "nothing takes precedence over [an officeholder's] oath to uphold the Constitution . . . including . . . strict separation of church and state."

KENTUCKY. South Central state, United States; admitted to the Union, June 1, 1792. The "Bluegrass State" ranks 37th in area and 21st in population among the 50 states.

Area and Population.—Area: 40,395 square miles (land, 39,864; inland water, 531), divided into 120 counties. Population: (1950) 2,944,806; (est., July 1, 1958) 3,087,000. Urban places with populations above 10,000 (as estimated by the State Department of Health for July 1, 1957) are:

Ashland	35,000	Louisville	408,300
Bowling Green	23,000	Madisonville	12,600
Covington	75,000	Middlesborough	13,300
Fort Thomas	17,200	Newport	35,500
Frankfort (*capital*)	20,800	Owensboro	43,200
Henderson	18,100	Paducah	35,800
Hopkinsville	16,900	Richmond	12,800
Lexington	66,900		

Executive.—Chief state officers in 1959:
Governor: Albert B. Chandler (Democrat)
Lieutenant Governor: Harry Lee Waterfield
Secretary of State: Mrs. Thelma L. Stovall
Treasurer: Henry H. Carter
Attorney General: Jo M. Ferguson
Auditor: Mary Louise Foust
Supt. of Public Instruction: Robert R. Martin

Constitution and Judiciary.—The present constitution went into effect in 1891. The highest court, the Court of Appeals, comprises seven justices; chief justice in 1959 was Morris C. Montgomery.

Legislature.—The Kentucky General Assembly comprises a 38-member Senate (in 1959, 29 Democrats, 8 Republicans, 1 vacancy) and a 100-member House of Representatives (72 Democrats, 25 Republicans, 3 vacancies), which meet in even-numbered years commencing the first Tuesday after the first Monday in January.

Finance.—In the 1958–59 fiscal year, state revenue of $340,560,249 comprised $208,485,828 from state tax sources, $112,362,526 from the federal government, and $19,711,895 from other sources. Tax revenue consisted of $29,973,359 from sales and gross receipts taxes, $45,908,755 from individual income taxes, $16,689,701 from corporate income taxes, $67,219,377 from motor fuel taxes, $27,182,145 from licensing, and $21,512,491 from other sources. Expenditures of $390,183,362.90 comprised $92,478,966.06 for education, $92,711,416.45 for health, welfare, and safety, $158,997,191.21 for highways, and $45,995,789.18 for other purposes. Long-term indebtedness on Sept. 30, 1959, amounted to $70 million.

Banking.—As of June 10, 1959, the state's 88 national banks had $909,777,000 in assets, $623,099,000 in demand deposits, and $191,704,000 in time deposits. The 272 state banks had assets of $1,402,074,237, demand deposits of $750,293,818, and time deposits of $444,341,580.

Education.—School attendance is compulsory between the ages of 7 and 16. The National Edu-

cation Association estimated operating expenditures for Kentucky's public elementary and secondary schools in the 1959–60 school year at $123,500,000 ($217 per pupil). Revenue comprised an estimated $73,500,000 from local school districts, $63,065,000 from the state, $7,260,000 from the federal government, and $12 million from other sources. Capital outlays and interest payments totaled $42 million. Teachers' salaries averaged $3,201 (high school, $3,349; elementary, $3,127).

KENTUCKY SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–8)	3,084	15,167	446,257
Public junior high (7–9)	41	883	20,533
Public senior high (9–12)	417	6,552	147,817
Private and parochial elementary and secondary	347	2,725	84,671
Colleges and universities	41	...	42,703

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $52,693,688, including $29,068,351 for the aged, $17,970,462 for dependent children, and $3,994,380 for the permanently and totally disabled. A monthly average of 143,029 persons received public assistance. State expenditures for mental health activities amounted to $928,472.60; for correctional and penal programs, $2,901,532.10.

Labor Force.—In July 1959, nonagricultural employment was 626,300, compared with 615,800 a year earlier and the 1958 average of 623,500. Of nonfarm employees in 1959, 26.9% were engaged in manufacturing, 21.3% in trade, and 17.2% in government. Unemployment in August 1959 was down by almost 50%, to 21,530, from the figure of 42,240 recorded for the previous August. The state paid $46,437,392 in unemployment compensation during 1958.

Manufacturing.—In 1958 there were 160,827 insured employees in manufacturing plants who

MAJOR KENTUCKY MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Food and kindred products	28,328	$116,593	$408,165
Nonelectrical machinery	25,112	120,847	317,802
Tobacco manufactures	10,403	39,646	233,163
Chemicals and products	10,331	57,511	202,295
Transportation equipment	6,373	34,272	124,948
Fabricated metal products	12,340	57,319	86,894
Primary metal industries	5,354	41,287	67,188
Printing and publishing	7,399	38,936	63,465
Apparel and related products	17,861	41,244	57,198
Stone, clay, glass products	5,325	21,083	42,696

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

received $734,282,684 in wages. Value added by manufacture (1957) totaled $1,838,617,000, and outlays for new plant and equipment amounted to $153,804,000. Production workers averaged $83.03 for an average workweek of 40.9 hours in August 1959.

KENTUCKY MINERAL PRODUCTION, 1958

(In short tons, except as noted)

Mineral	Quantity	Value
Clays	737,000	$ 2,957,000
Coal	66,312,000	289,385,000
Fluorspar	25,861	1,201,000
Natural gas (1,000 cu. ft.)[1]	72,248,000	17,412,000
Natural gas liquids (bbl.)	4,490,023	10,656,000
Petroleum (bbl.)[1]	17,509,000	51,652,000
Sand and gravel	4,685,000	4,835,000
Stone	12,597,000	17,360,000
Other minerals	...	7,437,000
Total	...	$402,121,000[2]

[1] Preliminary. [2] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Mining.—In 1958 Kentucky ranked 10th among the states in the value of its mineral output, with 2.43% of the national total. It was second in output of ball clay (24% of United States production) and third in bituminous coal mining. Employment in the state's mineral industries declined 12% between 1957 and 1958, partly owing to a severe recession in coal mining. Employment in all mineral operations with four or more employees averaged 37,355 in December 1958.

Agriculture.—Cash farm income for the first nine months of 1959 was up to $299,732,000 from $292,309,000 for the comparable period of 1958. For the full year 1958, income comprised $298,217,000 from livestock and livestock products, $249,627,000 from crops, and $22,661,000 from government payments. Principal income sources in 1958 were tobacco, $192,274,000; cattle, $108,701,000; and dairy products, $81,303,000.

KENTUCKY CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	308	395	260
Corn (1,000 bu.)	76,202	75,803	85,775
Hay (1,000 tons)	2,215	2,756	2,369
Popcorn (1,000 lb.)	20,817	57,710	30,060
Potatoes (1,000 cwt.)	1,056*	890	890
Soybeans (1,000 bu.)	2,286	3,798	3,768
Strawberries (1,000 lb.)	9,278*	10,560	4,080
Tobacco (1,000 lb.)	422,189	326,348	357,362
Wheat (1,000 bu.)	4,761	3,948	4,484

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 192,000 farms in the state in 1958. Total acreage (1954) of 18,034,000 included 4,541,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,834,000 cattle, 1,225,000 hogs, and 7,346,000 chickens (excluding commercial broilers). There were 236,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds spent for design and utility contracts, rights-of-way, and construction in the 1958–59 fiscal year totaled $72,695,000, and 299 miles of new construction were completed.

Highways and roads on June 1, 1959, totaled 67,323 miles (22,555 surfaced), including 3,087 miles of city streets. Registered *motor vehicles* numbered 1,049,800 on June 30, 1959, including 835,372 passenger cars. There were (1958) 22 *railroads* operating 5,941.35 miles; 7 regularly scheduled *airlines;* and 39 *airports and airfields* (20 commercial and municipal, 2 military, 13 private, and 4 other).

Communications media (1959) included 76 AM and 15 FM *radio stations;* 3 VHF and 3 UHF *television stations;* 25 daily *newspapers* (circulation, 1,113,179) and 144 other newspapers (339,352); and (January 1) 187,500 business and 555,900 residential *telephones.*

Principal Events, 1959—Kentucky experienced a highly exciting year in 1959. In politics the two factions of the Democratic Party were involved in a bitter struggle centering on the gubernatorial nomination in the May primary. Lt. Gov. Harry Lee Waterfield was favored by Gov. Albert B. ("Happy") Chandler, who could not succeed himself. Opposed to him was Bert Combs of Prestonsburg, a former judge of the Court of Appeals. Chandler had defeated Combs for the party's nomination in 1955, and there was considerable personal bitterness between the two in the 1959 race.

Judge Combs associated himself with Wilson Wyatt, former Louisville mayor and former federal housing administrator, who campaigned for the lieutenant governorship. They were supported by three former governors of the state and by a strong following of other former state officials. Waterfield was defeated after a bitter campaign, and the press considered this a serious defeat for the Chandler administration.

In the general campaign, Combs and Wyatt

were opposed by Republicans John Robsion, Jr., a former congressman from Louisville, and Pleaz Mobley, of Manchester, candidate for lieutenant governor. There were few pronounced issues between the Republicans and Democrats, although Robsion promised that he would not recommend any new taxes, while Judge Combs left this question open to future decision.

Within the Democratic Party feuding continued. Chandler attacked Combs, on one occasion warning that "the salvation of the state might well depend on his getting beat." The intraparty bitterness virtually ended any possibility that Chandler, who had announced himself a candidate for the 1960 Democratic presidential nomination, would be supported as a favorite-son candidate by the Kentucky delegation to the convention.

In the general election of November 3, Judge Combs and almost all of the Democratic candidates were elected. The Combs plurality of more than 179,000 votes was the largest ever given a Kentucky candidate. Democrats returned 30 out of 38 candidates for the Senate and 80 out of 100 House members. The new administration took office on December 8.

On the ballot were two proposals to amend the Kentucky Constitution. One of these, approved by the voters, proposed to pay bonuses to veterans of the Spanish-American War, the two World Wars, and the Korean War. Payments ranging from $300 to $500 will be made to veterans or their next of kin. Funds to pay this bonus will come from a bond issue of between $300 million and $500 million. A second submitted amendment, proposing that county sheriffs be made eligible to succeed themselves, was defeated.

Economically most of Kentucky showed a remarkable revival from the 1958 recession. This was not true, however, for eastern Kentucky, which continued to be hurt by the extended United Mine Workers' strike, starting March 9, in the eastern coalfields. Kentucky coal production suffered an 11% production loss, and the approximately 7,000 striking miners suffered seriously. Outbreaks of violence, including bombings and even murder, in the communities of Barbourville, Hazard, and Whitesburg, led Governor Chandler on April 24 to send National Guardsmen into the coal-mining area.

On the other hand, western Kentucky showed promise of major progress. The Tennessee Valley Authority (q.v.) announced in October its decision to locate a new $100 million steam plant at Paradise, Ky. It entered into a 17-year contract with the Peabody Coal Company for delivery of 65 million tons of coal.

Oil discoveries in various parts of the state, especially in Green County, created considerable excitement in 1959. Old oilfields were again being explored and the area of production enlarged. During the first eight months of 1959, Kentucky produced 18,771,545 barrels—more than in all of 1958.

Despite an early spring drought, 1959 was a good growing year for crops. Tobacco production, for example, was estimated at 357,362,000 pounds, compared with 326,348,000 in 1958.

The state Department of Conservation estimated the year's income from the tourist business at $500 million, a sum almost equal to the entire agricultural income of the state.

Principal Events by: THOMAS D. CLARK, *Professor of History, University of Kentucky; Author of "Frontier America" (1959).*

KENYA COLONY AND PROTECTORATE. See BRITISH EAST AFRICA.

KHRUSHCHEV, Nikita Sergeyevich, Soviet premier: b. Kalinovka, Ukraine, Russia, April 17, 1894. More in word than deed, Premier Khrushchev campaigned untiringly in 1959 in an effort to impress the peoples of the world with the Soviet Union's desire for peace. Throughout the year he reiterated this theme: his desire for an accommodation between the East and West, for an end to the armaments race, and for friendly economic competition between the two systems.

The highlight in Khrushchev's professed efforts to reach an understanding with the West came on his historic 13-day visit to the United States in September 1959. On his coast-to-coast tour, the Soviet leader demonstrated his alternate moods of truculence and affability; and his protestations of sincerity were interspersed with ominous allusions to Soviet military might. While in the United States, Khrushchev presented his plan for total disarmament to the U.N. General Assembly on September 18 (see DISARMAMENT) and met privately with President Eisenhower at Camp David on September 25–27. Although the year brought no consequential change in the Kremlin's basic position, many in the West were heartened by Khrushchev's seemingly conciliatory attitude.

Born in poverty, the son of a coal miner, Khrushchev joined the Communists in 1918 and started his political career as a minor party worker in the Ukraine. By 1935 he had advanced to leadership of the Moscow Oblast party organization, and from 1938 to 1949 (except for a brief period in 1947) he directed the party in the Ukraine. A lieutenant general in World War II, he returned as head of the Moscow organization in 1949, and on Sept. 13, 1953, was named first secretary of the Central Committee of the Communist Party, the most powerful political position in the USSR. He became a member of the Presidium (formerly the Political Bureau) of the Supreme Soviet in 1939. On March 27, 1958, he was elected premier (chairman of the Council of Ministers) by the Supreme Soviet.

Premier Khrushchev remained adamant in 1959 on the Berlin issue, but his talks with President Eisenhower in September reportedly resulted in the removal of any Soviet ultimatum against continued Allied occupation of the city. Khrushchev had warned earlier (February 18) that a Western attempt to force its way into Berlin would mean "the beginning of war," and he declared (February 24) that the Soviet Union would sign a separate peace treaty with East Germany if necessary. No progress was made on the Berlin dispute during British Prime Minister Macmillan's discussions (ending March 3) with Khrushchev in Moscow, but a week later, on a visit to East Berlin, the Soviet leader said that West Berlin, if made a free city, might be guarded by Big Four or neutral troops.

The establishment of Allied missile bases on European soil brought heated denunciations from Khrushchev during the year. Returning from a 12-day trip to Albania and Hungary in the spring, he threatened to set up nuclear missile bases in Albania and other satellite nations unless the West agreed to a ban on such installations in the Balkans. The existence of United States military bases on the Soviet periphery was one of the arguments to which Khrushchev frequently returned during the visit of Vice President Nixon (q.v.) to the Soviet Union in July (notably at the highly publicized debate between the two at the opening of the American National Exhibition in Moscow, July 24).

Khrushchev arrived in Washington on September 15 for his heralded tour of the United States. He was greeted in a generally cool manner in the nation's capital, New York City (September 17–19), and Los Angeles (September 19–20), but friendly and at times warm receptions awaited him on the latter part of his trip, at San Francisco

(September 20–22), Des Moines and Coon Rapids, Iowa (September 22–23), and Pittsburgh (September 23–24). In New York City and Los Angeles, hostile speakers piqued him to the point of threatening to cancel the remainder of his tour, and his flashes of anger in Los Angeles prompted the government to insist that the visitor be spared any further taunts. The rest of the journey brought no untoward incidents, and the premier's attitude mellowed noticeably following amicable exchanges with crowds along the route to San Francisco.

The climactic talks with President Eisenhower (q.v.) on September 25–27 produced no momentous decisions, but they did serve to ease the immediate pressure over Berlin and to insure a broadening of cultural and scientific exchanges. The principle of a summit conference (q.v.) also was established, and on December 30 Khrushchev accepted Western proposals for a Big Four parley in Paris, to begin May 16, 1960.

Soon after his United States trip, Khrushchev traveled to Peking on September 30 to attend the 10th anniversary celebrations of the Chinese Communist regime and to confer with Mao Tse-tung. Observers saw signs of coolness between Khrushchev and the Soviet Union's major ally, particularly in the lack of Chinese response to his enthusiasm over coexistence with the United States.

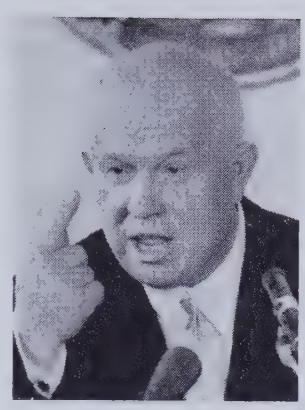
But if the world sometimes saw an expansive, joking Khrushchev in 1959, it also heard some fearfully blunt reminders of the Soviets' growing rocket and nuclear power. Typical of these sudden insights into the ruthless personality underlying the ingratiating pose which he uses to advantage were Khrushchev's boasts (in May) that if war should come the Western nations "would be literally wiped off the face of the earth," and that eight hydrogen bombs would suffice to obliterate West Germany, and (in November) that at least one Soviet factory was producing 250 hydrogen-warhead rockets each year—to which he appended this characteristic note: "We are ready to sink all this in the sea in the interests of insuring peace on earth."

(See also UNION OF SOVIET SOCIALIST REPUBLICS.) S. J. F.

KISHI, Nobusuke, prime minister of Japan: b. Yamaguchi Prefecture, Japan, Nov. 13, 1896. Premier from Feb. 25, 1957, after the resignation of Tanzan Ishibashi, Kishi was elected president of the Liberal-Democratic Party in March 1957 and re-elected premier on June 12, 1958.

After his graduation from Tokyo Imperial University in 1920, he held various government posts. In the early 1940's he was vice minister (1939–41) and minister (1941–43) of commerce and industry, and he remained in Hideki Tojo's cabinet as vice minister of munitions until 1944, when disagreement with the premier forced him to resign. After World War II he was held by the United States occupation forces until 1948. Elected to the Diet in 1953, he helped to bring about the coalescence in 1955 of the Democratic Party, which he had founded, and the Liberal Party. Before his election by the Diet as premier in early 1957, he had served as foreign minister in Ishibashi's cabinet.

The premier reshuffled his cabinet on Jan. 12, 1959, and again on June 18 in order to increase cabinet representation of his faction of the Liberal-Democratic Party, disunited apparently through personal rivalries rather than over major policy differences. On January 24 he was reconfirmed as party leader for the following two years. Local elections in April and Diet elections in June increased the Liberal-Democrat majority over the



(*Left*) On U.S. visit, Premier Khrushchev gestures during press conference in Washington, September 27. (*Below*) At Andrews AFB, September 15, President Eisenhower reads message welcoming the premier. Soviet Ambassador Menshikov stands at rear.

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(*Right*) Khrushchev pays a surprise visit to supermarket near San Francisco on September 21. (*Below*) He links arms with Adlai Stevenson (left) and Iowa farmer Roswell Garst during stop at Coon Rapids farm, September 23. At rear is Henry Cabot Lodge, U.S. ambassador to United Nations.

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(*Below*) Dinner party at the Soviet embassy in Washington, September 16. From left: Premier Khrushchev, Mrs. Eisenhower, Mme. Khrushchev, President Eisenhower, Barbara Eisenhower, and Maj. John Eisenhower.

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opposing Socialists and independents. Kishi's position thus strengthened, he visited several major European and Latin American countries in July and August. On his return he publicly confirmed the foreign policy he had followed earlier: to cooperate more closely with the non-Communist world in spite of the desire for neutrality expressed by his political opposition. Such rapprochement was to be accomplished partly by rewriting, rather than simply amending, the defense alliance of April 28, 1952 with the United States, so that Japan would be given more responsibility in the mutual defense pact. In spite of a demonstration on November 27 by more than 20,000 union workers and university students against the revision of the alliance, the premier went ahead with his plans to visit the United States for the signing of the pact on Jan. 19, 1960. (See also JAPAN.)

KISTIAKOWSKY, George Bogdan, Russian-American physical chemist: b. Kiev, Russia, Nov. 18, 1900. On May 28, 1959, President Eisenhower named him special assistant for science and technology, succeeding Dr. James R. Killian, Jr. The post carries the responsibility for overall advice to the administration on scientific problems, including the defense and space programs.

Dr. Kistiakowsky has in the past two decades served the federal government on a number of missions, interspersed with his duties as a teacher and researcher at Harvard University. During World War II he worked as a civilian at the Los Alamos (N. Mex.) nuclear laboratory on explosives needed to detonate the first atomic bomb. He served as a special adviser on the ballistic missile program on the President's Science Advisory Committee from its establishment in 1957 under Dr. Killian. And he was one of the three-man United States delegation to the East-West talks in Geneva in November 1958 on the prevention of a surprise nuclear attack.

Dr. Kistiakowsky received his early schooling in Kiev. In 1918, following the outbreak of the Russian Revolution, he fought with the anti-Communist White Russian Army as a tank soldier. After a period of internment in Turkey and the Balkans, he made his way to Germany in 1921 and studied at the University of Berlin (Ph.D. 1925) under the chemist Max Bodenstein. In 1926 he moved to the United States, where he became a citizen in 1933. He was at Princeton University for the last four years of the 1920's as a research fellow and associate, and in 1930 transferred to Harvard University, where he rose to the rank of full professor by 1937.

KOREA. A peninsula projecting from northeastern Asia toward Japan, which lies some 120 miles across the Korea Strait, Korea has an area (including adjacent islands) of 85,248 square miles (South Korea, 37,424; North Korea, 47,824). It borders on Siberia for 11 miles and on Manchuria for approximately 800 miles. Its western shore is washed by the Yellow Sea, and its eastern by the Sea of Japan. The mountainous northern half of the country, endowed with richer mineral, timber, and waterpower resources, has most of the heavy industries, mines, and hydroelectric plants. The less rugged south is chiefly agricultural, with light industries.

The population of South Korea was officially estimated at 22,836,000 in mid-1959; that of Seoul, the capital, at 1,756,406 in 1958. Other large cities, with their 1955 census populations, are Pusan (1,049,363), Taegu (488,960), and Inchon (321,072). The population of North Korea could be estimated at about 10,000,000; that of its capital, Pyongyang, at 700,000.

South Korea

Government.—To bring about the promised Korean independence and to receive the surrender of Japanese troops after V-J Day, Soviet forces occupied Korea north of the 38th parallel and United States forces the south in 1945. The perpetuation of this temporary arrangement in the racially homogeneous and economically indivisible nation resulted in a devastating war which began on June 25, 1950, and ended in a stalemate on July 27, 1953.

The 1945 Moscow agreement imposing on Korea a trusteeship for "a period of up to five years" failed to be implemented because of a United States–Soviet deadlock over Korean representation. Korea's case was laid before the United Nations by the United States. The U.N. General Assembly created the U.N. Temporary Commission on Korea in 1947 to facilitate the establishment of a national government through general elections, but the Soviet Union boycotted the commission and denied it access to North Korea. The commission therefore observed an election—held on May 10, 1948, in South Korea alone —of a 200-member Constituent Assembly for a 2-year term. This legislature, on July 12, adopted a constitution providing for a unicameral National Assembly and for a president with broad powers, and on July 20 elected Dr. Syngman Rhee to that office for a 4-year term. The formal proclamation of the Republic of Korea on Aug. 15, 1948, terminated United States military government in South Korea. On Dec. 12, 1948, the U.N. General Assembly declared the government of the Republic of Korea a lawful regime in "that part of Korea."

In the 1950 elections, National Assembly membership was increased to 210 for a 4-year term. In 1952, President Rhee, seeing no chance for re-election by a hostile assembly, forcibly changed the constitution to provide for a bicameral legislature and election of the president and vice-president by direct popular vote. Dr. Rhee was re-elected for a 4-year term on Aug. 5, 1952. In the third assembly election, held on May 20, 1954, for 203 members, Rhee's Liberal Party obtained 114 seats, while some opposition candidates withdrew from the race for reasons of personal safety. Subsequent shifting of alignment increased Liberal Party membership to 131.

President Rhee secured legislation in 1955 empowering him to "suspend or repeal adminstrative orders or dispositions of the Cabinet Ministers in case such orders or dispositions are deemed improper or illegal." This supplemented a constitutional amendment of Nov. 29, 1954 (forced through the assembly despite the lack of a two thirds majority vote), which eliminated the premiership and permitted Dr. Rhee (but no subsequent president) to run for re-election for life. On May 15, 1956, he was elected for a third term.

In the fourth National Assembly election (its membership was increased to 233), held on May 2, 1958, the number of Rhee's Liberal Party seats decreased from 131 to 126, while the Democratic Party increased its membership to 79 from 46. One seat went to the Unification Party, and 27 members were elected as independents. Subsequently elections to several seats were nullified because of irregularities; re-elections were held, and some legislators changed parties. As of November 1959, assembly membership was as follows: Liberal Party, 141; Democratic Party, 80; Unification Party, 1; and independents, 11.

Education.—In the 1958–59 school year there were 4,583,527 students in all types of schools. Of that number, 3,785,050 were pupils in 4,537 elementary schools; 618,025, students in 1,012 middle schools and 343 high schools; 100,887, students in 280 vocational schools; and 79,565, students in 61 colleges and universities.

Although 6 years of free elementary school education are provided for all children by the constitution, parents are required to pay a Parent-Teachers Association fee, levies for "building and physical facilities" and textbooks, and an education tax. Other supplementary contributions are reportedly solicited by school authorities.

Religion.—There are no accurate statistics on adherents of all faiths, but Confucianism and Buddhism predominate over Chontoism (Chondo-kyo), Christianity, and Tankun-kyo (the religion of Tankun, mythical founder of Korea). The 1959 South Korean yearbook listed 3,855,983 adherents of Buddhism and 454,770 followers of Chondo-kyo, while Christians, including children and Sunday School members, comprised 1,025,114 Protestants and 244,783 Roman Catholics.

Economic Conditions.—South Korea's economy has been sustained by foreign assistance which, from 1945 through June 1959, totaled about $2.8 billion. The damage caused by the Korean War has not been completely offset. Some 1,000,000 units of housing are urgently needed, and an estimated 2,700,000 persons are unemployed. Despite large crops farmers are hungry because of

low grain prices and the high prices of other commodities, and because they have had to pay black market prices for fertilizer and usurious interest rates on loans.

The 1958 rice crop yielded 3,540,000 metric tons, and the 1959 summer grain crop was estimated at 949,000 tons. Cereal and grain imports during 1958 amounted to 365,701 metric tons, valued at $51.1 million. Despite typhoons and floods in September 1959 (the severest in this century), in which 747 lives were lost, 3,186 persons were missing, and property damage was estimated as high as 104.9 billion hwan, a bumper rice crop was predicted for 1959.

The fish and seafood catch in 1958 totaled 395,000 metric tons. More than 221 million square yards of textiles were produced, and electric power generation amounted to 1,512 million kw.-hr. Production of other commodities, in metric tons, was as follows: cement, 296,000; coal, 2,671,000; iron ore, 261,025; tungsten concentrates, 3,012; and salt, 436,408. The gold output was 2,242 kilograms.

In 1958 imports amounted to $390 million, of which $337.5 million was financed by foreign aid, and exports to $16.8 million. In the first week of August 1959, the money supply totaled 220 billion hwan, compared with 164.3 billion hwan a year earlier. Official foreign exchange holdings on August 31 amounted to $150.1 million. Although the official exchange rate remained 500 hwan to U.S.$1, the free market rate was about 1,400 to $1 in September.

The national budget for 1959 anticipated revenues of 389.8 billion hwan to meet expenditures of the same amount, of which 142.2 billion was allotted for military expenses. The U.N. Commission for the Unification and Rehabilitation of Korea (UNCURK) commented in its 1958 report: "Defense expenditure . . . accounts for about half the general budget and is one of the factors limiting desirable social projects and economic recovery and growth." The commission's 1959 report said that "unification [of the country] could immeasurably improve the prospect of economic viability for the peninsula."

In fiscal year 1958–59 the United States provided $214.8 million in defense support, $5.8 million for technical cooperation, and $17.7 million from the Development Loan Fund (DLF). Direct military aid reportedly totaled about $200 million. The U.N. Korean Reconstruction Agency (UNKRA), created in 1950, concluded its program in 1959 after expending $149,274,389.

Political Developments.—The Rhee government's ramming through the National Assembly of 22 bills on Dec. 24, 1958, after locking out opposition legislators, brought far-reaching consequences. This action once again nullified American efforts to make South Korea a democratic model in Asia through the development of representative government. Of the new laws, Koreans considered the following the most detrimental to freedom:

(1) A sweeping new National Security Law which provides stiff prison terms for those who "disturb" the people by disseminating "false" information, who make derogatory remarks about high government leaders, and who collect information on political, economic, cultural, and military affairs. These catchall provisions were strenuously opposed by the press and the Korean Bar Association, as well as by the opposition Democratic Party.

(2) An amendment to the Local Autonomy Law whereby mayors and village heads are appointed instead of being elected.

(3) An amendment to the House of Councilors Election Law empowering the president to set a date for elections to the upper house, and requiring its political composition to be in direct ratio to present lower house membership.[1]

Because the opposition refused to recognize the legality of the 22 arbitrary acts, the National Assembly did not function normally in 1959.

On March 23, Choi In Kyu, appointed minister of home affairs three days earlier, demanded that: "All my subordinates should publicize the accomplishments of President Syngman Rhee through their families to assure his re-election in the next presidential election. Any employee who does not wish to do so or does not respect his superior, should quit his post in the government." Announcing his candidacy for a fourth term on April 15, President Rhee predicted: "All things being equal, the people will elect me next year from among other candidates."

Kyunghyang Shinmun, a respected opposition Roman Catholic daily and the second largest newspaper in South Korea, was ordered shut down on April 30 on charges of its "falsehoods and fabrications"; its consistently "unpatriotic, antisocial conduct"; its defamation of the speaker of the National Assembly; its advocacy of "insurrection"; its "undermining [of] confidence in the Armed Forces [for exposure of corruption in the army]"; its unauthorized account of a Communist spy arrest; and its "misrepresentation" of statements by President Rhee.

All political parties were ordered to notify the government of any gathering 10 days in advance and to submit a report on the results of such a meeting within 5 days after it had been held. Otherwise, the party would be outlawed. Meanwhile, elected mayors and district and village heads were being removed to make room for obedient Liberal Party appointees.

Cho Bong Am, who was minister of agriculture and forestry in Rhee's first cabinet, temporary speaker of the 2d National Assembly, and twice presidential contender (he polled 2,163,808 votes in 1956), was hanged on July 31, on charges of espionage, although he had renounced communism in 1945. (His Progressive Party had been outlawed almost three months before the 1958 National Assembly election.) National Police Director Lee Kang Hak warned newspaper editors against publicizing Cho's case, and his body was turned over to his family on condition that he be buried quietly without any public ceremony.

Dissension over presidential candidacy for the 1960 election between factions in the opposition Democratic Party was settled at its national convention on November 26 by the nomination of Chough Pyong Ok for president and Chang Myun (John M. Chang) for vice president.

North Korea

The Democratic People's Republic of Korea was established north of the 38th parallel on Sept. 9, 1948, after elections held independently of the U.N. Temporary Commission on Korea, and proclaimed itself the government of all Korea. It was headed by Kim Il Sung as premier and Kim Doo Bong as chairman of the Presidium of the Supreme People's Assembly. Assembly membership was reduced from 572 to 215 at the Aug. 27, 1957, elections, the first held since 1948. Kim Il Sung succeeded himself as premier on Sept. 20, 1957, but chairmanship of the Presidium passed to Choi Yong Kun. The replacement of Foreign Minister

[1] According to the 1958 election law, the upper house should have come into existence in January 1959, but President Rhee has not decreed its election date.

Nam Il, who had served as chief Communist negotiator for the Korean Armistice Agreement, by Vice Foreign Minister Pak Sung Chul was announced on Oct. 25, 1959, but Nam still retained his vice premiership.

Industrialization and expansion of agriculture seem to be the chief aims of the Korean Workers' (Communist) Party and the North Korean regime. The North Koreans have boasted that their Five-Year Plan, which began in 1957, would be fulfilled two years ahead of time. In December 1959, however, they decided to scrap the plan, whose overemphasis on heavy industry had caused serious difficulties, in favor of increased capital for housing and greater assistance to agriculture.

Claims of the North Koreans for 1958 output included 3.7 million tons of grain, 6,882,000 tons of coal, 393,000 tons of pig iron, 575,000 tons of steel, 1,244,000 tons of cement, 457,000 tons of chemical fertilizers, 682,000 tons of fish and seafood, 439,000 tons of salt, 110 million meters of textile fabrics, 7,630 million kw.-hr. of electricity, and housing for 21,600 families in Pyongyang alone. They also claim that government retail prices were cut seven times between mid-1953 and mid-1958, that wages were increased by an average of 40% in January 1959, and that the average rate of the agricultural tax in kind on grain was reduced from 22.4 to 10% in February.

Just as South Korea's economic rehabilitation is dependent on the United Nations and the United States, so is the rebuilding of North Korea supported by the Communist world. Of the equivalent of $754,350,000 in aid promised through 1957, including $360 million from China and $250 million from the USSR, $470,750,000 had been received by 1956. The Moscow radio reported that the volume of North Korea's foreign trade in 1959 would increase nearly three times over that of 1955. An agreement signed on March 17, 1959, contemplated Soviet delivery of equipment and materials amounting to nearly 500 million rubles ($125 million at the official rate), to be paid for by Korean goods.

In 1958 there were 2,380,000 students in 7,000 educational establishments, including 112,000 in technical schools and institutions of higher learning. Tuition-free compulsory primary education (inaugurated in 1956) was extended on Nov. 1, 1958, to include junior middle schools, for a total of 7 years. Tuition was abolished in schools of all levels beginning on April 1, 1959.

Repatriation Agreement.—Representatives of the Red Cross societies of Japan and North Korea met in Geneva from April 13 to June 24, 1959, to reach agreement on the problem of voluntary repatriation of Koreans in Japan. After much wrangling and vehement protests from the South Korean government, an agreement for repatriation was signed in Calcutta on Aug. 13, 1959. It provides that Koreans who wish to return to North Korea must submit applications to the Japanese Red Cross Society in person, with parents or guardians acting for minors, and that withdrawal of applications is permitted "until a certain time before embarkation." The Japanese side will assume all expenses up to the returnees' embarkation, while the North Korean side will pay all expenses thereafter and furnish repatriation ships. The agreement also states: "The Japanese Red Cross Society shall request the International Committee of the Red Cross to take such measures as the latter deems necessary and appropriate to ensure that the organization and operation of the system for registering persons wishing to return be fair, impartial and in conformity with the humanitarian principles." Repatriates leaving Japan for North Korea totaled 2,942 by December 28.

Post-Armistice Developments, 1959

Since the conclusion of the Korean Armistice Agreement in 1953 there has been no progress toward national unity or peace. The Neutral Nations Supervisory Commission, created to watch ports of entry for traffic in arms and troops, was deactivated in June 1956; and subparagraph 13(d) of the armistice agreement, restricting an arms buildup, was nullified in June 1957. The two sides make charges and countercharges of violations while arming themselves with deadlier weapons.

North Korean Communist authorities loudly demand withdrawal of all foreign troops so that Koreans can unite themselves peacefully through negotiations between North Korea and South Korea. The Rhee regime wants the United Nations forces to stay and advocates either unification by conquest or the holding of free elections under United Nations supervision in North Korea only. On Dec. 9, 1959, the U.N. General Assembly passed (54–9, with 17 abstentions) its customary resolution calling for the reunification of Korea.

North Korean armed strength was estimated at 350,000 men in 1959. All Chinese troops were reportedly withdrawn by Oct. 25, 1958, except for a small group attached to the Military Armistice Commission (MAC). In South Korea there were in 1959 about 650,000 men in the Korean forces, two United States divisions (including some Koreans) with supporting units, a Turkish brigade, and token or liaison units from a few other nations which had fought under the U.N. Command. On April 22, Lt. Gen. Carter B. Magruder was appointed to succeed Gen. George Decker as head of the U.N. Command, and on May 1, Maj. Gen. William S. Biddle replaced Rear Adm. Ira H. Nunn as senior U.N. Command member of the MAC.

Yongjeung Kim,
President, Korean Affairs Institute.

KORNBERG, Arthur, American biochemist: b. Brooklyn, N.Y., March 3, 1918. In 1959, the second consecutive year in which the Nobel Prize in medicine and physiology was awarded to Americans, Dr. Kornberg shared the prize of over $42,000 with one of his previous teachers, Dr. Severo Ochoa (q.v.).

Receiving a B.S. from the City College of New York in 1937 and an M.D. from the University of Rochester (N.Y.) in 1941, Kornberg entered the U.S. Public Health Service in 1942, becoming a medical director in 1951. He studied with Dr. Ochoa while he was a guest research worker at New York University's College of Medicine in 1946. Head of the Department of Microbiology at the School of Medicine of Washington University in St. Louis until a few months before he received the Nobel Prize, he had moved to Stanford University to become the executive head of the Department of Biochemistry.

In 1956 Kornberg found a commercially available bacterial enzyme which can be used to synthesize a chemical compound that appears to be identical with deoxyribonucleic acid (DNA). DNA is the genetic substance governing the transmission of hereditary qualities by allowing a cell to reproduce itself in its own image. In independent research at about the same time, Dr. Ochoa found an enzyme that would produce a compound apparently identical with ribonucleic acid (RNA). These two nucleic acids are the basic chemical compounds in producing and sustaining life and in passing on hereditary information. The Nobel

laureates were the first to synthesize them artificially from smaller organic molecules that are commercially available. Their work may ultimately throw some light on the problem of cancer and on the reproduction of certain kinds of viruses. (See also MEDICINE.)

KOZLOV, Frol Romanovich, first deputy premier of the Soviet Union: b. Loshchinino, Russia, Aug. 17, 1908. Amid growing indications that he was favored by Premier Nikita Khrushchev (q.v.) as his eventual successor, Kozlov was projected onto the world stage in 1959 by his two-week visit to the United States and his meetings with President Eisenhower.

WIDE WORLD

On his visit to the United States in July, Soviet Deputy Premier Kozlov (l.) inspects corn at Morris, Ill., farm.

Born of humble peasant stock, Kozlov began working at the age of 15 in a textile factory in Kasimov. Three years later, having joined the Communist organization, he attended a workers' school. In 1928 he entered Leningrad Polytechnical Institute, from which he was graduated as a metallurgical engineer. He then became supervisor of a steel plant in Izhevsk, and in 1944 went to Moscow to work for the party's Central Committee. After holding party posts in Kuibyshev Oblast and in the city of Leningrad, he became first secretary of the Leningrad Oblast in November 1953, following Khrushchev's rise to party leadership. Advancement for Kozlov followed rapidly. He was elected to the Presidium of the Supreme Soviet in 1954 and to the Presidium of the Communist Party's Central Committee in 1957, and became first deputy premier in March 1958. He reportedly played a key role in helping Khrushchev in 1957 to overcome a faction led by Georgi Malenkov, V. M. Molotov, and L. M. Kaganovich.

Kozlov arrived in the United States on June 28, 1959, to open the Soviet National Exhibition of Science, Technology, and Culture in New York City. On June 29 he escorted President Eisenhower on a preview visit of the show, and on July 1 met with the president in Washington for a discussion of Soviet-American relations, centering particularly on the Berlin question and the possibility of a summit conference. A nationwide tour took him also to San Francisco, Detroit, Chicago, and Pittsburgh, before his departure on July 13. Ten days later Kozlov reversed his role from guest to that of host, as he greeted Vice President Richard Nixon (q.v.) on his arrival in Moscow and accompanied him on a tour of the Soviet Union.

KUNITZ, Stanley Jasspon, American poet: b. Worcester, Mass., July 29, 1905. For his *Selected Poems, 1928–1958* Kunitz was awarded the 1958 Pulitzer Prize in poetry (announced May 4, 1959) —one of three major laurels which he gained during 1959. He also received grants from the National Institute of Arts and Letters and the Ford Foundation.

After attending Harvard University (B.A., 1926; M.A., 1927), Kunitz joined the reference-book publishing house of H. W. Wilson Company, where he was joint editor, with Howard Haycraft, of a number of biographical volumes, including *British Authors of the Nineteenth Century* (1936), *American Authors, 1600–1900* (1938), and *Twentieth Century Authors* (1942). During World War II he served in the Army as editor of *Ten Minute Break,* an Army news magazine, and as a noncommissioned officer in the information and education division of the Air Transport Command.

After the war, in addition to free-lance editorial work for H. W. Wilson Company (a supplement to *Twentieth Century Authors* appeared in 1955), Kunitz embarked on a teaching career. From 1946 to 1949 he taught at Bennington College in Vermont, and in 1949–50 he was a visiting professor of English at the New York State Teachers College in Potsdam. After 1950, besides conducting the Poetry Workshop of the New School for Social Research in New York City (1950–58), he held visiting professorships at the University of Washington (1955–56), Queens College, New York (1956–57), and Brandeis University (1958–59).

Kunitz' first volume of poetry, *Intellectual Things,* was published in 1930. His second volume, *Passports to the War: A Selection of Poems,* appeared in 1944. Although his work occasionally appeared in periodicals, he did not command a wide reputation until his manifold recognition in 1959. According to John Ciardi, a better-known contemporary poet, "Kunitz is certainly the most neglected good poet of the last quarter-century."

KURIL (KURILE) ISLANDS. A chain of some 30 islands and numerous islets and reefs extending from the tip of the Kamchatka Peninsula (Siberia) to within a few miles of Hokkaido, Japan. Area, about 5,700 square miles; est. pop., 15,000. In 1945 the Soviet Union took over the islands from Japan under the Yalta Agreement. Since 1947 the Kurils have been part of the Sakhalin Oblast of the Russian Soviet Federated Socialist Republic. Chief occupations are whaling, fishing, lumbering, sulfur mining, and hunting. The Soviet-Japanese peace agreement of 1956 deferred the question of permanent rights to Etorofu and Kunashiri (two of the larger southern Kuril Islands) and the smaller Habomai Islands and Shikotan Islands (off Hokkaido) to future negotiations. A Japanese request in 1958 for discussions on the islands was rejected by the USSR.

KUWAIT. See ARABIA.

LABOR. Two events dominated the United States labor scene in 1959: the industry-wide steel strike and the enactment of the Labor-Management Reporting and Disclosure Act of 1959.[1] Also, the first constitutional challenge of the 80-day injunction provisions of the Labor Management Relations (Taft-Hartley) Act of 1947 was brought before the Supreme Court during the lengthy steel walkout. Concern over automation and work practices, rather than direct economic improvements, appeared to dominate labor attitudes in collective bargaining, and a number of the year's important situations and contracts reflected this concern.

Labor-Management Relations.—Steel negotiations, continuing on plea of the president for two weeks past the July 1 contract expiration date, foundered on two issues: determination of the steel companies to resist an "inflationary" wage increase, and their insistence on revision of local work rules inhibiting "effective" manpower deployment and utilization. The ensuing strike, which began on July 15, lasted 116 days, the longest steel strike in the nation's history.

Despite stern warnings by the president that the national interest demanded a settlement, negotiations between the United Steelworkers of America and representatives of the 12 largest companies collapsed. Thereupon, on October 9, the president invoked the emergency provisions of the Taft-Hartley Act—the 17th such use of the law since it was enacted in 1947. A fact-finding board, headed by Dr. George W. Taylor of the University of Pennsylvania, was convened. During its hearings (October 12–18), the board took the unusual step of openly attempting to mediate the dispute. Although it succeeded in narrowing the issues separating the parties and in eliciting a new offer and counteroffer, the board in its report to the president on October 19 stated that there was not "any single issue of any consequence whatsoever upon which the parties are in agreement." The government then obtained a federal court order enjoining the strike for 80 days, but successive appeals by the union resulted in stays until November 7, when the Supreme Court ruled, 8–1, that the national welfare was endangered and that the injunction was constitutional.[2] The steelworkers were ordered back to work by the union two hours after the court's ruling was announced.

While the injunction was in litigation, Kaiser Steel Corp., one of the "big 12" bargainers, signed a separate contract with the union on October 26. Over a 20-month period, the agreement provides wage and benefit improvements estimated at 22.5 cents an hour, although no direct wage increase would be due until the second year. The union gave up the cost-of-living increase which might have been due in 1959, and limited 1960 wage escalation to 3 cents an hour. A 1960 wage increase will amount to 7 cents an hour, plus some increments between job classes. More important to the union was retention of the old work-rule clause. Work practices, however, would be reviewed by a joint committee. A second committee, tripartite in character, will develop a long-range plan for the "equitable sharing of economic progress." Similar contracts were later signed by the union with Detroit Steel and Granite City Steel.

After protracted bargaining negotiations, an agreement between the United Steelworkers and the remaining 11 major steel producers was finally arrived at on Jan. 4, 1960. The settlement provided for wage and benefit increases amounting to an estimated 39 cents per hour in stages over a 30-month period, with the first direct wage increase effective Dec. 1, 1960. The difficult problem of work practices was referred to a joint union-management committee for further study and recommendations. (See also IRON AND STEEL.)

The concern of labor with work practices and the job-loss threats of laborsaving devices was manifest in other situations. Armour and Co. and two unions—the United Packinghouse Workers and the Amalgamated Meat Cutters and Butcher Workmen—on August 31 established a tripartite committee to study the effects of technological change in the industry and to "consider for appropriate action a program of training" displaced employees. To finance the study, training, and planning, the company agreed to contribute 1 cent per hundredweight of total slaughter tonnage until a fund of half a million dollars is available.

On the west coast, the Pacific Maritime Association, eager to introduce more efficient cargo-handling equipment on the docks and to reduce work-gang sizes, agreed on July 28 with the International Longshoremen's and Warehousemen's Union (Ind.) to establish a $1.5 million fund through employer contributions. In return for a freer hand in cutting labor costs, the employers agreed to devise a plan for sharing the savings thus achieved, the fund to be a down payment on the sharing.

East and Gulf coast stevedores, represented by the International Longshoremen's Association, resisted employer demands for more extensive use of laborsaving machinery, and struck on October 1. Five days later the president created a fact-finding board, and a Taft-Hartley injunction was obtained ending the strike in all ports within 24 hours. Beginning December 1, settlements were reached providing for a 3-year contract with total economic benefits over the term of the contract amounting to 41 cents per hour. On work rules, 20-man gangs were retained, but the union agreed to the introduction of new equipment. The issue of special fees for preloaded containers was referred to arbitration.

A four-month strike by the United Glass and Ceramics Workers Union against the Pittsburgh Plate Glass Co., mainly over work rules and work assignments, ended on February 11 with wage and pension increases and an agreement to arbitrate the work issues. A 51-day strike by 2,000 glass moldmakers against the Glass Containers Manufacturers Institute ended on November 2 with the signing of a new contract.

The Lithographers Union and employers continued a joint commission dedicated to facilitating introduction of automated equipment in the industry.

Fearing heavy cutbacks in employment because of automation, the United Automobile Workers Union at its convention in mid-October proposed a permanent government commission on technological change "to insure that the social gains of technological progress are fairly shared."

Apart from the steel negotiations, the most important labor-management dispute concerned the nation's railroads and a score of unions representing nearly 1 million railroad employees. Although the unions had requested wage increases averaging about 25 cents an hour, and employers had demanded cuts of 15 cents, the really contentious issue as contracts expired on November 1 was the carriers' determination to change what

[1] Public Law 86–257, signed by President Eisenhower on Sept. 14, 1959, and also referred to as the Landrum-Griffin Act and the Labor Reform Act of 1959.

[2] The union had challenged the order on the ground that no national emergency affecting health or welfare existed and that the injunctive provisions of Taft-Hartley were unconstitutional because they called for court intervention in a wholly administrative action to temporarily stop an otherwise legal strike.

they characterized as outmoded and costly work rules—known popularly as "featherbedding." (Provisions of the Railway Labor Act can prevent strike action for 60 days following appointment of a presidential board of inquiry.) In this situation, too, the unions' apprehension over declining employment was a motivating factor in their adamant position on the rules matter. Employer resistance was strengthened by a group strike insurance plan under which struck lines could be reimbursed for a portion of their daily fixed charges.

Negotiations in certain industries which traditionally follow the steel bargaining pattern—notably metal containers and aluminum—were suspended temporarily while work continued. However, a strike by the unaffiliated Mine, Mill, and Smelter Workers Union and by the United Steelworkers against major copper smelters and refiners was almost coextensive with the steel stoppage. The container and aluminum negotiations were resumed in December, and agreement was reached early that month on the basis of the Kaiser contract's economic terms. On November 22 and 28, respectively, pattern-setting 20-month contracts were signed by the United Steelworkers with the Kennecott Copper Corporation, and by the Mine, Mill, and Smelter Workers with the American Smelting and Refining Company. The contracts called for wage and other benefit increases valued at about 22 cents per hour.

Other significant labor-management negotiations in 1959 included the following:

Coal.—A $1-a-day increase for about 20,000 hard-coal miners, effective February 1, was negotiated by the United Mine Workers of America; the agreement also increased royalty payments to the welfare and retirement fund and vacation payments. Efforts in March and April by the UMW to impose terms of the 1958 soft coal contracts on independent "truck mines" in Kentucky, Tennessee, and West Virginia resulted in extensive violence reminiscent of early organizing days in the industry. National Guardsmen were used to maintain order in Kentucky, and the National Labor Relations Board (NLRB) obtained an injunction against the union on April 30.

Rubber.—Between April 15 and May 1, major rubber companies and the United Rubber Workers agreed to improvements in pensions, insurance, supplemental unemployment benefits, and other nonwage items, but not without strikes affecting Goodrich, Firestone, and United States Rubber. In late August and early September, the same parties agreed to a 10-cent-an-hour wage increase. About 156,000 workers were involved.

Textiles.—Pay scales for an estimated 300,000 workers in Southern plants received their first upward change since 1956.

Clothing.—Leading manufacturers of men's shirts, pajamas, and cotton garments agreed on May 28 with the Amalgamated Clothing Workers to a 7.5-cent hourly wage increase and various fringe benefits for about 100,000 workers. Approximately 50,000 employees making women's and children's outer garments in four Eastern states, members of the International Ladies' Garment Workers' Union, received a new 3-year contract on May 4. It called for a wage reopener when prices rise 5% over the December 1957 level, severance pay, and extension of overtime pay to incentive workers.

Construction.—Thousands of construction workers, through various area settlements, in the spring received exceptionally large wage increases in newly negotiated, usually multiple-year contracts. Terms in many instances called for annual increases of from 18 to 25 cents an hour, as well as fringe benefits.

Hospitals.—Significant chiefly for their rarity were strikes in 7 New York City voluntary hospitals in May and June by nonprofessional employees, represented by the Retail, Wholesale, and Department Store Union, for improved working conditions and pay. They secured indirect recognition, a grievance committee, and wage improvements. The Hotel and Allied Service Employees (an affiliate of the Building Service Employees), operating in 37 profitmaking hospitals in New York City, obtained a 3-year contract on June 25, calling for wage increases and other benefits.

Excluding construction and service industries, wage increases negotiated during the first half of 1959 for workers covered by major agreements (1,000 or more employees) averaged between 7 and 8 cents per hour, Bureau of Labor Statistics figures revealed.

WIDE WORLD

Congressmen Phil M. Landrum (left) and Robert P. Griffin, in Washington on August 13, celebrate House clearance of their jointly sponsored labor reform bill. A compromise bill, incorporating features of the Landrum-Griffin measure and the Senate's milder Kennedy-Irvin bill, was enacted into law and signed by President Eisenhower on September 14.

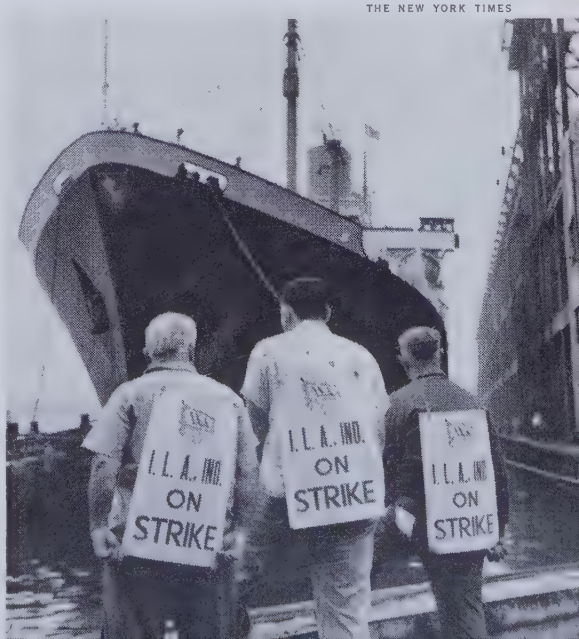
Strike activity totals for the year, swollen abnormally by half a million steelworkers, reached 68 million participants and 1,850,000 man-days lost for the 3,900 stoppages in effect in 1959.

Labor Force Trends.—Labor force growth of about 600,000 in 1959 continued below its long-term trend for the third consecutive year. However, growth during the latter half of 1959 averaged about 750,000 persons. Long-range projections had anticipated an increase of 1 million in 1959. Over-the-year expansion that did occur was influenced by the rise in the number of persons in the usual working-age groups. The labor force was also characterized by an expanded participation rate for married women and a lower rate for teenagers and for men 65 and over.

Unemployment during 1959 reflected two conflicting influences: economic recovery and the steel strike. During the first half, unemployment declined from depression levels to a seasonally adjusted June total of 3.4 million (4.9% of the labor force); and long-term unemployment (15 weeks or more) began to diminish in the spring of 1959.

Members of the International Longshoremen's Association, which went on strike in Atlantic and Gulf ports on October 1, picket a New York pier. Strikers were recalled to work on October 9, following a Taft-Hartley injunction.

THE NEW YORK TIMES



TALBURT IN THE NEW YORK WORLD-TELEGRAM AND SUN

"Now Look Where They're Headed!"

In April, the latter category stood at 1.4 million, down one-half million from the recession peak of the previous April. By the end of the year, long-term joblessness had leveled off to about 750,000. The steel strike, which commenced on July 15,

SELECTED LABOR FORCE DATA
(In thousands)

	October 1959	October 1958	Average 1958
Civilian labor force	70,103	69,111	71,284
Employed	66,831	65,306	63,966
Agricultural labor	6,124	6,404	5,844
Nonagricultural labor	60,707	58,902	58,122
Unemployed	3,272	3,805	4,681
Seasonally adjusted rate[1]	6.0	7.1	6.8
Unemployed by duration:			
Less than 5 weeks	1,607	1,522	1,833
5 to 14 weeks	939	892	1,397
15 to 26 weeks	333	581	785
27 weeks and over	393	811	667
Average duration (weeks)	13.1	16.6	13.8

[1] Percentage of civilian labor force unemployed. (Source: U.S. Department of Labor, Bureau of Labor Statistics.)

caused unemployment to rise to a seasonally adjusted October rate of 6%; but by the end of 1959, with the resumption of steel production during the period of the Taft-Hartley injunction, the rate had dropped to approximately 5%.

Trade Union Developments.—Total trade union membership in the United States was estimated by the Bureau of Labor Statistics at 17.0 million, with an additional 1 million Canadian members of these same organizations. Little organizational work was accomplished in 1959. Unions operating in the mass-production industries—especially those in which automated equipment was in use or about to be increased in use—were keenly aware of the growing proportion of technicians and other white-collar employees as potential members. But as yet no new organizing appeal to attract these groups in appreciable numbers had been devised. Large-scale organizing drives among production workers, shrinking in absolute and relative numbers, was impeded by employment uncertainties as well as by failure of the AFL-CIO effectively to resolve its jurisdictional difficulties (see also American Federation of Labor and Congress of Industrial Organizations).

There were, however, specific manifestations of expedients employed to this end. On January 18, the United Automobile Workers and the Detroit Building Trades Council signed the first local area jurisdictional agreement which, in addition to specifying work "rights," pledged "friendly and cooperative relationships."

Seven railroad shop-craft unions reached agreement during the summer of 1959 to establish machinery for final and binding decisions relating to jurisdictional matters.

On January 7, the National Maritime Union and the Seafarer's International Union put an end to years of belligerent rivalry by setting up a committee to resolve differences and agreeing to withdraw charges each had filed against the other before the NLRB.

A merger between the Marine Engineers Beneficial Association and the Brotherhood of Marine Engineers was consummated in May.

The International Association of Machinists and the United Auto Workers continued their cooperative arrangements in aircraft bargaining, and in August formulated joint demands for presentation to the industry.

Late in October the International Brotherhood of Longshoremen voted to merge with its rival, the International Longshoremen's Association. The IBL had been established by the old American Federation of Labor after expulsion of the ILA for corrupt practices. The ILA in September had been voted into probationary AFL-CIO membership.

In general, however, the greatest hope for resolution of interunion differences and further merger of unions in the same or related fields, as well as for realistic consideration of an organizational drive by the AFL-CIO, lay in the convention scheduled by the parent body for 1960 to consider such matters.

Many unions in 1959 were faced with the high cost of institutional operations and administration. Such organizations as the Auto Workers, the Ladies' Garment Workers, the Shoe Workers, the Railroad Clerks, the Retail Clerks, the Office Employees, the Newspaper Guild, and the Communications Workers all raised dues.

Continued investigation by the Senate Select Committee on Improper Activities in the Labor or Management Field turned up, among a relatively small number of organizations, diverse examples of internal union corruption, undemocratic practices, and employer-union officer collaboration to write "sweetheart" contracts to the detriment of the workers affected. A report of the committee,[3] which ended its third and probably final year of operation, cited in particular collusive action between officials of two locals of the Meat Cutters and Butcher Workmen and of food processing firms in the New York City area. It also detailed what it termed a "shocking" story of "betrayal of union members and their families" by Teamster President James R. Hoffa and some of his principal aides, in connection with Teamster health and welfare funds in the Midwest.

Meanwhile, the three monitors established by a federal court to oversee the Teamsters union tightened, through court action, their authority over internal union affairs and their right to institute reforms.

Federal Legislation.—The Labor-Management Reporting and Disclosure Act of 1959 in a real sense grew out of the disclosures of corruption by the Senate Select Committee on Improper Activi-

[3] U.S. Senate Select Committee on Improper Activities in the Labor or Management Field, *Second Interim Report*, Aug. 5, 1959.

ties in the Labor or Management Field. In its essential features, the law:

(1) Guarantees certain basic union membership rights, such as voting and speaking on union affairs, and freedom from arbitrary discipline.

(2) Requires all labor organizations to file with the secretary of labor, on penalty of court action, constitutions and bylaws, detailed financial reports, and union-officer reports on certain personal financial dealings. Members may sue in federal court to enforce access to basic records.

(3) Limits trusteeships of parent unions over subsidiary units by requiring filing of accounting and other information with the secretary of labor at regular intervals; and limits trusteeships to control of corrupt or undemocratic procedures.

(4) Stipulates method of union elections and provides, under certain conditions, for a complaint to the secretary of labor, who may bring federal court action.

(5) Permits suits by members for an accounting; requires bonding of officers and certain employees; proscribes, under limits, holding of office by Communists or felons; makes illegal employer payments to unions or their representatives to gain influence; and bans extortion picketing.

The law also amends the Taft-Hartley Act to give states jurisdiction in cases over which the NLRB declines jurisdiction; allows economic strikers to vote in NLRB elections; strengthens the secondary boycott provisions; outlaws "hot cargo" clauses (an agreement to prevent the transporting of nonunion goods) in contracts; and makes organizational and recognition picketing illegal under certain conditions.

On May 19, President Eisenhower signed an amendment to the Railroad Retirement and Unemployment Insurance acts, raising pension benefits for railroad workers 10% and maximum unemployment insurance benefits by 20%.

State Legislation.—Workmen's compensation benefit increases were passed in 29 states in 1959. Compulsory coverage for farm workers was voted in California. The trend toward radiation disease coverage continued, with 5 states enacting relevant amendments and 9 increasing the time limit for filing claims in such cases.

California and Ohio adopted fair employment practices acts, making a total of 16 states with such legislation. Connecticut, Oregon, and Wisconsin extended their fair employment laws to cover age discrimination.

New York passed a measure similar to the Landrum-Griffin Act. North Dakota banned convicted criminals and most felons from holding union office. Wisconsin repealed its 1955 law prohibiting political contributions by unions.

Equal pay for women was enacted in Hawaii, Ohio, and Wyoming, making 20 states with some form of this requirement.

North Carolina approved its first minimum-wage law, and Maine expanded the coverage of its statute. Minimum wages were increased in Alaska, Vermont, New Hampshire, Connecticut, and Massachusetts.

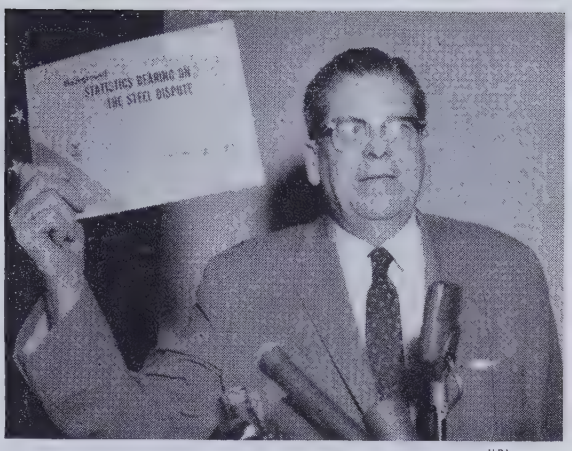
Labor and the Law.—In addition to the steel injunction case discussed earlier, the following 1959 Supreme Court decisions were significant:

A state antitrust law may not be invoked against a contract provision setting a minimum truck rental for owner-driven vehicles leased to carriers, because such a contract establishes a wage agreement rather than price-fixing (*Teamster Local 24* v. *Oliver,* January 19).

A state court cannot award damages for peaceful picketing, even though a state law is violated and the NLRB has refused jurisdiction (*San Diego Building Trades Council* v. *Garmon,* April 20).

Employee committees, even if established by employers, are labor organizations if they bargain over working conditions and have majority approval (*NLRB* v. *Cabot Carbon Co.,* June 8).

A unilateral wage increase given after a refusal-to-bargain complaint is filed can be considered by the NLRB in holding that an employer refused to bargain (*NLRB* v. *Fant Milling Co.,* June 15).



UPI

Secretary of Labor James P. Mitchell, at a press conference in Washington on August 19, holds a copy of his report on wages, profits, and prices in the steel industry.

On May 14, the NLRB announced it would exercise jurisdiction over nonresidential hotels and motels which gross at least $500,000 annually. Important NLRB cases included rulings that: a minority union cannot contract for exclusive bargaining rights (*Bernhard-Altmann Texas Corp.,* February 6); a union cannot refuse to deal with an employer representative merely because he was once an officer of that union (*International Ladies' Garment Workers Union, Northeast Department, and others,* February 13); employers may not make a lockout intermittent in order to defeat employees' claims to unemployment insurance (*Great Falls Employers' Council,* April 29); expiration of a contract does not relieve a union of duty to arbitrate grievances which arose during life of the contract (*Local 611, International Chemical Workers Union,* June 5).

(See also CHILD LABOR; LAW; NATIONAL LABOR RELATIONS BOARD; and the Index entry, *Labor.*)

LAWRENCE R. KLEIN,
Editor-in-Chief, "Monthly Labor Review."

LABOR FORCE. See Index entry.

LABOR RELATIONS BOARD, National. See NATIONAL LABOR RELATIONS BOARD.

LABRADOR. See NEWFOUNDLAND.

LACQUERS. See PAINTS, VARNISHES, AND LACQUERS.

LACROSSE. See SPORTS, GAMES, AND SHOWS.

Negotiators in the steel dispute, meeting in Washington on October 18, are: (l. to r.) George W. Taylor, head of president's board of inquiry; Arthur J. Goldberg, chief counsel for United Steelworkers; David J. McDonald, union president; and R. Conrad Cooper, chief industry spokesman.

WIDE WORLD

LAND BANKS, Federal. See FARM CREDIT SYSTEM.

LANDOWSKA, Wanda (80?), Polish harpsichordist: b. Warsaw, Poland, July 5, 1879 or 1877; d. Lakeville, Conn., Aug. 16, 1959. Landowska's numerous recordings of harpsichord music remain a living monument to her unique artistry and complete technical mastery, representing half a century of devotion to the harpsichord and its music. Her performances of Baroque music were, as Nicolas

EUROPEAN

Wanda Landowska, famous harpsichordist, died on August 16.

Slonimsky well wrote, "notable in their balance between classical precision and freedom from rigidity, particularly in the treatment of ornamentation."

She was graduated from the Warsaw Conservatory in 1893 and continued her studies under Moritz Moszkowski and Heinrich Urban in Berlin. She then went to Paris in 1900, joining the staff of the Schola Cantorum, and from Paris toured Europe as a pianist. Her desire to revitalize the performance of Baroque harpsichord music soon led her to devote her remarkable energy to propagandizing for that instrument. In 1912 she had a modern harpsichord built for her in Paris by Pleyel et Compagnie. She was invited in 1913 by August Kretzschmar to give master classes in harpsichord playing at the Berlin Hochschule für Musik.

She and her husband, Henri Lew, a writer on folklore whom she had married in 1900, were interned in Germany during World War I, at the end of which he was killed in an accident in Berlin. After the war, Landowska taught in Switzerland briefly before returning to Paris and buying, in nearby Saint-Leu-la-Forêt, a villa that she converted into a school of old music. She also taught at the Conservatory of Fontainebleau.

Wishing not only to restore to its original instrument the harpsichord music of such composers as François Couperin, Jean-Philippe Rameau, Domenico Scarlatti, Johann Sebastian Bach, and George Frederick Handel, but also to evoke a modern repertoire for the instrument, she began to commission compositions from well-known composers. The best known of these pieces, with dates of their first performances (with Landowska as soloist) were Concerto for Harpsichord and Chamber Ensemble, by Manuel de Falla (Nov. 5, 1926), and *Concert champêtre,* by Francis Poulenc (May 3, 1929).

Landowska first played in the United States at Philadelphia, with Leopold Stokowski conducting the Philadelphia Orchestra, on Nov. 20, 1923. She returned to the country frequently until 1932. At the time of the German invasion of France in 1940, Landowska fled, abandoning her villa and her collection of harpsichords, and reached the United States in 1941. Later, having settled at Lakeville, Conn., she devoted herself chiefly to recording and teaching, making only occasional recital and concert appearances. Her last public performance was in 1954 at the Frick Museum in New York City.

Landowska's recordings include Bach's *The Well-Tempered Clavier* and *"Goldberg" Variations* and *The Art of the Harpsichord* and *Treasury of Harpsichord Music,* as well as piano performances of sonatas by Mozart and Haydn (the latter released in the summer of 1959). She composed a number of works for strings, harpsichord, piano, and voice, and was the author of many articles and books on musical subjects, including *Bach et ses interprètes* (Paris 1906) and, with Henri Lew, *La musique ancienne* (Paris 1909; Eng. tr., *Music of the Past,* New York 1924).

For additional information on and criticism of Landowska, consult Bernard Gavoty's *Wanda Landowska* (Geneva 1957) and Roland Gelatt's *Music Makers* (New York 1953).

HERBERT WEINSTOCK,
Music Editor and Reviewer; Author of "Music as an Art" and other works.

LANGER, William (73), United States senator: b. near Everest, N.Dak., Sept. 30, 1886; d. Washington, D.C., Nov. 8, 1959. A Republican who frequently opposed his own party on major issues, "Wild Bill" Langer four times won a seat in the U.S. Senate, where he established himself as a table-thumping orator on behalf of isolationism and farm interests.

Earning a law degree from the University of North Dakota and admission to the bar of his home state before he was old enough to practice law, Langer went on to study at Columbia University, graduating in 1910 as president of his class. He returned to North Dakota to practice law, helping Arthur C. Townley[1] to found the Non-Partisan League in 1915. With the league's support, he became state attorney general in 1916. After defeat in the gubernatorial race of 1920 he engaged in a successful law practice in Bismarck until winning the governorship in 1932. Although he was removed by the state Supreme Court for allegedly soliciting political contributions from federal employees, he successfully appealed the conviction in 1935, was re-elected governor in 1936, and U.S. senator in 1940. Here too he surmounted an initial setback, this time in the form of a petition that he not be seated and a vote supporting the petition by the Senate Privileges and Elections Committee. In 1942 the Senate finally voted to seat him.

A thoroughgoing isolationist, he opposed passage of the lend-lease bill as well as extension of the draft in 1941, and renewal of the Reciprocal Trade Agreement Act in 1943–44. He voted against the Bretton Woods Monetary Agreement in 1945, against ratification in 1945 of the United Nations Charter, against Greek-Turkish Aid in 1947, against the $3,750 million loan to Great Britain in 1946, and against the North Atlantic Security Pact in 1949.

On domestic issues he favored statehood for Alaska, higher pay for postal employees and serv-

[1] On Nov. 7, 1959, the day before Langer's death, Arthur C. Townley (age 79) was killed in an automobile accident at Makoti, N.Dak. The Non-Partisan League, which he founded, opposed the rail and grain interests with the purpose of raising the farmer's economic status. It worked for state ownership of terminal elevators, flour mills, and packinghouses, and for exemption of farm improvements from taxation. Some of these and other goals were realized through legislation in 1919.

icemen, and a farm program closely following that of the Non-Partisan League, which he helped resuscitate after the depression of the 1930's, and which he sponsored until 1956 when the league filed its candidates as Democrats. In championing the farmer, Langer placed himself in opposition to Ezra Taft Benson, secretary of agriculture in President Eisenhower's cabinet. His opposition to his own party was evidenced in other ways, as for example his vote in 1959 against the appointment of Lewis L. Strauss as secretary of commerce.

In 1958 the North Dakota Republican convention failed to endorse Langer for re-election to the Senate. Campaigning on his own in the primary, he won every county and in the election was returned to the Senate for the fourth time.

LANGUAGE. See LINGUISTICS.

LAOS. A land-locked kingdom of Southeast Asia. Estimated area, 91,500 square miles; pop. (est. 1958), 1,690,000. Over half the population are Lao, a people of Thai stock. Thai, Meo, Kha, and other tribesmen of Indochinese or Chinese origin comprise most of the remainder. Lao is the official language, although French is commonly used in commerce and government. Vientiane (est. 80,000) is the chief city and administrative capital. Luang Prabang (est. 10,000) is the royal residence. Over 90% of the population is rural.

Government.—Laos is a constitutional monarchy. Crown Prince Savang Vatthana acceded to the throne on Nov. 4, 1959, following the death of his father, King Sisavang Vong, on Oct. 29, 1959, and assumed the royal name of Setha Khatya. The ministry is responsible to the National Assembly, consisting of 59 members elected at least every 5 years by universal suffrage. Party seating following the special elections of May 4, 1958, was: Rally of the Laos People, 36; Neo Lao Hak Xat (Communist), 9; Santithab (neutralist), 7; Democrats, 3; National Union, 2; unaffiliated, 2. Phoui Sananikone, of the pro-Western Rally of the Laos People, held the premiership from Aug. 18, 1958, to Jan. 1, 1960. On January 7, Kou Abhay was named to head an interim government, pending new elections.

The 1958 special elections followed a compromise agreement of 1957 between the Laotian government and the Communist-led Pathet Lao movement, whereby the Pathet Lao relinquished its control of the two northern provinces of Sam Neua and Phong Saly, agreed to the integration of its forces with the Royal Laotian Army, and obtained legal recognition as a political party. Following the unification of the country, and at the request of the Laotian government, the three-nation International Control Commission (set up under the Geneva agreements of 1954 ending the Indochinese War) suspended operations in July 1958.

The Geneva agreements of 1954 prohibited the establishment of foreign military bases in Laos or Laos' participation in aggressive military alliances. France was permitted to maintain a military training mission in Laos and has maintained such a mission, though of considerably smaller size than permitted. The United States, which supports the Laotian armed forces financially and also provides weapons and other aid, has a program evaluation office of some 200 persons and a training mission of about 100. Laos is not a member of the Southeast Asia Treaty Organization (SEATO), although a separate protocol to the SEATO treaty guarantees the defense of Laos.

Education and Religion.—An estimated 80% of the population is illiterate. In 1958 there were 770 primary schools (77,133 pupils), and 7 secondary schools (1,984). University education is obtained abroad, mainly at Saigon (South Vietnam) or in France. Buddhism is the chief religion and is a major element in the Laotian way of life.

Finance.—The budget for 1957 estimated expenditure at 1,145 million kip; revenue, 945 million (in October 1958 the kip was devalued from 35 to 80 kip per U.S.$1, and made freely convertible). The United States provided aid to Laos totaling $190,281,000 in the period from Jan. 1, 1955, to June 30, 1959, mostly for defense support. Technical assistance programs in agriculture, transport, social services, and other spheres are supported by the U.S. International Cooperation Agency, France, the Colombo Plan, and the United Nations.

Production.—Over 90% of the population is engaged in subsistence agriculture. Cultivation techniques are primitive and the country is a food deficit area, despite the low population density. Output of rice, the staple of diet, totaled 1,100 million pounds in 1957–58 (estimated average output, 1950–55: 970 million). Other crops are maize (average annual output about 12,000 metric tons), peanuts, coffee, tea, cotton, tobacco, ramie, beans, pimento, and sugar. Opium is grown by tribesmen in the north. Cattle and other livestock are raised. The vast forests yield teak, lumber, bamboo, and other products. Estimated output of tin concentrates in 1958 was 600 metric tons. The few industries include sawmills, rice mills, tanneries, woodworking, ships, and charcoal ovens. Handicraft items are produced in households or in small shops.

Foreign Trade.—Exports in 1958 totaled 54.8 million kip; imports (financed largely by United States aid), 1,040.9 million. Chief exports were tin concentrates (19.2 million kip), wood and lumber, and plants for medicine and perfume; chief imports: foodstuffs, textiles, transportation equipment, and other manufactures. Laos' chief trading partners are Thailand, South Vietnam, Japan, France, and the United States.

Transportation and Communications.—Laos has no railroads. Road transport is extremely primitive and entirely lacking in many areas; surfaced roads total some 1,200 miles, mainly in the south. The Mekong River is an important means of transport for bulk cargo. Most of Laos' foreign trade passes through Thailand and South Vietnam. Air Laos provides internal services and connections with nearby capitals. Passenger cars numbered 4,629 in 1958; telephones, 550.

Principal Events, 1959.—The 1957 compromise agreement between the Communist-led Pathet Lao movement and the Vientiane government appeared shattered in 1959, when the regime of Premier Phoui Sananikone pressed forward its anti-Communist program, and the Communists once again took up arms against the Royal government. The tougher policy against communism was inaugurated in July 1958, with the ouster of the Neo Lao Hak Xat from the coalition government. At the premier's request, the National Assembly on Jan. 14, 1959, voted to give the premier special powers to rule for a year without the assembly. On January 24 the premier reorganized his cabinet to include army officers and several members of the Committee for the Defense of the National Interest, a newly organized group dedicated to furthering economic and political reform and combating communism. On February 11 the Laotian government renounced the Geneva agreements of 1954, which had ended the Indochinese War and had barred the establishment of foreign bases in Laos. In mid-May the Laotian Army sought to incorporate two remaining Pathet Lao battalions, but was met with refusals on the part of the battalions' commanders. One of the battalions was forced to surrender; the other escaped, and in the ensuing pursuit by the army, several minor clashes occurred.

The implementation of Premier Phoui Sananikone's anti-Communist program evoked a sharp reaction by the neighboring Communist regime of the Democratic Republic of Vietnam (North Vietnam). In late December 1958 and early January 1959 the Vientiane and Hanoi governments accused each other of frontier violations in the poorly marked border area of central Laos. Laos' renunciation of the Geneva agreements was as-

Laotian government soldier stands guard over Communist-led rebels captured in Sam Neua, northern Laos, in September.

WIDE WORLD

sailed by North Vietnam (as well as by Communist China) as evidence that Premier Phoui Sananikone's regime had abandoned neutrality and placed Laos under United States domination. Following the clashes in mid-May between the escaping Pathet Lao battalion and the Royal Army, North Vietnam and Communist China repeated their previous demands for the reactivization of the three-nation International Control Commission. The Laotian government, however, declared that the mission's purpose had been fulfilled and its reactivization would constitute interference in Laotian internal affairs.

On July 16, reconstituted Pathet Lao forces opened an attack in Sam Neua, seizing several outposts lightly manned by the Royal Army. Before the end of July, rebel operations had spread to Phong Saly, with the apparent objective of regaining control of the two northern provinces given up by the Pathet Lao group under the 1957 compromise agreement. According to reports by the Laotian government, the rebels consisted of newly expanded forces equipped by North Vietnam. By early August, reinforced Royal Army forces had recaptured most of the posts in Sam Neua. In mid-August, however, there were reports of minor Pathet Lao activity in the central provinces of Savannakhet and Thakhek, and on August 23 a rebel thrust penetrated to within 50 miles of Vientiane, giving rise to some panic in the capital.

Meanwhile, with the agreement of France, Laos in late July requested aid from the United States to strengthen the Laotian Army. In early August it was reported that the number of United States technicians and training advisers in Laos would be increased. On August 17 the Soviet Union charged Laos with violating the Geneva agreement by permitting the establishment of a United States military base in Laos. The United States termed the Soviet accusation a gross distortion of the facts. On August 26 the U.S. State Department announced that special aid (mainly small arms, uniforms, and transport equipment) would be rushed to Laos to permit the expansion of the Laotian Army from about 25,000 to 29,000, and the first shipment of such aid arrived in Vientiane by airlift on August 31.

A second large-scale Pathet Lao offensive began on August 30 and resulted in the rebel capture of several score villages in Sam Neua, including the posts of Moung Het and Xien Kho. Government spokesmen charged that the rebel attack was aided by artillery fire from the North Vietnamese border and that North Vietnamese troops were participating directly in rebel operations. On September 4, in a cablegram to U.N. Secretary General Dag Hammarskjöld, Laos accused North Vietnam of "flagrant aggression," and appealed to the United Nations to send an emergency force to help defend Laos. The U.N. Security Council voted on September 8 to send a four-nation investigation subcommittee to Laos to inquire into the charges of aggression. The USSR, which had opposed the Security Council action, on September 14 called for an international conference to consider the problem of Laos within the scope of the Geneva agreements. The Soviet proposal was rejected by the United States on September 15 and by Britain on September 22.

The United Nations investigation subcommittee arrived in Laos on September 15, studied evidence submitted by the Laotian government, sent teams to Sam Neua and other battle zones, and departed from Laos on October 13. In its report of November 6, the subcommittee stated that evidence "did not clearly establish whether there were crossings of the frontier," although there was some evidence of North Vietnamese weapons and materials support of the rebels. At the request of the Laotian government, Hammarskjöld visited Laos from November 12–19. On Hammarskjöld's initiative, a United Nations "presence" was temporarily established in Laos in the person of Sakari S. Tuomioja of Finland, who arrived on November 17. Tuomioja's ostensible purpose was to conduct a survey of Laos' economic needs, but it was hoped that his presence in the country would tend to allay the conflict.

Beginning with the arrival of the United Nations investigation subcommittee, rebel activity had diminished considerably. On September 27, government forces recaptured Muong Het, taken by the rebels in their drive of August 30. In late September and October a few rebel raids took place in the southern provinces, where the rebels had enlisted the Kha tribesmen as allies. These raids were on a minor scale, however, and rebel efforts were reported to have shifted mainly to propaganda activities in the rural areas.

Rejecting pressures by army leaders and militants of the Committee for the Defense of the National Interest for more aggressive action against the Pathet Lao, Premier Phoui Sananikone ousted several top military men and members of the committee from his cabinet on December 15. On December 18, at the behest of the premier, the National Assembly voted to prolong its mandate (scheduled to expire on December 25) until the holding of new national elections in April 1960. However, following the death on December 29 of Katay D. Sasorith, former premier and president of the Rally of the Laos People, Premier Phoui lacked sufficient support to withstand the Committee for the Defense of the National Interest, and resigned on Jan. 1, 1960. The army then took over control until January 7, when King Setha Khatya named Kou Abhay to head an interim government, pending the holding of elections early in the year.

(See also FAR EAST.)

M. J. G.

LATIN AMERICA. See INTER-AMERICAN AFFAIRS; articles on the Latin American countries; and the Index entry, *Latin America.*

LATIN AMERICAN LITERATURE. The most significant publishing in Latin American is done in Mexico by the Fondo de Cultura Económica, whose publications are of such a scope (104 titles in 1958) as to make it an extraordinary vehicle of cultural internationalism. Important Latin American literary periodicals include *Cuadernos Americanos* (published in Mexico), *Sur* (Argentina), *Cuadernos* (France), and three Puerto Rican magazines: *Asomante, La Torre,* and *Revista del Instituto de Cultura Puertorriqueña.*

Four important Latin American writers died in 1959: Luis Palés Matos (February 23), José Vasconcelos (June 30), Ventura Garcia Calderón (October 28), and Alfonso Reyes (December 27). They were, respectively, from Puerto Rico, Mexico, Peru, and Mexico.

Novels, Short Story, and Drama.—Many important titles were added to the Latin American bibliography in 1959. The current trend in fiction is to depart from *criollismo* (that is, regional literature which is realistic and sometimes naturalistic, and which emphasizes native characters and backgrounds) and to use themes with a more universal point of view. However, the economic and political strife characteristic of Latin American history is always present in fiction, and among the best novels of the year were those which dealt with the

drama of men struggling against various tyrannies.

El sol a plomo by the Cuban, Humberto Arenal, is in this category. This short novel, translated into English as *The Sun Beats Down*, depicts an episode of the recent Castro revolution in Cuba. *El laberinto* by Puerto Rican novelist Enrique Laguerre is rich in psychological complexities, set against the background of the Spanish-speaking minority in New York City, and the fight for freedom in the Caribbean area. In *Muertes de perro*, the Spaniard, Francisco Ayala, who has lived in Latin America for many years, gives a vivid description of a typical Latin American dictatorship.

The cultural flowering in Puerto Rico is particularly evident among its playwrights and short story writers. Names of promise in the younger generation include Francisco Arriví, Abelardo Díaz Alfaro, José Luis González, Pedro Juan Soto, and René Marqués. Marqués contributed *Los soles truncos* to the Festival of the Americas, held in the summer in Chicago. The production, presented both in English and in Spanish, was warmly received.

Two recent anthologies of short literary pieces are of merit. The Chilean, María Flora Yáñez, compiled *Antología de los jóvenes cuentistas chilenos*, published in 1958. René Marqués' *Cuentos puertorriqueños de hoy* appeared in 1959.

Poetry.—Latin American poetry was well-represented during the year, and literary magazines published work of the younger poets beside that of the better-established names. Dora Isella Russell of Uruguay is one of the most original and sensitive of contemporary poets, and Cecilia Meireles of Brazil is a writer of subtle and delicate verse. The Chilean, Pablo Neruda, published *Estravagario*, a well-balanced combination of poetry and illustrations. The Cuban, Nicolás Guillén, one of the outstanding "nativist" poets using Negro imagery and rhythms, published *La paloma de vuelo popular: Elegías.*

Following the death of Luis Palés Matos in February, Federico de Onís undertook a critical study of the late Puerto Rican poet's works. In addition, the periodicals *Asomante* and *La Torre* dedicated special issues to Palés Matos.

Nonfiction.—The second volume of Alberto Zum Felde's monumental *Índice crítico de la literatura hispanoamericana* appeared in 1959. (The first volume was published in 1954.) Zum Felde, a Uruguayan, devotes his new work, entitled *La narrativa*, to fiction. The Spaniard, Salvador de Madariaga, released *Presente y porvenir de hispanoamérica.* The Colombian, Germán Arciniegas, wrote a vivid interpretation of Latin American culture through its great men; the volume is entitled *América mágica, los hombres y los meses.* Chilean critic Ricardo Latcham brought out *Estudio sobre la literatura hispanoamericana.*

National literatures and other aspects of national cultures were examined by Luis Alberto Sánchez in *El Perú: Retrato de un país adolescente*, and by Cintio Vitier in *Lo cubano en la poesía.* The author of this article examines the social, literary, and artistic aspects of Puerto Rican culture in *Panorama de la cultura puertorriqueña.* Concha Meléndez collected some of her best critical studies in *Figuración de Puerto Rico y otros estudios*, and Ángel Flores compiled *Historia y antología del cuento y la novela en hispanoamérica.*

Autobiography and authors' personal compilations were also represented in 1959. *La flama*, the fifth volume of the memoirs of the Mexican essayist, José Vasconcelos, was published. Mariano Picón Salas of Venezuela was the author of a delightful autobiographical essay, *Regreso de tres mundos*, which touches on many of the experiences of his generation. The late Alfonso Reyes of Mexico issued the ninth volume of his complete works (*Obras completas*).

Several important books relative to Latin America were published in English in the United States during 1959. Harriet de Onís' translation of the Peruvian chronicles of Pedro de Cieza de León (1518–60), the Spanish soldier and historian, appeared under the title *The Incas.* Thomas Mabry Cranfill compiled an anthology of contemporary Mexican art, verse, and prose fiction in *The Muse in Mexico: A Mid-Century Miscellany.* Gonzalo Fernández de Oviedo y Valdés' *Natural History of the West Indies* was translated by Sterling A. Stoudemire.

María Teresa Babín,
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LATTER-DAY SAINTS. See Church of Jesus Christ of Latter-day Saints.

LATVIA. Independent since 1918, Latvia was forcibly annexed to the USSR in 1940 and reannexed by force after World War II, thus becoming the Latvian Soviet Socialist Republic. The United States does not recognize this annexation.

Area and Population.—Latvia's area is about 25,000 square miles; its population (1959), 2,094,000, of which 56% is urban. The largest cities, with their 1959 populations, are Riga, the capital, 605,000; Liepaja (Libau), 71,000; Daugavpils (Dvinsk), 65,000; and Jelgava (Mitau), 31,700 (1956). The predominant religion is Lutheran, although there are many members of the Roman Catholic and Russian Orthodox churches. About 70% of the people are Latvians, an Indo-European ethnic group. Russians constitute the largest minority.

Government.—The Latvian legislature is a single-chamber Soviet of 200 deputies elected for 4-year terms. It rarely meets, and in the interim its authority is delegated to a Presidium and a Council of Ministers (cabinet). The present premier is Yan V. Peive. The Latvian government has no political autonomy, merely fulfilling orders from the Kremlin. All important posts are held by members of the Latvian Communist Party, which is headed by Arvid Y. Pelshe, the first secretary.

In 1959, Latvia had 61,414 members of the Communist Party, 120,000 members of the Young Communist League, and 640,000 trade unionists. Data in the Latvian press indicated that the majority of Latvian Communists were Russian civilians and troops residing in the country.

Finance.—The 1959 budget listed expenditures of 4,086,764,000 rubles ($1,021,691,000), an increase of 273,764,000 rubles ($68,441,000) over 1958.

Economy.—Latvian agriculture, with 1,220 collective farms, is largely collectivized. About 3,600,000 acres, of which one fifth was in state farms, were under cultivation in 1959. The main crops are grain, potatoes, hay, and flax. The Seven-Year Plan (1959–65) calls for a 500,000-acre increase in crop land, but the main emphasis of the agricultural plan is on livestock raising. The output of farm produce in 1965 is planned to increase over 1958 by the following percentages: grain, 100–120; potatoes, 70; sugar beets, 50–70; meat, 60; milk, 50–70; and butter, 80.

The Seven-Year Plan also calls for the expansion of the electrical equipment, radio-television, precision machinebuilding, railway carbuilding, and fishing industries. Industrial production in 1965 is planned to increase over 1958 by the following percentages: all industry, 60; machinery, 100; railway cars, 100; electric light bulbs, 80; and cement, 60. The fish catch is scheduled to increase by 120%. In addition, the plan provides for the construction of 1,760,000 square meters of government housing and the completion of the Dashava-Minsk-Vilnyus-Riga gas pipeline.

Principal Events, 1959.—The standard of living remained low in Latvia in 1959, and even the Latvian press admitted that there were shortages of vegetables in urban stores. This was one of the

sources of public discontent. President Yan E. Kalnberzins criticized this discontent in a major speech accusing the Latvian masses of bourgeois nationalism, chauvinism, bourgeois ideology, belief in capitalist propaganda, absenteeism from work, defective production, hooliganism, and excessive drinking. In July, Deputy Premier Eduards K. Berklavs was discharged for having advocated that emphasis under the Seven-Year Plan be placed on consumer goods rather than on heavy industry. To keep discontent under control, 100,000 Russian army and police troops were stationed on Latvian soil during the year.

ELLSWORTH RAYMOND,
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LAW. Supreme Court Statistics.—During the term which began in October 1958 and ended in June 1959, the Supreme Court of the United States handed down 113 opinions, of which 13 were *per curiam*. Sixty-one per cent of the opinions showed dissents, with 24 of these 69 being five-four decisions. Eighty-six cases (all but 27) involved either the government of the United States or of a state. Of the federal government cases, 11 involved criminal law, seven concerned federal regulation, six dealt with taxation, six with public contracts and property, five with labor, three with transportation, and one with aliens. Justice William J. Brennan, Jr., wrote 14 opinions, which was the most by any one justice, while Chief Justice Earl Warren tied with Justices Hugo L. Black, Charles Evans Whittaker, and Potter Stewart in writing 11 opinions, which was the least. The chief dissenter was Justice William O. Douglas, with 39 such votes, and the member of the court who dissented the least number of times (11) was Justice Tom C. Clark. The court disposed of 1,781 cases during the 1958–59 term, leaving 281 cases on the docket at the end of this term.

Business Regulation; Antitrust Laws.—In a case applying the antitrust laws to a federally regulated industry, the court held that prior approval by the Federal Communications Commission of an agreement for the exchange of television stations did not preclude a civil action by the United States under the Sherman Act. Relying primarily on the legislative history of the Communications Act, the court decided that the scope of the commission's approval was limited to the statutory standard of "public interest, convenience, and necessity" (*United States* v. *Radio Corporation of America,* 358 U.S. 334). In another Sherman Act case, *Melrose Distillers, Inc.* v. *United States* (359 U.S. 271), the court refused to allow the dismissal of an indictment for restraining trade and conspiring and attempting to monopolize commerce, when the corporate defendants were dissolved and became separate divisions of a new corporation under the same ultimate ownership. *International Boxing Club* v. *United States* (358 U.S. 242) was a civil action under the Sherman Act for restraint of trade in the promotion, broadcasting, and televising of world championship boxing contests. The court decided that championship boxing, as distinguished from boxing in general, was a sufficiently separate part of the trade or commerce to constitute the "relevant market" for purposes of the antitrust law.

In *Klor's, Inc.* v. *Broadway-Hale Stores, Inc.* (359 U.S. 207) the court held that a conspiracy among many manufacturers and distributors and one retailer not to sell to another retailer, or to sell to the latter only at discriminatory prices and unfavorable terms, violated the Sherman Act. The combination was found to interfere with the natural flow of interstate commerce and to have a "monopolistic tendency," even though the victim was just one merchant whose business was so small that his destruction would make little difference to the economy.

In a case of first impression under the Robinson-Patman Act, the court held that a dress pattern manufacturer was not justified in furnishing free services and facilities, of substantial value, to large variety stores, while not furnishing the same services and facilities to small fabric stores (*Federal Trade Commission* v. *Simplicity Pattern Co.,* 360 U.S. 55). The court found that "competition" existed, within the meaning of the law, even though the variety stores sold patterns for a profit while the smaller stores sold them as an inducement to customers to buy yard goods.

Safeway Stores, Inc. v. *Oklahoma Retail Grocers Ass'n.* (360 U.S. 334) involved the validity of the state's Unfair Sales Act as applied to the prohibition of sales of groceries at prices below cost. Holding that the statute, as so applied, did not violate the equal protection clause of the 14th Amendment, the court rejected the contention that there was a constitutional right to compete by selling below cost to meet competition from other grocers violating the law. It also decided that allowing grocers to give trading stamps with goods sold at or near the statutory minimum price was not unconstitutionally discriminatory, because such stamps were given to cash customers "across the board," whereas price cuts were made selectively in order to lure customers into the store with "loss leaders."

Interpreting the federal Bankruptcy Act, the court held that an employer's contributions owed to a union welfare fund (established under a collective bargaining contract) were not entitled to priority as meeting the statutory concept of "wages due to workmen" (*United States* v. *Embassy Restaurant, Inc.,* 359 U.S. 29).

In a case distinguishing between "insurance" and "securities," the court decided that issuers of "variable annuities" had to register them with the Securities and Exchange Commission (*Securities and Exchange Commission* v. *Variable Annuity Life Insurance Co.,* 359 U.S. 65). Since these "annuities" had no element of fixed return, but were dependent on the value of investments made by the insurer, it was held that they were not really "insurance" and that for this reason their issuance was subject to federal regulation.

Interpreting a provision of the Fur Products Labeling Act, the court held that a retail sales slip is an "invoice" within the meaning of language prohibiting falsely invoiced sales of furs (*Federal Trade Commission* v. *Mandel Bros., Inc.,* 359 U.S. 385). The argument that the "invoice" provision did not apply to retail sales was rejected, with emphasis on the fact that the invoice was the only permanent record of the transaction that the purchaser had. (See also FEDERAL TRADE COMMISSION; SECURITIES AND EXCHANGE COMMISSION.)

Communications; Transportation; Public Utilities.—Deciding that the Federal Communications Act prevented a broadcasting company from removing defamatory statements from speeches made by candidates for public office, the Supreme Court held that the act also granted to a radio or television station an immunity from liability for libelous material which it broadcast (*Farmers Educational Union* v. *WDAY, Inc.,* 360 U.S. 525). The court said that to allow civil, and perhaps criminal, liability to be imposed for the very conduct which the statute demands of the licensee would be "unconscionable."

T.I.M.E., Inc. v. *United States* (359 U.S. 464)

raised the question whether a shipper of goods by a certificated motor carrier could challenge, in postshipment litigation, the reasonableness of the carrier's charges which had been made in accordance with tariffs duly filed with the Interstate Commerce Commission. The court held that the Motor Carrier Act precluded the recovery of past charges alleged to have been unreasonable, rejecting the argument that denial of a remedy to the shipper who had paid such rates would be to sanction injustice.

A violation of the policy of free trade reflected in the commerce clause was determined to exist in an Illinois statute requiring the use of contour-type rear mudguards on trucks and trailers, rather than the customary straight mudguards (*Bibb* v. *Navajo Freight Lines, Inc.*, 359 U.S. 520). The court found this to be one of those rare cases where local safety measures that are nondiscriminatory place an unconstitutional burden on interstate commerce, since the state was insisting on a design which was out of line with the requirements of most other states. Acting to preclude a multitude of interpretations of the same federal certificate by several states, the court held that the Virginia courts could not impose a fine against a motor carrier certificated by the Interstate Commerce Commission to operate in interstate commerce, based on the belief by the state Corporation Commission that a routing of some of the carrier's business was merely a subterfuge to evade Virginia law (*Service Storage and Transfer Co., Inc.* v. *Virginia*, 359 U.S. 171).

In *Atlantic Refining Co.* v. *Public Service Commission* (360 U.S. 378) the Supreme Court upset a determination by the Federal Power Commission which allowed the sale of offshore gas by producers to a transmission company at a price agreed upon by these parties. The price was higher than the transmission company had ever paid, and the court held that the commission should have issued a conditional, instead of a permanent, certificate on the basis of the record before it.

Taxation.—In *Cammarano* v. *United States* (358 U.S. 498) the court upheld, as having acquired the force of law, a longstanding provision of U.S. Treasury regulations prohibiting the deduction of expenditures for "lobbying" or for the promotion or defeat of legislation. The amounts in question were spent to save the taxpayer's business from extinction by legislation, and would have been deductible as "ordinary and necessary business expenses," in computing federal income taxes, except for the regulations. The time when income should be reported by taxpayers using the "accrual" method of accounting was at issue in *Commissioner* v. *Hansen* (360 U.S. 446). The court held that amounts withheld by finance companies when they purchased installment paper from automobile dealers, in order to cover possible losses on such paper, were income to the dealers when recorded on the books of the finance companies as liabilities to the dealers. *Parsons* v. *Smith* (359 U.S. 215) involved the question of entitlement to the deduction for depletion, as between owners of coal lands and persons whom the latter paid to extract coal from their properties. The court held that the deduction was available only to a person having a capital investment in the mineral in place.

State taxing power was ruled on by the Supreme Court in several cases. That a state had power to tax the net income of a business engaged exclusively in interstate commerce was decided in *Northwestern States Portland Cement Co.* v. *Minnesota* (358 U.S. 450). The court qualified this holding by saying that the tax must be calculated on the basis of a fair apportionment formula, that it must be nondiscriminatory, and that there must be a sufficient "nexus" (that is, connection), in the form of business activity within the taxing state, to satisfy the requirements of the due process clause of the 14th Amendment. In *Youngstown Sheet and Tube Co.* v. *Bowers* (358 U.S. 534) the court upheld state personal property taxes on imported iron ore and lumber, as against the contention that the levies violated the import clause of the Constitution (Art. 1, sect. 8). The determining factor was that the goods had been committed to use in the manufacturing process and thus had lost their immunity from taxation. In *Railway Express Agency, Inc.* v. *Virginia* (358 U.S. 434) the validity of a franchise tax on a transportation company doing an exclusively interstate business was unsuccessfully challenged. The tax, which was measured by gross receipts, was determined to be a constitutionally permissible tax on "intangibles," or "going concern" value. The decision in *Allied Stores of Ohio, Inc.* v. *Bowers* (358 U.S. 522) was that a state could tax the warehoused property of a resident while exempting the property of nonresidents under similar circumstances, without violating the equal protection clause of the 14th Amendment.

Criminal Law.—In *United States* v. *Shirey* (359 U.S. 255) the Supreme Court held that an offer by a person to a congressman to contribute $1,000 a year to a political party, in consideration of the legislator's use of his influence to procure a postmastership for the defendant, violated a federal bribery law. In *Arroyo* v. *United States* (359 U.S. 419) the "anti-kickback" provision of the Taft-Hartley Act was termed inapplicable to the theft by a union official of an employer's contribution to an employees' welfare fund. The court found in the legislative history of the act no congressional intent to duplicate state criminal laws. In *Heflin* v. *United States* (358 U.S. 415) the court refused to allow the same defendant to be convicted under the federal Bank Robbery Act both for feloniously taking and for feloniously receiving the same property.

The fact that kidnaping and murder are separate crimes in Oklahoma posed the question whether a judge, in sentencing for kidnaping, could consider murder during the kidnaping, for which the defendant had already been convicted (*Williams* v. *Oklahoma*, 358 U.S. 576). The court answered the question in the affirmative. In *Abbate* v. *United States* (359 U.S. 187) the defendants had previously been convicted, under an Illinois statute, of destroying telephone facilities. The court held that this fact did not bar their prosecution for the same acts under a federal law making it a crime to destroy means of communication controlled or operated by the United States, rejecting the plea of "double jeopardy" under the 5th amendment. The reverse situation was considered in *Bartkus* v. *Illinois* (359 U.S. 121) where the court decided that the defendant could be tried under a state robbery statute, even though he had previously been acquitted when tried (on the basis of the same facts) under a federal statute. The court thought that "precedent, experience, and reason all support the conclusion" that there was no deprivation of due process contrary to the 14th Amendment.

The previously affirmed right to have judicial review of a criminal conviction without paying a fee for filing an appeal was extended to include all phases of the review procedure, in *Burns* v. *Ohio* (360 U.S. 252). Accordingly, an indigent defendant, who had already been afforded a review by the intermediate Ohio Court of Appeals, was

held to have a right, under the due process clause of the 14th Amendment, to invoke the discretionary reviewing authority of the state Supreme Court without paying docket and filing fees. A conviction for first-degree murder was reversed on the ground that the defendant's confession was involuntary, in *Spano* v. *New York* (360 U.S. 315). The accused was questioned for about eight hours, was refused permission to speak with his attorney, and was partly induced to confess by a policeman friend who falsely stated to him during the questioning that his job was endangered by a telephone call which the defendant had made to him. *Cash* v. *Culver* (358 U.S. 633) involved the right to counsel under the 14th Amendment's guarantee of due process of law. An uneducated farm boy's unfamiliarity with his rights under Florida law to demand a cautionary instruction to the jury with respect to the evidence of an accomplice operated to make the denial of counsel a deprivation of due process, the court found. The right to the assistance of counsel was also litigated in *Anonymous* v. *Baker* (360 U.S. 287), where a state judge was conducting a judicial inquiry into alleged improper practices of lawyers. The court held that the judge could require counsel for subpoenaed witnesses to remain outside the hearing room, where he offered to suspend the proceedings whenever the witnesses wanted to consult with counsel. Convictions of contempt for the witnesses' refusals to answer questions were upheld, and the contention that the due process clause of the 14th Amendment was violated by this procedure was rejected.

In *Frank* v. *Maryland* (359 U.S. 360) the court upheld a city ordinance permitting health inspection of premises without a warrant and providing a fine for refusal of entry for such inspection. Contentions that the ordinance was unconstitutional under the "unreasonable search and seizure" and the "due process" provisions of the Constitution were rejected. "Probable cause" to believe that a person arrested without a warrant had committed a crime was the issue before the court in *Draper* v. *United States* (358 U.S. 307). The arrest by a federal narcotic agent of a person fitting the description given by a reliable informant, under circumstances accurately predicted by the informant, was upheld as lawful under the 4th Amendment, and the subsequent search of the defendant's person and seizure of drugs from him were found to be valid.

Communism and Internal Security.—In *Raley* v. *Ohio* (360 U.S. 423) the Supreme Court held that witnesses before a state's Un-American Activities Commission could not be convicted of contempt, on the theory that they were presumed to know the law of the state, for refusal to answer certain questions when a state immunity statute deprived them of the protection of the privilege against self-incrimination. The defendants had claimed the privilege in refusing to answer each of the questions. The court reversed three out of four convictions under these circumstances, asserting that they violated the due process clause of the 14th Amendment and were the result of "an indefensible sort of entrapment by the State."

In two companion cases, the court denied the power of the secretary of defense to revoke the security clearances of employees of government contractors. Without explicit authorization from either the president or Congress, government officials could not deprive such employees of their jobs in proceedings where they were not afforded the safeguards of confrontation and cross-examination, the court ruled in *Greene* v. *McElroy* (360 U.S. 474). Substantially the same facts were involved in *Taylor* v. *McElroy* (360 U.S. 709). In *Vitarelli* v. *Seaton* (359 U.S. 535) the court upset the dismissal of a government employee on grounds of national security, where the discharge proceedings fell substantially short of the requirements of the applicable departmental regulations.

Rejecting the argument that Congress, by enacting the Smith Act, had completely occupied the field of subversive activities, the court upheld the application of the New Hampshire Subversive Activities Act to compel the production of the names of guests at an alleged Communist-front camp (*Uphaus* v. *Wyman,* 360 U.S. 72). The court affirmed the state's power to investigate, in the interest of self-preservation, as to whether subversive persons were present in the state. In *Barenblatt* v. *United States* (360 U.S. 109) the court affirmed the conviction for contempt of Congress of a witness refusing to answer questions inquiring whether he was or ever had been a member of the Communist Party. It was decided that the inquiry of a subcommittee of the House Committee on Un-American Activities did not violate the 1st Amendment, since it was part of an appropriate investigation of the advocacy of, or preparation for, the ultimate overthrow of the government of the United States by force and violence. The court concluded that "the balance between the individual and the governmental interests here at stake must be struck in favor of the latter. . . ." (See also CIVIL LIBERTIES.)

Racial Discrimination.—The Supreme Court reversed a state court's conviction of a person refusing to answer questions of a Virginia legislative committee investigating integration in the public schools and related subjects, on the ground that the witness had not been clearly advised as to the purposes of the inquiry (*Scull* v. *Virginia,* 359 U.S. 344). Although not reaching the question of possible invasion of "an area of speech, press, and association of vital public importance," the court remarked that the circumstances surrounding the subpoena, as well as the questions asked, made it clear that the investigation touched such an area.

In *Lassiter* v. *Northampton County Board of Elections* (360 U.S. 45) the court upheld a requirement that a prospective voter "be able to read and write any section of the Constitution of North Carolina in the English language." It refused to draw the inference that the literacy provision was merely a device to make racial discrimination easy, finding that this test fell within the wide scope for permissible exercise of a state's power to prescribe standards for voters.

The court decided that Virginia courts should be allowed a reasonable chance to construe certain state statutes concerning rendering of financial aid in litigation and activities and advocacy relating to racial integration or segregation, before the federal courts would be permitted to enjoin the enforcement of such statutes (*Harrison* v. *NAACP,* 360 U.S. 167). Without intimating any view as to the validity of the state statutes, the court merely held that these enactments should be exposed to state court construction or limiting interpretation before the federal courts were asked to decide upon their constitutionality.

Censorship.—The court struck down as unconstitutional under the 1st and 14th Amendments a New York State motion picture censorship provision, when applied to *Lady Chatterley's Lover* (*Kingsley International Pictures Corp.* v. *Regents,* 360 U.S. 684). The invalidated statute prohibited the exhibition of films presenting acts of sexual immorality (in this case, adultery) as desirable, acceptable, or proper patterns of behavior. The court said that the state had "struck at the very heart of constitutionally protected liberty" in at-

tempting to prevent the advocacy of an idea—that adultery under certain circumstances may be proper behavior.

In *Smith* v. *California* (361 U.S. 147), the court held that an ordinance making the mere possession of an obscene book by a bookseller a crime was unconstitutional as invading freedom of speech and of the press, under the 14th Amendment. The imposition by the state of "strict liability," making possible a conviction of a person having no knowledge whatsoever of the contents of a book, was considered by the court to have "such a tendency to inhibit constitutionally protected expression that it cannot stand under the Constitution."

Torts; Workmen's Compensation.—Several cases involving admiralty law were decided by the Supreme Court. In a case of first impression, the court held that maritime law applied to an accident on a ship berthed in New York, and that the shipowner owed a duty of reasonable care to the social guest of a crew member (*Kermarec* v. *Compagnie Generale Transatlantique*, 358 U.S. 625). In *United, etc., Pilots Ass'n* v. *Halecki* (358 U.S. 613) the court denied damages for the death of a shore-based electrician under the doctrine of "unseaworthiness" (under which a shipowner can be held liable even if he exercises reasonable care). The reason for the decision was that, in using special equipment to clean generators, the injured employee was not doing the type of work traditionally performed by ship's crew. On the other hand, a stevedore was allowed to recover damages for injury due to "unseaworthiness," in *Crumady* v. *The Joachim Hendrik Fisser* (358 U.S. 423). In *The M/V "Tungus"* v. *Skovgaard* (358 U.S. 588) the widow of an employee of an independent contractor hired to discharge cargo was allowed to recover damages under the New Jersey wrongful death statute, where the death occurred in navigable waters within the territory of New Jersey.

The three-year statute of limitations did not apply to a suit under the Federal Employers' Liability Act, where the employer had induced the delay by telling the employee he had seven years in which to sue, the court decided in *Glus* v. *Brooklyn Eastern District Terminal* (359 U.S. 231), citing in support of its holding the maxim that "no man may take advantage of his own wrong."

Governmental immunity from suit was involved in *Petty* v. *Tennessee-Missouri Bridge Commission* (359 U.S. 275), where the widow of an employee who died in a ferryboat accident was allowed to collect damages from a state-created commission. The court said that the two states had waived their immunity by the terms of a compact prepared by them and submitted to Congress.

In two similar cases the court refused to allow the recovery of damages for defamatory material published by government officials. A letter from the commanding officer of a naval shipyard to certain members of Congress was held to be "absolutely privileged," so that a person claiming to be defamed thereby could not maintain a lawsuit even if the officer acted maliciously (*Howard* v. *Lyons*, 360 U.S. 593). It was found that the circulation of the report was clearly done in the discharge of the officer's duties. In *Barr* v. *Mateo* (360 U.S. 564) the same doctrine of "absolute privilege" was applied to a press release in which the director of a government agency announced his intention to suspend certain employees for conduct for which the agency had been criticized. The court stressed the importance of government officials' being "free to exercise their duties unembarrassed by the fear of damage suits in respect of acts done in the course of those duties."

Labor Law.—The jurisdiction of state courts, a familar cause of controvery, was litigated in several cases. In *San Diego Building Trades Council* v. *Garmon* (359 U.S. 236) the Supreme Court held that a state court had no power to award damages for injuries caused by peaceful picketing, on the ground that picketing was a tort under state law, even though the National Labor Relations Board had declined to exercise its jurisdiction in the case. The court distinguished cases involving intimidation and threats of violence, where action by state courts is permissible. In *Plumbers Local* v. *County of Door* (359 U.S. 354) it was decided that a state court could not enjoin the peaceful picketing of a county courthouse, in spite of the fact that the complainant was the affected county. The court rejected the arguments that the labor dispute did not affect interstate commerce and that political subdivisions were not subject to the National Labor Relations Act. A conflict between state and federal law was settled in favor of the latter in *Teamsters* v. *Oliver* (358 U.S. 283), where the court held that an Ohio antitrust law could not be applied to restrain the carrying out of an agreement relating to the rental of trucks by owner-drivers to a lessee-operating company. The basis of the decision was the court's view that the rental provisions were intimately related to the problem of maintaining the basic wage structure established by collective bargaining, and therefore came within the scope of the National Labor Relations Act.

In *United Steel Workers* v. *United States* (361 U.S. 39) the Supreme Court upheld the injunction granted by the lower courts to send striking steelworkers back to their jobs for an 80-day cooling-off period. Rejecting the union's arguments that neither the national health nor the nation's safety were being imperiled, the court said that there was ample ground for holding (under the Taft-Hartley Act) that the national safety was affected. It did not decide whether the national health was endangered.

In *National Labor Relations Board* v. *Cabot Carbon Co.* (360 U.S. 203) the court decided that "employee committees," established and supported by employers at each of their several plants to consider and discuss problems of mutual interest, including grievances, were "labor organizations" within the meaning of the National Labor Relations Act, even though they did not "bargain with" employers in the usual concept of collective bargaining. For this reason, it was determined that the act prohibited employers from dominating, interfering with, or supporting such committees.

In *National Labor Relations Board* v. *Fant Milling Co.* (360 U.S. 301) an unfair labor practice complaint formulated by the NLRB was predicated partially on events occurring after the filing of charges by a union with the Board's regional director. The court held that these subsequent events, relating to the refusal of an employer to bargain in good faith, could properly be considered by the board where such events were related to and grew out of those alleged in the charges. In applying the Fair Labor Standards Act, a personal loan company is not exempt as a "retail or service establishment," the court ruled in *Mitchell* v. *Kentucky Finance Co.* (359 U.S. 290). The opinion stressed the legislative history of the act, as well as the rule that exemptions from it must be narrowly construed. *Mitchell* v. *Lublin, McGaughy & Associates* (358 U.S. 207) involved the question of whether draftsmen and other employees of an architectural and consulting engineering firm were "engaged in commerce," so as to be subject to the minimum wages and maximum hours provisions of the same act. Answering the question in the affirmative, the court relied on the fact that the employees worked intimately with plans and specifications prepared by the company for the repair and construction of various interstate instrumentalities and facilities. (See also NATIONAL LABOR RELATIONS BOARD.)

Interpreting provisions of the Railway Labor Act, the court held that retired employees must submit their backwages claims to the National Railroad Adjustment Board, and could not bypass the board and sue in a federal district court (*Pennsylvania R.R. Co.* v. *Day*, 360 U.S. 548). The uniform administrative interpretation of the board itself in adjudicating claims of retired employees was considered to be of great importance in reaching this result. In another case under this act, the court held that an employee's submission to the board of his grievances as to the validity of his discharge precluded him from seeking damages in a common-law action three years later (*Union Pacific R.R. Co.* v. *Price*, 360 U.S. 601). The court cited a provision of the act that awards of the board are final and binding except insofar as they contain a money award, and said that the denial of a claim for money damages was not a "money award." Under a proviso in the act that the "checkoff" of dues to a union could be revoked in writing by an employee after the expiration of one year, it was held that a railroad and a union could not require an employee to execute a form furnished by the union and forwarded by it to the employer, as a prerequisite to the employee's release from the authorization to deduct dues from his wages (*Felter* v. *Southern Pacific Co.*, 359 U.S. 326).

(For a discussion of major federal laws passed in 1958, see UNITED STATES—*The United States in 1959;* of major state laws, see articles on individual states; for international law, see INTERNATIONAL LAW; and for laws or legal decisions relating to special fields, see such articles as CENSORSHIP, CIVIL LIBERTIES, EDUCATON, HOUSING, LABOR, PUBLIC UTILITIES, TAXATION. For further references see the Index entry, *Law.*)

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LEAD. Smelter production of lead in the world and the United States in 1953–58 is shown in the accompanying table, compiled from U.S. Bureau of Mines data. (Production figures are in thousands of metric tons.)

Year	World	U.S.	% in U.S.	Year	World	U.S.	% in U.S.
1953	1,860	424.3	22.8	1956	2,180*	491.9	22.9
1954	1,990	441.5	22.2	1957	2,280*	483.8	21.4
1955	2,010	434.5	21.6	1958	2,250	425.0	19.0

* Revised.

United States.—In 1958, supply of lead exceeded demand by a wide margin, resulting in rapid stock buildups and lower metal prices. Imports were in almost unprecedented quantity. Domestic mine production fell sharply (whereas world output declined only 3%). The United States is the world's leading producer of both mined and smelter lead. Missouri continued to rank first, as it has for 52 years; Idaho ranked second, and Utah third. These three states produced nearly 78% of the domestic output of lead in 1958 (72% in 1957).

Domestic lead mined in 1958 totaled 267,377 short tons, compared with 338,216 tons in 1957. Refined lead totaled 470,176 tons in 1958, compared with 533,533 tons in 1957. Lead refined from foreign ores totaled 201,074 tons in 1958, compared with 185,858 tons in 1957. The quantity refined from domestic ores was 269,082 tons in 1958, compared with 347,675 tons in 1957. Consumption was down 13% from the 1957 level, to 986,387 tons from 1,138,156 tons.

In the first nine months of 1959, production of recoverable lead totaled 189,952 short tons, a decline from 199,925 tons in the first nine months of 1958.

United Nations Program.—The U.S. Bureau of Mines reported that: "Concerned over the apparently chronic world oversupply of lead, the United Nations, through the U.N. Interim Coordinating Committee on International Commodity Agreements, held talks in London in September 1958 designed to explore areas of possible agreement among interested nations to effect stabilization of world lead-zinc supply." A lead-zinc committee was formed.

(See also MINERAL PRODUCTION.)

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LEAHY, William Daniel (84), American naval officer and diplomat: b. Hampton, Iowa, May 6, 1875; d. Bethesda, Md., July 20, 1959. Graduated from the U.S. Naval Academy in 1897, he was a midshipman aboard the *Oregon* when it made its dramatic run around Cape Horn from the Pacific to join in the Battle of Santiago (July 3, 1898). He also saw service in the Philippine Insurrection and the Boxer uprising in China in 1900, the Nicaraguan occupation in 1912, and the Haitian campaign in 1916. While he was in command of the dispatch boat *Dolphin,* he became a close friend of Franklin D. Roosevelt, then assistant secretary of the Navy, whom he was to serve in various capacities when Roosevelt became president. Between World Wars I and II, Leahy was successively chief of the Bureau of Ordnance (1927–31), of the Bureau of Navigation (1933–35), and of naval operations (1937–39) with the rank of admiral.

On his retirement in 1939, Leahy was appointed governor of Puerto Rico and then United States ambassador (1940–42) to the French government at Vichy. He won Marshal Pétain's confidence while there and may have stiffened Pétain's resistance to German demands. In 1942 he was named personal chief of staff to President Franklin D. Roosevelt in the latter's capacity as commander in chief of the armed forces. Leahy accompanied the president to many international meetings, including the controversial Yalta Conference. In December 1944 he was one of the first three officers to be promoted to the new five-star rank of admiral of the fleet. He was retained as chief of staff by President Harry S Truman, and continued in that position until his retirement in 1949, meanwhile participating in the reorganization of the armed services. In the following year he published *I Was There,* an account of his years in Washington.

LEATHER. Total output of leather in the United States in 1959 was moderately higher than production in 1958. Sharpest year-to-year gains in volume were in leathers made from goat and kid skins and sheep and lamb skins. Calfskin leather production suffered a decline, resulting primarily from a scarcity of raw calfskins.

Market prices for bovine hides and skins advanced sharply during the early part of 1959. Smaller domestic slaughter, a continuation of the trend which started late in 1957, together with export demand for raw material, combined to force market prices upward by 100% to 250% over price levels prevailing in 1958. By late fall, market prices had declined substantially and trading was conducted at levels 15% to 25% higher than a year earlier.

Shoe production in the United States, which annually consumes approximately 80% of the American leather industry's output, was at a record level in 1959 (see SHOE INDUSTRY).

U.S. PRODUCTION OF LEATHER

Raw material	Unit	1959 (9 months)	1958 (Full year)
Cattle	hides	15,781,000	23,818,000
Calf and whole kip	skins	4,601,000	8,069,000
Goat and kid	skins	15,374,000	19,992,000
Sheep and lamb	skins	21,018,000	27,453,000
Cabretta	skins	2,155,000	3,286,000

Figures on production of major types of leather, by reference to the raw material used, are shown in the accompanying table. The five categories listed account for approximately 97% of total output, with smaller quantities being made from hides or skins of the horse, deer, elk, pig, alligator, buffalo, ostrich, and various reptiles.

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LEBANON. An Arab republic on the eastern shore of the Mediterranean Sea, Lebanon is bounded on the north and east by the Syrian Region of the United Arab Republic (UAR) and on the south by Israel. It has an area of 4,015 square miles and a population (mid-1957 est.) of 1,525,000, excluding Palestine refugees (129,228 registered as of December 1958). The capital, Beirut

(est. pop., 500,000) has modern port facilities, an extensive free zone for transit trade, and a large international airport. Other important cities are Tripoli (100,000), Zahle (33,000), and Saida (ancient Sidon, 22,000). The official language is Arabic, but French is widely spoken.

Government.—The executive department consists of a president (Fouad Chehab, inaugurated Sept. 23, 1958), who is selected by the legislature for a 6-year term, and a cabinet headed by a prime minister. The cabinet, numbering eight members following its reorganization on Oct. 8, 1959, is appointed and may be removed by the president, but is also responsible to the legislature. There is a unicameral Chamber of Deputies of 66 members, who are elected for normal terms of four years. (The last general elections were held in June 1957.) Voting is compulsory for every Lebanese citizen 21 years of age or older, and the electoral law apportions seats in the Chamber of Deputies on a religious basis. By constitutional convention, the president is a Maronite Christian, the prime minister a Sunni Moslem, and the speaker of the Chamber of Deputies a Shi'ite Moslem. Lebanon is a member of the Arab League and the United Nations.

Finance.—The unit of currency is the Lebanese pound (£L), with a free market value on Aug. 31, 1959, of 31.75 cents (U.S.). The official rate, used chiefly in computing certain government trade statistics, is 45.63 cents. The monetary supply on April 30, 1959, was £L1.02 billion, with £L399 million in currency and £L621 million in demand deposits in commercial banks. There is no central bank; the currency is managed by the French-controlled Bank of Syria and Lebanon.

Revised budget figures for 1958 showed expenditures of £L205 million (compared with an anticipated £L194.2 million) and ordinary revenues of £L180.5 million. The deficit was more than made up by United States grants of £L39.5 million ($12.5 million), which provided a carryover of £L15 million into 1959. The budget estimates for 1959 were balanced, with expected expenditures amounting to £L205 million. Defense allocations totaled £L43.9 million; education, £L30.9 million; and public works, £L28.1 million. Lebanon has no national debt except for a $27 million World Bank loan for economic development, which is still largely unused.

Defense.—The Lebanese army numbers about 9,000 men. There are also a gendarmerie of 2,500, a police force of 500, and a special security force of 250. The small air force has a personnel of some 350 men, and the naval arm, composed of three coastal patrol boats, has a strength of about 100.

Education.—Public education comprises a compulsory five-year program of primary instruction, followed by either a four-year intermediate program (leading possibly to further vocational or technical training) or a seven-year secondary program preparatory to professional or university studies. In 1956 there were 1,107 public schools and 1,166 private and foreign schools, enrolling 188,338 students. Institutions of higher learning are concentrated in Beirut, and include the Lebanese University (governmental, with 374 students in 1958), St. Joseph University (Jesuit, with 1,649 students), and the American University of Beirut (2,177 students).

Religion.—Government estimates indicate that a majority of the people are Christians, belonging mainly to the Maronite (424,000), Greek Orthodox (150,000), Greek and Roman Catholic (91,000), Armenian Orthodox (69,000), and Armenian Catholic (14,500) sects. There are about 14,000 Protestants. Of the Moslems, both the Sunnite (286,000) and Shi'ite (250,000) sects are represented. There are also about 88,000 Druses and 6,600 Jews. There is no state religion.

Transportation and Communications.—There are about 2,225 miles of improved roads in Lebanon, and most passenger and commercial traffic moves by highway. At the end of 1957 there were 31,072 passenger cars, 5,339 commercial vehicles, and 1,481 buses in use. Operative railways, partially standard-gauge and partially narrow-gauge, link Beirut with Tripoli along the coast and connect both these cities, via the Syrian rail system, with Turkey and Europe. The direct Beirut-Damascus narrow-gauge line carries only freight traffic. Beirut International Airport is used by three national airlines and by many foreign air services.

The Iraq Petroleum Company operates two oil pipelines from Kirkuk, in Iraq, to Tripoli; the Trans-Arabian Pipe Line Company, a subsidiary of the Arabian American Oil Company, operates a pipeline from Dhahran in Saudi Arabia to Saida.

A television broadcasting station, which is both the first in Lebanon and the first commercial station in the Middle East, began regularly scheduled broadcasts in 1959. By July, over 1,500 television receivers had been installed in the country. There were 40,238 telephones in use on Jan. 1, 1958.

Economic Development.—The year 1959 saw an upturn in economic development activities in Lebanon. The government let additional contracts for the first phase of the Litani River development project, which is expected to provide irrigation for some 8,500 acres of farm land and to double the output of the country's electric power.

On May 10 the Soviet ambassador offered Russian economic aid to Lebanon for carrying out its development program. The minister of public works, Pierre Gemayel, replied that unconditional Soviet aid would be accepted if the need arose. Lebanon, however, continued to look to the West for economic assistance. On July 16 the U.S. Development Loan Fund approved a $500,000 credit to the Societé d'Electricité d'El Bared, a private utility company, for the rebuilding of its power plant. On July 23 the same agency agreed to lend $5 million to the Banque de Credit Agricole, Industriel, et Foncier (a Lebanese bank in which the government has 40% participation) for reloan to private entrepreneurs.

Agriculture and Industry.—Agriculture, which accounted for about one sixth of the national income of £L1.58 billion in 1957, is the principal occupation of over half of the working population. Important crops are citrus fruit (131,000 metric tons in 1958), wheat (48,000 metric tons), barley, potatoes, olives, and cotton. Also grown are tobacco, onions, tomatoes, apples, grapes, bananas, and watermelons. Goats (425,000 head in 1958), cattle (88,000 head), and sheep (70,000 head) are raised.

Manufactures include petroleum products (1,017,000 metric tons in 1957), cement (561,000 metric tons), electrical energy, soap, foodstuffs, cotton and woolen textiles, clothing, furniture, metal products, tobacco products, leather goods, and beet sugar. In 1957 there were 2,997 industrial establishments, offering employment to 37,088 workers.

Foreign Trade.—Exports in 1958 were £L101 million (compared with £L133 million in 1957); imports were £L698 million (£L800 million in 1957).[1] (In spite of apparently large trade deficits, Lebanon normally enjoys a favorable balance of international payments because of remittances from emigrants, income from tourism, and payments for services to the transit trade.) Transit traffic declined from 587,000 tons in 1957 to 329,000 tons in 1958, largely as a result of the UAR's closing of the Lebanese-Syrian frontier during the political crisis in the summer of 1958.

Major articles of export are fruits, vegetables, wool, cotton, cement, beer, petroleum products, cut diamonds, and gold. Major imports are cereals and flour, animals for slaughter, sugar, automobiles, engines and machinery, iron and steel, textiles, wood and paper, crude petroleum, uncut diamonds, and gold. Imports in 1958 came chiefly from Great Britain, the United States, the Syrian Region of the UAR (mostly in the period from January to April 1958), France, West Germany, Italy, Saudi Arabia, and Iraq. The principal customers were the Syrian Region of the UAR, Saudi Arabia, Jordan, West Germany, the United States, Iraq, and Great Britain. Of the exports, 45% went to nearby Arab countries; only 7.5% went to countries of the Soviet bloc.

Principal Events, 1959.—The cabinet of Prime Minister Rashid Karami ruled during the early months of 1959 under emergency decree powers granted by Parliament in November 1958. The Chamber of Deputies did not meet until June 13, when it assembled to review the policies and activ-

[1] The official import figure of £L486 million has been adjusted to the free-market rates of exchange in order to present a more meaningful comparison with the export figure. These statistics do not take into account either gold transactions or the transit trade through the free zone in Beirut.

ities of the administration. On October 8 the four-member cabinet of the emergency period was reorganized and expanded into an eight-member body.

The country was generally quiet in contrast to the virtual civil war of the preceding year. Some evidences of continued unrest, however, appeared from time to time. On February 22, during a celebration in Beirut of the first anniversary of the union of Syria and Egypt, Pan-Arabist supporters of President Nasser rioted, wrecking streetcars. Five days later two persons died and ten were wounded in renewed clashes in the capital between pro-Nasser Moslem Lebanese and Christian adherents of ex-President Camille Chamoun. On the evening of July 27, Naim Moghabghab, a member of Parliament and a close friend of Chamoun's, was beaten to death by a mob in a Druse area near Beirut. On September 25, following the execution in Iraq of 17 persons accused of plotting against the government of Premier Kassem, anti-Kassem riots broke out in Beirut, Tripoli, and Saida. Despite such disturbances, a former prime minister, Sami es-Solh, found it possible to return to Lebanon on July 4 from self-imposed exile in France after receiving assurances that he would be unmolested and might resume his seat in the Chamber of Deputies.

In foreign affairs the Lebanese government attempted to avoid involvement in the East-West struggle, but its ties with the West remained considerably stronger than its ties with the East. In May the government clamped firmer restrictions on Communist activities and deported a number of non-Lebanese Arab Communists. Efforts were made to re-establish friendly contacts with the other Arab states and to escape entanglement in the conflict between the Kassem regime in Iraq and that of President Nasser of the UAR. Good relations with the UAR, which had deteriorated during the crisis of 1958, were gradually restored after the Karami government came to power in October 1958. On Feb. 16, 1959, following a conference in Damascus, the UAR, Lebanon, Jordan, and Saudi Arabia reached a general agreement on the freedom of transit traffic. On March 25, President Chehab and President Nasser met in a specially-constructed hut athwart the Syrian-Lebanese frontier for a discussion of mutual problems. At Cairo on June 7, Premier Karami signed a Lebanese-UAR economic pact reaffirming the trade agreement of March 5, 1953, and fixing visa, customs, and export charges.

On January 14, Lebanon recognized the provisional government established by the Algerian nationalists, being the last of the Arab states to do so. In spite of this step, relations with France remained relatively good, and a new financial agreement between the two countries was signed on June 25 in Beirut to replace the outmoded convention of 1948.

Trouble with Israel flared on May 27 when the Israeli Air Force required a Lebanese Air Force plane to land at Haifa. The plane, which allegedly had been seeking to photograph Israeli positions south of the frontier, was returned to Lebanon on June 9. From July 28 to August 18, Lebanon was the site of conferences of the Arab League (q.v.) to discuss the economic boycott of Israel and the problems of the Palestine refugees. At these conferences and at the meeting of the Arab League Council in Casablanca in September, Lebanon supported the general Arab position on the Palestine question. On September 28, Premier Karami told the U.N. General Assembly that his government firmly supported the exclusion of Israeli ships and cargoes from the Suez Canal.

The long-standing disagreement between Lebanon and the internationally controlled Iraq Petroleum Company over transit royalties on oil moving through company pipelines within Lebanon was settled on June 3, 1959, when the oil company agreed to royalties of 46 cents per ton. The new rate will provide yearly royalties of about $3.5 million on the current annual throughput of 7.5 million tons of crude petroleum (compared with about $1 million at the old rate). Payment of some $16 million to cover prior Lebanese claims dating back to 1952 was also agreed to. Twenty per cent of the petroleum products processed at the Tripoli refinery of the company are to be made available to Lebanese distributors designated by the government.

(See also MIDDLE EAST.)

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LEEWARD ISLANDS. See HAWAII; WEST INDIES FEDERATION.

LEGISLATION. See UNITED STATES—*The United States in 1959;* articles on the states and countries; and the Index entry, *Congress, U.S.*

LEMNITZER, Lyman Louis, U.S. Army officer: b. Honesdale, Pa., Aug. 29, 1899. Appointed vice chief of staff of the Army in 1957, Lemnitzer succeeded to the post of Army chief of staff on July 1, 1959, with the retirement of Gen. Maxwell D. Taylor.

A graduate of the U.S. Military Academy (1920), and later of the Command and General Staff School and of the Army War College, Lemnitzer established himself as a skilled negotiator during and after World War II. He began the war as a combat artillery officer in England. Made assistant chief of staff (G-3) to Dwight Eisenhower, commanding general of the European Theater of Operations, he planned the air-sea-land invasion of North Africa, and accompanied Gen. Mark Clark on a clandestine visit by submarine to North Africa before the invasion to persuade the French not to oppose the landings. In 1945 he took part in the discussions with the German high command in Switzerland that led to the German surrender in Italy and southern Austria. He was a persuasive exponent of the Mutual Defense Assistance Act before Congress in 1949, after having studied western European defenses in the previous year. Prior to his appointment as vice chief of staff, he commanded the United States and United Nations forces in the Far East during the cease-fire negotiations in 1955–57.

LEMONS. See FRUITS.
LETTUCE. See VEGETABLES.
LEUKEMIA. See CANCER.

LIBERIA. A small republic on the west coast of Africa, bounded by Sierra Leone, Guinea, and Ivory Coast, Liberia has an area of about 43,000 square miles, and a population (est. July 1, 1956) of 1,250,000. Founded by freed American slaves in 1822, Liberia has maintained close ties with the United States. The descendants of the original American settlers constitute the most influential group and live mainly along the coast. The great bulk of the population are indigenous Africans; about 28 different tribal dialects are spoken. Non-Africans (only Africans may acquire citizenship) number about 3,500. Monrovia is the capital and chief city (est. pop., 50,000, including environs). English is the official language and the U.S. dollar is the legal tender.

Government.—Authority is centralized in the national government, organized into three branches: executive, legislative, and judicial. The president and vice president serve 8-year initial terms, and may be re-elected thereafter for 4-year terms. President William V. S. Tubman was re-elected in May 1959 for his fourth consecutive term. The True Whig Party of President Tubman controls all the seats of the elected bicameral legislature (a 35-member House of Representatives, to be increased to 39 in 1960, elected for 4 years; and a 10-member Senate, elected for 6 years). Opposition parties are not legally barred, but in practice there is no effective political opposition.

Education.—Illiteracy is high, and probably less than 15% of school age children attend school. As of 1958 there were 2,157 teachers in 690 schools attended by 53,242 students. About 62% of the students attended government schools; 27%, Christian mission schools; and 11%, private schools (chiefly company-operated). Institutions of higher education are the University of Liberia (300 students), Cuttington College (120 students), and Our Lady of Fatima College (40 students). The Booker T. Washington Institute is a trade and vocational institution with 460 students. In 1958, 447 Liberian students were abroad on scholarships.

Finance.—In 1958 government expenditures totaled $23.1 million (up $3.5 million from 1957), while receipts amounted to $18.1 million (down $2 million from 1957). Major sources of revenues were custom receipts (24%), company income taxes (23%), iron ore royalty payments (18%), and ship registration fees (9%). Another net budget deficit was anticipated in 1959, with increases in both revenues and expenditures. Extraordinary capital works expenditures are usually financed outside of the regular budget by means of foreign loans or credits, most of which have been received from the United States. As of Sept. 30, 1958, the public debt stood at $23.2 million.

Transportation and Communications.—A national highway expansion program is being pushed aggressively. There were some 2,000 miles of roads in 1959, of which about 700 miles were all-weather. At present the only railroad is the 42-mile Liberia Mining Co. line (freight only) running from the Bomi Hills iron ore deposits to Monrovia. Robertsfield, about 50 miles from Monrovia, is the chief airport, with service by several international lines, including Pan American World Airways. Partly because of its low registration fees, Liberia has achieved great popularity as a country of registration for foreign-owned vessels. As of June 30, 1959, Liberia was the leading flag of registry for the world's oil tanker fleet and ranked third in total shipping tonnage. The free port of Monrovia handled over 2.3 million tons of cargo in 1957. Liberia has a daily newspaper and 2 radio broadcasting stations.

Production.—Liberia's economy is chiefly agricultural, although mining is increasing in importance. The two principal subsistence crops are rice (annual production estimated at over 100,000 long tons, milled equivalent) and cassava (360,000 long tons). Liberia's 1959 output of rubber, the chief export crop, is expected to at least equal the 1958 total of 95.43 million pounds (dry rubber content). About 88% of the crop is produced by the Firestone Plantations Co., which employs about 25,000 Liberians; the remaining 12% is produced on an estimated 1,000 Liberian-owned farms. Total rubber acreage is 172,000, of which 63,000 acres are in immature trees. The B. F. Goodrich Co., which received a rubber concession in 1954, is expected to complete its initial planting of 10,000 acres by the end of 1959. Other export crops, produced by Liberian small-farm holders, include cocoa, coffee, and palm products. Iron ore is mined at Bomi Hills, where the Liberia Mining Co. (an affiliate of Republic Steel) produced 2,263,850 long tons in 1958 (2,128,650 in 1957). Rich new deposits, under development in the Nimba Mountains on the Guinea border (Liberian-American-Swedish Minerals Co.) and in the border area of Sierra Leone near the Mano River (National Iron Ore Co.), will greatly increase Liberia's importance as an iron-ore producing country. Lumber output expanded to nearly 9 million board feet in 1958, from about 5 million in 1957.

Foreign Trade.—Exports in 1958 totaled $40,277,070, of which rubber accounted for $26,122,934; iron ore, $8,074,524; diamonds, $2,263,516; and palm kernels, $1,005,740. Imports of machinery and assorted manufactured items and foodstuffs totaled $27,796,359 in 1958. The United States purchased 74.8% of Liberia's exports and supplied 54% of her imports.

Principal Events, 1959.—On July 19, following a 4-day meeting at Sanoquelli (near the Guinea border), President Tubman, President Sékou Touré of Guinea, and Prime Minister Kwame Nkrumah of Ghana issued a joint proposal for a 1960 conference to set up a "Community of African States." At Monrovia on August 4–8, the 9-member Conference of Independent African States called for support of the rebel Algerian provisional government against the French, and opposed the French plan to test nuclear weapons in the Sahara.

A general wage increase for unskilled labor in most enterprises followed a successful 3-day strike by 400 workers at Monrovia's free port in May. The boom in public and private construction continued in 1959. A new motion picture theater, an 11-story hotel, and several public buildings were completed or under construction.

Liberia received $12,750,000 in new foreign loans, including a $7,265,000 Export-Import Bank of Washington loan for electric power expansion and a $3 million U.S. Development Loan Fund issue for telecommunications improvement (only Monrovia now has telephone service).

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LIBRARIES. Federal Legislation.—Library development in the United States has been aided in the last three years by the Library Services Act, passed in June 1956. The act authorized the appropriation of $7.5 million annually for five years for grants to the states for the extension and improvement of rural public library service. Fifty-two states and territories (all but Indiana) participated in 1959. The federal appropriation for fiscal 1960 was $6 million, but grants were to be made on the basis of a $7.5 million appropriation. This was the first time the full authorization had been made available.

As a result of the act, over 800 rural counties received new or improved public library service. Some 30 of these counties previously had no library service within their borders. More than 120 new bookmobiles and other vehicles have been placed in operation in rural areas by state library agencies, and over 130 county and regional library projects have been organized. State library agencies have added more than 70 field consultants, 100 additional professional librarians, and 300 clerks, bookmobile drivers, and other employees. Many states have expanded services available before the act went into effect; and cooperative buying, centralized processing of books, and new mechanical equipment are now in operation in some states.

California, Nevada, and Pennsylvania conducted and published comprehensive surveys of their public library systems, including present services, assessment of needed improvements, and recommendations for methods of obtaining appropriate development. The California and Pennsylvania surveys were particularly noteworthy for the careful collection of statistics and the wide variety of information they contained. Legislation based on the studies was proposed in the 1959 state legislatures, and it seems likely that significant advances will result from the surveys. Hawaii started a statewide survey in November 1959. Missouri, New York, South Carolina, Virginia, and Wisconsin incorporated library education scholarship plans in their Library Services Act programs.

Federal, state, and local funds for the extension and improvement of public library service to rural areas totaled $17,324,632 for fiscal 1959. State

funds to match the federal grants have increased more than 45% since the program began three years ago, and equal about half the total expenditures.

The National Defense Education Act of 1958 (see EDUCATION) has benefited school libraries, especially under Title III, which provides for federal funds to strengthen programs in science, mathematics, and modern foreign languages. Within the limitations imposed by individual state plans, school libraries have been able to improve their collections of both printed and audio-visual materials in these subject areas.

There was much activity in regard to library legislation during the first session of the 86th Congress. Most of the bills, still pending at adjournment, were expected to pass during the second session. Libraries made considerable progress toward being included in legislation relating to educational institutions.

State Legislation.—A steady growth in library support by state governments was apparent in 1959. Legislation passed by the Nevada Legislature permits county library trustees to contract with the board of county commissioners of any other county for library service, and enables two or more political subdivisions to create a regional library through written joint agreement. The state librarian was specifically authorized to provide technical and financial assistance to other libraries. These laws provide the framework for the recommendations of the Nevada survey conducted under the Library Services Act.

New Jersey passed a state aid law in which each municipality supporting library service "shall qualify for state aid of 35¢ per capita, provided that (1) its annual appropriation for library purposes shall be equal to or in excess of the local fair share, and (2) it shall be a member of a county library system or its annual appropriation for library purposes shall be not less than $50,000. . . ."

An unusual feature of the Pennsylvania legislation (still under consideration in 1959) is payment by the state for local service. Three of the four regional research centers would also serve as district library centers and would be eligible for three types of state aid: 25 cents per capita for the population which they serve directly, 25 cents per capita for the people in the district outside their service area, and up to $100,000 as regional centers.

Bills authorizing various forms of state aid to public libraries were rejected by legislatures in Florida, Indiana, and Massachusetts, while six other states passed legislation affecting libraries and their administration or support.

National Library Week.—The second annual National Library Week was celebrated on April 12–18, 1959. Observance of the week was sponsored by the National Book Committee (independent, nonprofit) in cooperation with the American Library Association (ALA), with the support of 30 other national organizations which share similar convictions concerning the importance of reading in American life.

Statewide committees of citizens were formed in 46 states and the District of Columbia to plan activities. Committee members represented a cross section of leadership in industry, professional and religious organizations, schools, and labor unions. In other states, programs were initiated by committees of librarians. Well over 5,000 communities participated in National Library Week. In Washington, observations appropriate to the week were sent out with 750,000 telephone bills; in New Hampshire, 20,000 Pogo leaflets on National Library Week topics were distributed by 70 supermarkets and restaurants; and in Montana, home demonstration clubs sponsored a survey of family reading. Colleges, universities, and high schools focused the attention of students and faculty on libraries and on the development of lifelong reading habits.

National Library Week themes were used in 36 magazines with a total circulation of 103,061,308. Fourteen network radio and television programs (estimated audience, 151 million) and more than $1.4 million (based on commercial value) in spot time, including more than 500 local television programs and nearly 2,000 local radio programs, were devoted to National Library Week.

Canadian librarians and publishers formed a new group, the Canadian Library Week Council, Inc., to celebrate the week simultaneously with the United States. There were also observances in Brazil, Colombia, El Salvador, and Verona, Italy.

These activities increased awareness and support of libraries, stimulated gains in circulation and registration, and created a climate of greater concern for the status of reading in the community. The ALA scheduled the third National Library Week for April 3–9, 1960, and voted to continue the annual observance through 1962.

Public Libraries.—In 1958, overall expenditures for public library systems serving populations over 50,000 rose from nearly $111 million in 1957 to $118.5 million in 1958. The systems added over 5,751,000 volumes, bringing the total to over 76.5 million volumes available. Circulation of these books exceeded 250 million. In cities of over 100,000 population, approximately 14.5 million more volumes were circulated in 1958 than in 1957, representing the largest annual increase since 1950.

The U.S. Office of Education published *Statistics of Public Libraries: 1955–56* as a chapter of the *Biennial Survey of Education* for the first time in 1959. The foreword says: "This is in keeping with the Office of Education's recognition of the important role played by public libraries in the educational and cultural life of the Nation." Of the 6,249 public library systems reporting, 58.4% served populations under 5,000, compared with 66.8% in 1939. Only 403 systems (or 6.5%) served populations of over 50,000. The survey indicates that local public funds continued to be the major source of public library income: 87.3% ($162 million) came from local sources in 1955–56; 2.7% ($5 million) from state funds; 4.3% ($8 million) from endowments and gifts; and 5.7% ($10.5 million) from other sources. The most noticeable changes, albeit gradual ones, were in the increasing proportion of funds from state sources and the decreasing amount from endowments and gifts.

The largest expenditures continued to be for salaries—61% ($104 million) in fiscal 1956, an increase from the 55% ($26.75 million) devoted to salaries in 1939. A total of 29,974 full-time and 21,675 part-time personnel were employed by reporting libraries, including 13,822 full-time and 3,522 part-time professional librarians.

Expenditures for books, periodicals, and audio-visual materials increased from $8.75 million in 1939 to $26.75 million in 1956. Only 3.9% of the reporting libraries had annual operating expenditures over $100,000, the figure suggested in the Public Library Inquiry (1950) report as the minimum necessary for adequate public library service in a single system. Approximately 11.5 million volumes were added to public libraries during 1955–56; and over 173 million, or 1.5 books per capita, were available to the 117.5 million people served by the public library systems reporting. Only 272

systems reported collections of over 100,000 books, while 17 public library systems held over a million volumes each.

Approximately 490 million volumes were circulated during the 1956 fiscal year, an increase of more than 100 million over 1950. During the same period, the per capita circulation of books rose from 3.4 to 4.2—an impressive testimony to the growing use of library books at a time when all predictions have suggested the contrary.

Hundreds of cities and towns are planning new public library buildings or have them under construction. New buildings have become necessary because of larger service areas, increased population, progression from temporary bookmobile service to permanent branch libraries, newly created regional branches in the larger cities such as Los Angeles and New York City (Borough of Queens), and obsolescence of existent buildings. Among the cities which completed public library buildings in 1959 are Minneapolis, Minn.; Kalamazoo, Mich.; South Bend, Ind.; and Whittier, Calif.

The Book of the Month Club presented $5,000 in books to the Arlington (Vermont) Public Library as the first Dorothy Canfield Fisher Award. The same sum will be made available each year to a small library meeting the club's criteria. The recipient of the award selects its own books.

Operation Library, sponsored by the International Junior Chamber of Commerce, had no national projects in 1959, but local chapters helped their libraries get bond issues passed and cooperated in other library projects. In a Junior Chamber of Commerce contest including all of the organization's community projects, the Mascoutah, Ill., chapter was awarded first place in the state competition and second place in the national competition for its Operation Library project. The Mascoutah chapter organized a successful campaign for a regional library in southern Illinois, bringing library service to many people who had never had it before.

Governors' conferences planned to assist public library trustees were held in four states in 1959: Missouri, New Jersey, Pennsylvania, and Wisconsin. Increased community interest in all kinds of libraries was shown by the number of new Friends of the Libraries groups.

College, University, and Research Libraries.—Standards designed to provide a guide for evaluation of libraries in American colleges and universities which emphasize four-year undergraduate instruction were adopted in 1959 by the Association of College and Research Libraries, a division of the ALA. (The ALA does not accredit college libraries, but the new standards should help them improve their situation.) The standards recommend that libraries in the same community, region, state, or nation pool their resources, and that academic status be accorded to professional librarians. Among such cooperative efforts have been the preparation of union lists of serials in the Southeast and other regions, and a joint acquisition agreement between the Detroit Public Library and Wayne State University.

Total library expenditures in college and university libraries increased in 1958, but not in the same proportion as total university expenditures. Median beginning salaries for librarians showed an increase in all sizes of colleges, with the beginning salary ranging from $4,000 to $4,500.

The Grants Program of the Association of College and Research Libraries (ACRL) received funds totalling $172,500 in 1955–59. In 1959, 76 grants of $500 or less were made to private colleges for materials. Most of the funds received were from the United States Steel Foundation. A grant from the Council of Library Resources, made possible a two-year continuation of the Farmington Plan, a cooperative agreement among several research and university libraries for the purchase of significant foreign technical books.

WIDE WORLD

***(Top)* Bookmobile from the Delmar (N.Y.) Public Library, destined for the American National Exhibition in Moscow, is loaded onto a ship in Brooklyn, May 20. *(Bottom)* Muscovites attending exhibit wait in line to view bookmobile.**

Ground was broken for the National Library of Medicine in Bethesda, Md., on June 12, 1959 (to be completed in 1961). New library buildings were completed in 1959 at Colgate University, the University of New Hampshire, Drexel Institute of Technology, Barnard College, Grinnell College, Hunter College, Wingate College, and the American Philosophical Society of Philadelphia.

School Libraries.—The year 1959 marked a growing emphasis in the development of centralized elementary school libraries and in the increase in school library supervisory positions. California, Hawaii, and Oregon added supervisory positions at the state level.

New school library standards were approved by the American Association of School Librarians (AASL), a division of the ALA, and are to be published early in 1960. The standards are expected to give an impetus to the growth and improvement of school libraries.

A 1958 National Education Association research division monograph, *The Secondary-School Teacher and Library Services*, revealed that almost all urban secondary schools have a central library and that 88.8% of the teachers who replied believed that the library plays an important role in the total instructional program of the school. Rutgers University is studying the effectiveness of centralized library services in elementary schools. The project, begun in the fall of 1958, is to be completed in 1960.

The Stern Family Fund, a philanthropic and educational foundation, gave $5,000 to the AASL to place gift magazine subscriptions in 55 high schools serving rural areas. These magazines were selected as "windows on the world" publications to help bring about an understanding of other peoples and cultures.

State Libraries.—The first Assembly of State Librarians met at the Library of Congress on Nov. 12–14, 1958. Reference and archival services, service to the blind, responsibility for extension of public library service, depository and exchange responsibilities of the superintendent of documents and the depository libraries, and standards of service for state libraries were discussed.

The American Association of State Libraries, a division of the ALA, planned a survey of state libraries and their varied activities before writing qualitative standards. The Alaska and Tennessee legislatures passed bills in 1959 transferring their state libraries to their departments of education, while Idaho officially established the state library under the management of the Idaho State Library Board.

Education for Librarianship.—The ALA Council adopted the Standards for Undergraduate Library Science Programs and Guide in 1959. The standards may serve as a self-evaluation instrument for any institution offering undergraduate library education programs. The major requirements of the standards are that professional education for librarianship should encompass a minimum of five years of study beyond the secondary school, and culminate in a master's degree; and that the amount of undergraduate library science shall not be so great as to limit seriously the amount of general education. A student's undergraduate program shall not be fewer than 12 nor more than 18 semester hours. The guide was written specifically to be used by the National Council for Accreditation of Teacher Education, which had not yet adopted the guide in 1959.

Western Michigan University's Department of Librarianship was accredited in 1959 by the ALA's Committee on Accreditation, making a total of 32 accredited library schools in the United States and Canada.

Personnel.—The shortage of professionally trained librarians in 1958 is indicated by the ratio of vacancy notices to graduates, ranging from 140 to 1 in a small school to 10 or 25 to 1 in the large schools. An indication of the desperate shortage of qualified librarians is the willingness of administrators to waive experience requirements for a "good" candidate. In 1958 only 1,136 of the 1,263 graduates from 28 library schools were known to have taken library positions. Of these, the average salary was $4,683, an increase of more than $200 over 1957. The 1959 graduate had an even greater choice of openings, with even higher beginning salaries.

The most serious shortage was in public libraries, with the most acute need in cataloguing and children's work. There were several disturbing elements: the overemphasis on beginning salaries, the disregard for persons in the middle responsibility–middle experience group, and the disconcertingly stable enrollment in library schools. The New York metropolitan area increased the salaries of over 700 professional librarians in its three major public libraries by $300 to $1,200. In cooperation with state library associations, the ALA has sponsored workshops to train local librarians in better methods of recruiting. Recruiting pamphlets were distributed widely.

The librarian shortage is a major obstacle to library development in most of the economically less advanced countries of the world. To help meet the immediate need, students were sent abroad (principally to the United States and England) to library schools. In 1958 and 1959, Columbia University conducted special workshops in comparative librarianship.

International Developments.—An ALA-sponsored field seminar to improve the range and quality of reference and advisory services in Japanese libraries received a grant of $40,450 from the Rockefeller Foundation to provide for preliminary seminars in Japan and for travel and seminars in the United States. The nine seminar members engaged in an intensive study of American library practices in and around five major United States cities.

A library school is to be established as a result of a survey of the library services of Ghana. Liberia will set up a national plan of library service in 1960.

The 25th annual council meeting of the International Federation of Library Associations met in Warsaw, Poland, in September 1959.

In Russian library schools, the day school enrollment doubled during 1948–58 and quadrupled in the evening courses. The on-campus and correspondence courses at Leningrad State Library Institute (one of three Soviet library schools of university rank) produced about 600 trained librarians in 1958.

The American Book Publishers Council, asked by the departments of State and Commerce to furnish a book exhibit at the United States National Exhibition in Moscow in 1959, chose a library bookmobile as a dramatic way to give meaning not only to the book publishing business but also to the use of books in the United States. The bookmobile was loaned by Delmar, N.Y., and sent by the ALA. On August 19 it was necessary to close the bookmobile because the Russian people, who could not buy the books, had borrowed all of them. By August 22, after a story on the closing was featured in the New York *Times*, 1,800 hardbound and 1,000 paperbound books (gifts of booklovers and publishers) were on a plane bound for Moscow.

In September, more than 200 persons from 10 countries met at Western Reserve University's Documentation Research Center in Cleveland for a conference on standards for machine searching and translation.

International appointments in 1959 included Josef Stummvoll, formerly director general of the Österreichische Nationalbibliothek, to succeed Rubens Borba de Moraes of Brazil as director of the United Nations Headquarters Library in New York; Carl White, professor at the Columbia University School of Library Service, as director of the Institute of Librarianship at the University of Ankara, Turkey; and Luis Florén, as director of the Escuela Interamericana de Bibliotecología at the Universidad de Antioquia, Medellín, Colombia.

(See also AMERICAN LIBRARY ASSOCIATION; LIBRARY OF CONGRESS; and the following listings under SOCIETIES AND ORGANIZATIONS: American Association of Law Libraries; Canadian Library Association; Catholic Library Association; and Special Libraries Association.)

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LIBRARY OF CONGRESS. On April 24, 1800, an act of Congress created a small parliamentary library to serve the nation's lawmakers. Since then, through gifts, copyright deposits, purchases, and exchange, the Library of Congress has become one of the world's largest libraries, containing by June 30, 1959, more than 38 million items. These included some 11.7 million books and pamphlets in every written language; 2.4 million maps and other cartographic items; 2 million volumes and pieces of all types of music; and 2.9 million photographic prints, slides, and negatives. There were also 163,000 bound volumes of newspapers and hundreds of thousands of individual issues; 583,000 fine prints and reproductions; 107,000 phonograph recordings of music, poetry, and speeches; 429,000 "talking books" for the blind; 124,000 motion-picture reels and, in the form of paper prints, more than 3,000 of the earliest American movies; and 173,000 reels and strips of microfilm. In addition, the library has more than 16 million manuscripts relating to American history and culture, including the papers of 23 presidents of the United States.

During the fiscal year 1959, the Legislative Reference Service, which is the main research arm of Congress, answered nearly 77,000 inquiries from members of Congress and from congressional committees; other divisions of the library handled more than 43,000 additional congressional requests for information or books. Nearly 673,000 readers were served by all departments of the library, which answered more than 345,000 inquiries for them. Readers used nearly 2.1 million books and other items in the two library buildings and in the Law Library in the Capitol. Although the library is not primarily a lending library, almost 222,000 items were lent to members of Congress, government agencies, and other libraries. The library also administers a national program of books for the blind, which in the calendar year 1958 lent 1,650,000 volumes to 58,931 blind readers. These volumes included "talking books" and books in braille and Moon type.

In its two income-producing operations, the library again set new records in the fiscal year 1959: $2,043,099 was derived from the sale of technical publications and more than 30 million printed catalogue cards; the Copyright Office took in $979,941 in fees. Receipts from such sales and fees are transferred to the U.S. Treasury. Works deposited in the Copyright Office with the 241,735 claims that were registered for copyright served as a major source of currently published material for the library's collections. (See also COPYRIGHTS.)

Funds obligated by the library in the 1959 fiscal year were $19,095,656, with $13,389,191 from congressional appropriations, $4,332,665 from transfers from other government agencies, and $1,373,800 from gifts and other sources.

The library added more than 1.2 million items to its holdings during the fiscal year. Important acquisitions included holograph letters of Benjamin Franklin and Abraham Lincoln; rare printings of the Emancipation Proclamation; the papers of Paul Wayland Bartlett, Elmer Davis, Marquis James, Jesse Jones, Alton B. Parker, and Theodore Roosevelt, Jr.; and additions to the papers of Harold Ickes, Jacob A. Riis, Kenneth Roberts, Arnold Schoenberg, and Robert A. Taft. Musical manuscripts included those of Samuel Barber, Leonard Bernstein, Aaron Copland, Roy Harris, Henry Dixon Cowell, Victor Herbert, Gian-Carlo Menotti, Walter Piston, Richard Rodgers, Sigmund Romberg, William Schuman, Leo Sowerby, Alan Hovhaness, and Wallingford Riegger.

To acquaint government departments and private scholars with its holdings, the library publishes accessions lists, bibliographies, and catalogues. Those published in the fiscal year 1959 include the fifth and final volume of the *Catalogue of the Library of Thomas Jefferson; East and Central Europe: Periodicals in English and Other West European Languages; Selected Maps and Charts of Antarctica; Air Pollution Bibliography;* and the 50-year-old *Monthly Checklist of State Publications.* A monthly *World List of Future International Meetings* was initiated.

In the library's 1958–59 concert season, the Whittall Foundation sponsored 31 concerts of chamber music; the Coolidge Foundation sponsored 6 such concerts in the library and 33 extension concerts in other cities. The Coolidge Foundation commissioned 4 composers to write new scores, and the Serge Koussevitzky Foundation commissioned works by 12 composers. The annual literary series sponsored by the Gertrude Clarke Whittall Poetry and Literature Fund included readings by Carl Sandburg, Robert Frost, Padraic Colum, Allen Tate, and Eudora Welty, as well as performances of Shakespearean plays.

The Lincoln Sesquicentennial Exhibition of 250 rare items, including 2 recently restored daguerreotypes of President and Mrs. Lincoln, was opened on Feb. 12, 1959, by Vice President Richard M. Nixon, Speaker of the House Sam Rayburn, Sen. John Sherman Cooper (Chairman of the Lincoln Sesquicentennial Commission), and Librarian of Congress L. Quincy Mumford. Among the 64 other exhibits presented during the year were the 17th National Exhibition of Prints. Displays marked the sesquicentennial of the birth of President Andrew Johnson, the bicentennial of the birth of Noah Webster, and the centennial of the births of A. E. Housman and Victor Herbert.

Through a $200,000 grant from the Council on Library Resources, Inc., the library established a project to inventory some 27,000 important manuscript collections throughout the nation, including 3,000 collections of its own. A study of problems in preserving sound recordings in libraries, initiated by the library in the fiscal year 1958 through a $65,000 grant from the Rockefeller Foundation, was completed by the end of the fiscal year 1959. Also during the year the library launched a research project, conducted for it by Recording for the Blind, Inc., to develop 8⅓-rpm. records and record players to provide blind readers with handier machines and longer-playing "talking books" for less than the present cost per book.

ELIZABETH E. HAMER,
Information and Publications Officer,
The Library of Congress.

LIBYA. A monarchy on the northern coast of Africa. Estimated area, 679,358 square miles; pop. (est. July 1, 1958), 1,153,000, predominantly Arab Moslems. Europeans number about 60,000, mostly Italians in Tripolitania. Arabic is the official language. Tripoli (pop. est. 1958, 172,202) and Bengasi (Benghazi; pop. 1954, 70,532) alternate biennially as the capital. A third capital, at Beida, was under construction in 1959.

Government.—Libya is a federation of three provinces: Tripolitania (est. pop., 746,000), Cyrenaica (291,000), and Fezzan (54,000), which exercise considerable autonomy through their respective provincial assemblies and councils. On the federal level, the king (Mohammed Idriss el Senussi) wields the chief power. He may introduce or veto legislation and dissolve the lower house of Parliament at his discretion. The Libyan Senate consists of 24 members (8 from each province) who serve for 8 years; 12 are appointed by the king and 12 by the provincial assemblies. The House of Representatives has 55 members (35 from Tripolitania, 15 from Cyrenaica, and 5 from Fezzan) elected by male suffrage for 4 years. Abdel Majid Kobar has served as premier of the federal council of ministers since May 26, 1957.

Libya obtains annual subsidies from Great Britain, which maintains military bases at Tobruk and Bengasi; from the United States, which maintains a large airbase at Wheelus Field, near Tripoli; and France, which contributes toward the maintenance of airfields in Fezzan. These nations also provide economic and technical aid, as do Italy, the United Arab Republic, Turkey, and the United Nations. Britain and the United States supply arms and equipment for Libya's armed forces.

Education and Religion.—School facilities are available to a relatively small number of children, and over 85% of the population is illiterate. In 1957 there were 502 primary schools (96,763 pupils), 53 secondary (6,886), 8 technical (722), and 4 teacher-training (1,568). One higher institution had 71 students in 1956. Islam is the state religion, but other faiths have freedom of worship.

Finance.—The budget approved by the Libyan Parliament for the fiscal year beginning April 1, 1959, estimated expenditure at L£13.4 million. Of this total, L£5.0 million was allocated to the federal government, L£6.2 million to the three provinces, and the remainder to development agencies. Domestic revenue was not expected to yield more than half the total expenditure; the rest was to come from foreign aid. United States aid in 1958–59 totaled $19 million ($8 million in the form of budget support and direct contributions to development agencies). Under an agreement of 1958, Britain's annual budget contribution amounts to £3,250,000. Libya is a member of the sterling bloc. The Libyan pound (L£) equals U.S.$2.80.

Transportation and Communications.—Inland transport is largely by caravan, over traditional routes. A coastal highway of about 1,140 miles runs from the eastern to the western border. Motorable roads in Tripolitania and Cyrenaica total about 2,490 miles. Three main railroad lines from Tripoli aggregate 119 miles; 2 lines from Bengasi total 101 miles. Libyan Airways provides internal air service. Passenger cars in 1958 totaled 10,632; telephones, 8,264; radio receiver licenses, 19,000 (1956).

Production.—Agriculture and animal husbandry are the main occupations. Fertile areas lie mainly along the Mediterranean coast; the inland regions are largely semidesert or desert. Output of cereals, chiefly barley and wheat, averages about 110,000 tons annually. Citrus fruit and olives (olive oil output, est. 1957–58, 14,300 tons) are grown mostly by Italians. Other crops are esparto grass, tobacco (1958 output, 1.9 million pounds), castor beans, almonds, vegetables, and dates. Sheep and goats provide wool and other animal products. Coastal fisheries yield sponges, tuna, and sardines. Manufactures include foodstuffs and beverages, soap, leather, bricks, tobacco products, and traditional handicrafts, such as rugs and carpets.

Important sources of income are foreign subsidies, expenditures by foreign armed forces, and outlays by foreign oil-prospecting companies. The Libyan Public Development and Stabilization Agency, which operates mainly with funds from Britain, and the Libyan-American Reconstruction Commission, financed by the United States, have concentrated on long-range projects to raise agricultural and industrial productivity. The U.N. Food and Agriculture Organization is seeking to spread modern methods of dry-land farming and sheep raising.

Foreign Trade.—Exports in 1958 totaled L£5.5 million; imports, L£34.5 million (including L£10.1 million in direct imports by oil-prospecting companies). Esparto grass, castor seed, wool, and

scrap iron (from World War II battlefields) accounted for 51% of the value of exports. Italy purchased 37% of exports; the United Arab Republic, 17%; and Britain, 15%. Italy provided 22% of imports; Britain, 22%; and the United States, 21%.

Principal Events, 1959.—Oil-prospecting efforts yielded their first significant successes in 1959, a development which may have important consequences for Libya's marginal economy. On June 12, Esso Standard (Libya) Inc. announced that a well at Zelten, in northwest Cyrenaica, had reached a daily flow of 17,500 barrels. A second well at Zelten was reported on August 19 to have attained a daily flow of 15,000 barrels. A smaller strike about 200 miles south of Tripoli had already been reported by the Gulf Oil Company in May, and several other strikes were reported during the year.

The United States agreed in May to provide financial aid directly to the Libyan government, instead of through United States agencies. An agreement for a $5 million loan from the U.S. Development Loan Fund for the expansion of electric power facilities in the Tripoli area was signed by Libya on June 29.

M. J. G.

LIECHTENSTEIN. A sovereign principality of central Europe, located between Switzerland and Austria. Area, 61 square miles; pop. (est. 1959), 16,000. The capital is Vaduz (3,031). Prince Francis Joseph II (b. 1906; acceded 1938) rules with the aid of a 15-member Landtag elected for a four-year term by male suffrage. Dr. Alexander Frick has been chief of government since 1945. Budget estimates for 1959 were: revenue, 10,106,660 Swiss francs; expenditure, 10,254,924. In 1958 there were 14 elementary and 5 continuation schools with a total of 2,733 pupils. Corn and other grains, grapes, potatoes, and vegetables are grown. Manufactures include machine parts, instruments, leather goods, textiles, and pottery. Liechtenstein has a customs union with Switzerland. On Oct. 23–24, 1959, representatives of Liechtenstein, Monaco, San Marino, and Andorra conferred at Vaduz on measures to promote tourism.

LIFE EXPECTANCY. See Index entry.
LIFE INSURANCE. See INSURANCE.
LIGHTING. See ELECTRICAL DEVELOPMENTS.

LIME. In 1958 the production of lime in the United States declined 10%, from 10.3 million short tons in 1957 to 9.2 million tons. Details of the sales and uses of lime are shown in the table.

	1956	1957	1958
Sales, total	9,004,139	8,516,132	7,388,231
Quicklime	7,047,079	6,650,584	5,545,874
Hydrated	1,957,060	1,865,548	1,842,357
Uses:			
Agricultural	251,906	208,600	196,125
Building	1,133,383	1,037,689	1,128,875
Industrial	5,216,884	5,038,134	4,422,159
Refractory	2,401,966	2,231,709	1,641,072

(Source: U.S. Bureau of Mines.)

In the first nine months of 1959, the total lime sold was 6,814,437 tons, compared with 5,551,565 tons in the same period of 1958. Sales of agricultural lime totaled 141,234 tons in the first nine months of 1959 (139,394 in 1958); building lime, 868,685 tons (789,020 in 1958); industrial lime, 4,337,493 tons (3,487,141 in 1958); and refractory lime, 1,467,025 tons (1,136,010 in 1958).

LIMES. See FRUITS.
LINEN. See TEXTILE INDUSTRY.

LINGUISTICS. Among new publications of 1959 in the field of linguistics is *Anthropological Linguistics* (F. M. Voegelin, editor), which will publish material from the collection of tape recordings in the Archives of Languages of the World, at the University of Indiana. The first numbers contain papers presented at the 1958 meetings of the American Anthropological Association on the subjects of operational models, genetic classification, and urbanization and standard language. Another newcomer in *Lochlann*, a journal devoted to Celtic languages, literature and culture; it is edited by A. Sommerfelt in Oslo.

In Washington the Modern Language Association has set up a Center for Applied Linguistics, with C. A. Ferguson as its first director, to serve as a clearing house for institutions and individuals concerned with the application of linguistic science to practical language problems. The need for such a service had become immediate, partly in connection with the program of language development announced under the provisions of the National Defense Education Act of 1958. Aside from training activities in language institutes (to increase teaching competence) and centers (to develop teaching in new fields), several research programs of fundamental interest have been inaugurated by the center. These projects include the graphic recording of speech intonations (J. M. Cowan), a study of the incidence of speech disorders in foreign language acquisition (E. Hocking), and contrastive structure studies designed to reveal those aspects of a target language which need particular emphasis (through drill) for the speakers of a given first language. The center publishes *The Linguistic Reporter*.

The death in Paris, late in 1958, of Paul Rivet, one of the great Americanist linguists, was deeply felt. Manu Leumann of Zurich was honored on his 70th birthday by the publication of his collected *Kleine Schriften*. Another item of partly biographical interest is J. Chadwick's *Decipherment of Linear B*, describing the history of the discovery made by the author together with the late M. Ventris. A large portion of the 1958 *Transactions* of the Philological Society, London, is taken up by L. R. Palmer's studies developing aspects of their work on early Mediterranean syllabic writing. J. W. Poultney has written a comprehensive work on the Umbrian *Bronze Tables of Iguvium*. James G. Février's *Histoire de l'écriture* has been entirely remade.

Interest in linguistic theory is increasingly and quite wholesomely influenced by such technological applications as mechanical translation and information retrieval. Thus Georgetown University has copyrighted a series of *Occasional Papers on Machine Translation*, and similar work has been coming from the Soviet Union and from other countries. The direction seems to be away from statistical and toward algebraic approaches. There have also been more serious efforts than in the past to deal with borderline areas between linguistics and psychology, as is evident from the discussion which has followed R. Brown's *Words and Things* (1958)[1] or from N. Chomsky's critique of B. F. Skinner's *Verbal Behavior* (1957),[2] or again from various exchanges between U. Weinreich and the authors of *The Measurement of Meaning* (1957)—C. E. Osgood, G. J. Suci and P. H. Tannenbaum—in the pages of *Word*. Pedagogical application of good linguistic analysis still has a long way to go; but it is to be hoped that our schools will not ignore as too revolutionary such

[1] See, for example, H. Hoijer's review in *Language*, vol. 35, pp. 496–50.
[2] Ibid., vol. 35, pp. 26–58.

an excellent work as the *Short Introduction to English Grammar* by J. Sledd.

Work in phonetics has been given a welcome tool in E. Pulgram's *Introduction to the Spectrography of Speech,* in which both acoustic and linguistic methods are brought together in an effort to bring the linguist's understanding of the physics of sound up to date.

Language classification is indebted to the Indiana Archives mentioned earlier; a notable publication is H. Wolff's *Subsystem Typologies* and *Area Linguistics.*[3] Glottochronology is again discussed—for example, by W. Arndt [4] and by D. H. Hymes and A. I. Samarrai.[5] B. Geiger, T. Halasi-Kun, A. H. Kuipers and K. H. Menges have published the fruits of their labors for the Human Relations Area Files in a reference pamphlet, *Peoples and Language of the Caucasus.* A large body of *Clackamas Chinook Texts* (Part 2) has been published by M. Jacobs.

An international congress of classical scholars was held in Great Britain in 1959. The Linguistic Society of America and the Modern Language Association met in Chicago, the American Oriental Society in Ann Arbor, Mich., and the American Philological Association (including a panel on the teaching of classical languages) in New York City.

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LIQUOR INDUSTRY. See DISTILLING INDUSTRY.
LITERARY AWARDS. See PRIZES AND AWARDS.
LITERATURE. See Index entry.

LITHUANIA. An independent republic since 1918, Lithuania was forcibly annexed by the Soviet Union in 1940, and reannexed by force after World War II, thus becoming the Lithuanian Soviet Socialist Republic. The United States does not recognize this annexation.

Area and Population.—Lithuania's area is about 25,000 square miles; its population (1959), 2,713,000, of which only 39% is urban. The principal cities, with 1959 populations, are Vilnyus (Vilna, Wilno), the capital, 235,000; Kaunas (Kovno), 214,000; Klaipeda (Memel), 89,000; and Šiauliai (Shavli), 60,000. About 80% of the people are Lithuanians, an Indo-European ethnic group. There are large Russian and Jewish minorities.

Government.—Lithuania's legislature is a one-chamber Soviet of 209 deputies elected for 4-year terms. It rarely meets, and in the interim between sessions its authority is delegated to the Presidium headed by J. D. Paleckis and to the Council of Ministers (cabinet) under the chairmanship of Premier M. Y. Sumauskas. The Lithuanian government has no political autonomy, however, and acts chiefly as an agent executing orders of the USSR government. All key positions are held by Communists, many of whom are Russians. The head of the Lithuanian Communist Party is First Secretary Antanas J. Snechkus.

Finance.—The Lithuanian budget for 1959 provided for expenditures of 4,264,758,000 rubles ($1,066,189,500), or 425,758,000 rubles more than in 1958. This increase did not particularly benefit the Lithuanian standard of living, since it represented chiefly the transfer of industrial construction funds from the USSR central budget to the Lithuanian budget.

Religion.—Because of Soviet persecution of the prevailing Roman Catholic religion, less than one fourth of Lithuania's Catholic priests were still conducting services in 1959, and most of the bishops were in prison. In March, the Communist press severely attacked the Shaker religion, which has some followers in the cities.

Education.—School attendance in 1959 totaled approximately 436,000, including 24,000 students in colleges. During summer vacation many college students were forced to work in the "new lands" of Siberia and north-central Asia.

Economy.—By 1959, Lithuania's peasant population was almost completely collectivized in 1,800 collective farms and 87 state farms. The advance of the campaign to move isolated farmsteads into collective villages meant that the peasants would be under stronger government supervision. Approximately 5,100,000 acres are under cultivation, the main crops being rye, oats, wheat, corn, potatoes, flax, clover, and sugar beets. Livestock raising is very important, and the sale of livestock products accounts for half of all collective farm income. The agricultural section of the Seven-Year Plan (1959–65) stresses the expansion of stock raising and calls for increased acreage under vegetables, sugar beets, and flax. The output of farm produce in 1965 is planned to increase over 1958 by the following percentages: grain, 80–100; potatoes, 110; sugar beets, 80–110; fiber flax, 70; meat, 50; milk, 60–70; and butter, 70. The reclamation of land by swamp drainage, which has been proceeding very slowly, is to be accelerated.

Under Soviet rule, Lithuanian industry has at least doubled in size, emphasis being placed on the production of capital goods. In 1959 shipbuilding, turbine construction, manufacture of electrical machinery, machine tool making, and fishing were the major industries. The industrial section of the Seven-Year Plan is concentrating mainly on the expansion of machinebuilding, light industry, food processing, and fishing. Industrial output in 1965 is planned to increase over 1958 by the following percentages: all industry, 80; machinebuilding, 160; electric power, 190; linen, 150; and shoes, 100. The fish catch is expected to increase by 70%. Completion of the Dashava-Minsk-Vilnyus gas pipeline is planned for 1962.

Principal Events, 1959.—Political dissatisfaction continued during 1959, the main complaints being directed against the low standard of living, Communist persecution of the Catholic Church, and Russian rule. Party Secretary Snechkus publicly criticized the Lithuanian masses for nationalism, concealment of industrial failures, embezzlement of state funds, and failure to deliver sufficient farm produce to the cities. This criticism confirmed reports of refugees that mass slowdowns in industry and petty sabotage on farms were prevalent. Open revolt would appear to be unlikely, however, since large numbers of Russian troops are stationed on Lithuanian soil. Refugees also reported that Klaipeda has large concrete shelters for submarines and has become the largest Soviet submarine base on the Baltic coast.

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LIVESTOCK. See Index entry.
LIVING STANDARDS. See STANDARDS OF LIVING.

LLOYD, (John) Selwyn Brooke, British foreign secretary: b. West Kirby, Cheshire, England, July 28, 1904. A successful barrister, and a staff officer during World War II, Lloyd was first elected to Parliament in 1945. He was appointed minister of state at the Foreign Office when the Conservative Party returned to power in 1951, and for the following three years he represented the United Kingdom at the U.N. General Assembly. In October 1954 he became minister of supply; in April 1955 he succeeded Harold Macmillan as minister of defense; and on Dec. 20, 1955, he succeeded him as secretary of state for foreign affairs in the cabinet of Sir Anthony Eden. He was retained in that office when Macmillan became prime minister on Jan. 10, 1957.

Lloyd and Prime Minister Macmillan made an official visit to the USSR from Feb. 21 to March 3, 1959. During March they conferred with Western heads of state in Paris, Bonn, Ottawa, and Washington, presumably reporting on their discussions

[3] *Anthropological Linguistics,* vol. 1; 7 pp. 1–88.
[4] *Language,* vol. 35, pp. 180–92.
[5] *International Journal of American Linguistics,* vol. 25, pp. 68–70, 267–69.

with the Soviet leaders. In April, Lloyd attended meetings with the French and German foreign ministers and U.S. Secretary of State Herter in Washington and Paris, preparatory to the foreign ministers conference in Geneva. While the Geneva Conference was in session (May 11–June 20 and July 13–August 5), the London *Times* on June 1 conjectured that Lloyd might soon be replaced as foreign secretary. The next day Prime Minister Macmillan denied this possibility before the House of Commons, and Lloyd was retained after the Conservative victory in the general election of October 8.

LOANS. See Index entry.

LODGE, Henry Cabot, U.S. representative to the United Nations and representative in the Security Council: b. Nahant, Mass., July 5, 1902. Chief of the United States mission to the United Nations since 1953, Lodge had been a Republican senator from Massachusetts, as was his famous grandfather, whose name he bears. In 1959 Ambassador Lodge served as President Eisenhower's personal representative to and escort for Soviet Premier Nikita Khrushchev (q.v.), during the latter's tour of the United States in September.

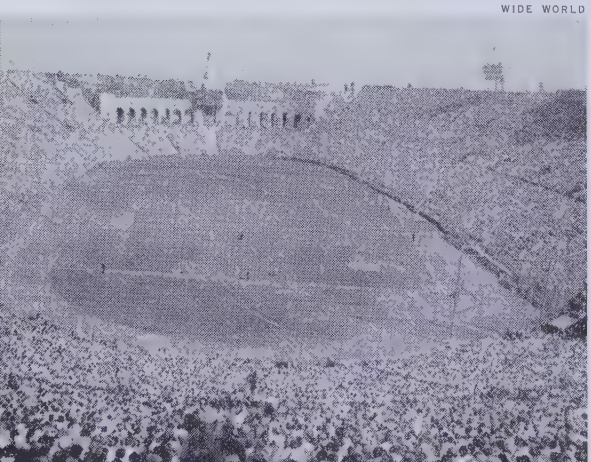
After his graduation from Harvard College in 1924, Lodge worked for eight years on the staff of the New York *Herald Tribune,* then turned to politics and ran successfully for the Massachusetts House of Representatives in 1932. After two terms in the state legislature he was elected to the U.S. Senate in 1936. With time out for military duty in 1941–42 and 1944–45, he served in the Senate until his defeat in 1952 by Democrat John F. Kennedy (q.v.).

Although Lodge sided with the isolationist wing of his party on many foreign policy matters before World War II, he subsequently became one of the leaders of his party's internationalist group. In 1952 he headed the preconvention campaign for the presidential nomination of General Eisenhower, who after the election named him to the United Nations post.

The ambassador's September tour with Premier Khrushchev was a trying assignment that called for diplomatic skill and agility. On the one hand Lodge was charged with countering Khrushchev's provocative propaganda sallies against the United States, and on the other hand he had to shield the premier from too vigorous ideological attacks by local political leaders—without either giving offense to the visitor or interfering with his freedom to inquire and debate during his trip.

Memorial Coliseum in Los Angeles, as it looked on October 4, 5, and 6 during 1959 World Series in which Los Angeles defeated Chicago. Coliseum's crowds of 90,000-plus on each of three days broke World Series attendance records.

WIDE WORLD



LOS ANGELES. Third most populous city (July 26, 1959, est., 2,435,300) in the United States, Los Angeles, Calif., is also the nation's largest metropolis in area (457.866 square miles). The population of Los Angeles County was increasing in 1959 at the rate of 556 persons each day.

A 15-member mayor-council is headed by Republican Mayor Norris Poulson, who was re-elected in 1957. Total estimated city budget appropriations (1959–60 fiscal year): $432,826,012. Estimated council-controlled appropriations (1959–60): $203,095,951. City tax rate (1959–60): $1.9346 per $100 assessed valuation. Assessed value of municipal property (1959–60) for tax purposes: $4.4 billion. Long-term debt total is $649,964,000, of which $403,595,000 is for Water and Power Revenue Bonds.

Total estimated metropolitan area employment (Oct. 1, 1959): 2,566,500; unemployment, 120,800. Value of manufactures of the metropolitan area (1958): $6.88 billion; retail sales, $8.98 billion. Total cargo carried (fiscal year 1958–59) through the Port of Los Angeles: 23,298,574 short tons, of which petroleum was the principal commodity. Assets of the city's harbor facilities total $160 million. Harbor revenues (fiscal year 1958–59): $7,600,000.

Accelerated construction of the metropolitan freeway system continued in 1959, with approval granted for the addition of 1,667 miles to the existing total. In air transportation, commercial jet service went into operation in January. The Municipal Department of Water and Power, largest such utility in the United States (total assets: over $900 million) announced that it would invest $71 million in new facilities during the fiscal year 1959–60.

Boasting a new $20 million Sports Arena, Los Angeles succeeded in "capturing" the Democratic National Convention (see DEMOCRATIC PARTY), which is scheduled to meet there in 1960. Located at Exposition Park, this stadium seats 35,000 persons. New sporting events, including hockey, can now be held in the city.

As the Los Angeles Dodgers Baseball Club began grading and filling operations on their new stadium at Chavez Ravine, the team won the National League pennant and went on to defeat the Chicago White Sox for the World Series baseball title. Three games at the Los Angeles Coliseum drew almost 93,000 persons each, the largest number of spectators at single games in the history of the World Series. (See also SPORTS, GAMES, AND SHOWS.)

During the year, crowds of 5,000 persons per day viewed the Von Gogh art exhibit at the County Museum Building. A Toulouse-Lautrec showing at the Municipal Art Center also attracted great attention.

Mayor Poulson continued his vigorous and sometimes controversial administration and was frequently in the news during the year. An altercation between the mayor and Soviet Premier Nikita Khrushchev (q.v.), during the latter's arrival in Los Angeles on September 19, drew national attention. Locally a conflict also developed between the mayor and the City Council over his desire to cut the city budget, particularly his reservations about pay increases for municipal employees. Later in the year many such employees received the increases they sought. The mayor also led a campaign to force auto makers to develop smog-arresting devices more rapidly.

In a special election of May 1959, the voters turned down additional old-age pension benefits for firemen and other civil servants, but they approved expansion of the city's network of fire substations and establishment of a fire-training academy.

The Los Angeles Chamber of Commerce claimed on Jan. 1, 1959, that the metropolitan area, which reached a population of 6,450,000 in 1958, had bypassed Chicago as the nation's second

largest urban complex, after New York. The chamber went on to point out that metropolitan Los Angeles was gaining population at an annual rate of about 240,000 persons, while Chicago's annual increase numbered only 100,000.

ANDREW F. ROLLE,
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LOUISIANA. South Central state, United States; admitted to the Union, April 30, 1812. The "Pelican State" ranks 31st in area and 20th in population among the 50 states.

Area and Population.—Area: 48,523 square miles (land, 45,162; inland water, 3,361), divided into 64 parishes. Population: (1950) 2,683,516; (est., July 1, 1958) 3,107,000. Urban places with populations above 10,000 (as estimated by the State Department of Health for 1959) are:

Alexandria	42,622	Lafayette	42,216
Bastrop	15,573	Lake Charles	56,050
Baton Rouge (*capital*)	154,465	Monroe	46,734
Bogalusa	21,314	New Iberia	21,201
Bossier City	23,057	New Orleans	653,888
Crowley	15,428	Opelousas	15,147
Gretna	16,715	Ruston	11,933
Houma	16,260	Shreveport	156,409
Jennings	10,673*	West Monroe	13,506

* Special census, Dec. 1, 1953.

Executive.—Chief state officers in 1959:
Governor: Earl K. Long (Democrat)
Lieutenant Governor: Lether E. Frazar
Secretary of State: Wade O. Martin, Jr.
Treasurer: Andrew P. Tugwell
Attorney General: Jack P. F. Gremillion
Comptroller: William Dodd
Supt. of Public Education: Shelby Jackson

Constitution and Judiciary.—The present constitution went into effect in 1921. The Supreme Court comprises seven justices; chief justice in 1959 was John B. Fournet.

Legislature.—The Louisiana Legislature (Senate, 39 members; House of Representatives, 101) met on May 11, 1959, for its regular 30-day fiscal session and adjourned June 9.

A joint legislative committee, assisted by state fiscal officers, had formulated the budget prior to the session, and this was approved by the legislature substantially as submitted.

There had been considerable discussion of the 19 different retirement systems in the state, and proposals were made to reduce the number. The special committee that studied the systems appeared to think that the teacher-retirement program could be merged with that of social security without injuring the benefits offered in the teachers' system. The latter had a surplus of $150 million which continued to increase. Some teachers felt that the proposed changes would wipe out the surplus and make their retirement benefits dependent on annual legislative appropriations.

The state's teachers procured appropriations sufficient for full implementation of a salary schedule (approved by the legislature in 1956), provided that subsequent oil leasing brought in more than $40 million. Some state officials, judges, and municipal and state police received salary increases, and all district attorneys were deprived of fees and placed on fixed salaries.

The governor tried without success to obtain legislation revising the voting machine board and setting back the Democratic primary by two weeks.

He called the legislature into special session on August 10 to enact his pet measures that the regular session had failed to pass. That evening motions were approved in the House (71 to 25) and the Senate (26 to 9) for immediate and final adjournment. This was the only action taken by the special session.

Finance.—In the 1958–59 fiscal year, state revenue of $714,665,642 comprised $426,317,920 from state tax sources, $169,849,070 from the federal government, and $118,498,652 from other sources. Tax revenue included $84,257,449 from a 2% general sales tax, $11,731,448 from individual income taxes, $18,677,391 from corporate income taxes, $61,845,846 from motor fuel taxes, and $24,634,036 from licensing. Expenditures of $633,276,785 included $213,397,577 for education, $166,940,643 for health, welfare, and safety, and $131,908,794 for highways. State long-term indebtedness on June 30, 1959, amounted to $315,416,463.50.

Banking.—As of June 10, 1959, the state's 42 national banks had $1,958,964,000 in assets, $1,399,795,000 in demand deposits, and $375,328,000 in time deposits. The 145 state banks had assets of $1,061,778,760.75, demand deposits of $715,179,195.26, and time deposits of $253,956,659.16.

Education.—School attendance is compulsory between the ages of 7 and 15, inclusive. The National Education Association estimated operating expenditures for Louisiana public schools in the 1959–60 school year at $233,000,000 ($373.40 per pupil). Revenue was expected to include $65 million from local school districts, $192,944,000 from the state, and $7,056,000 from the federal government. Capital outlays and interest payments amounted to $70 million, and teachers' salaries averaged $4,860 (high school, 5,150; elementary, $4,700).

WIDE WORLD

Gov. Earl K. Long, campaigning for nomination as lieutenant governor in the Louisiana primaries held December 6, is surrounded by admirers in Luling, La., on August 10.

In the 1959–60 school year there were an estimated 15,800 teachers and 545,000 pupils in public elementary schools and 9,609 teachers and 156,000 pupils in public secondary schools. College and university enrollment (1958–59) totaled 52,479 students.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $140,571,411.28, including $95,382,197.28 for the aged, $25,556,805.35 for dependent children, and $9,032,099.14 for the permanently and totally disabled. A monthly average of 262,000 persons received public assistance.

Labor Force.—The state's labor force totaled 1,107,500 on Aug. 15, 1959, including 146,500 agricultural workers. Nonagricultural employment of 755,600 on the same date was slightly below the figure of 762,000 for the previous August 15 and also below the 768,800 average for 1958. Of nonfarm employees, 19% were engaged in manufacturing, 23.3% in trade, and 17.6% in government. There were 51,100 persons unemployed on Aug. 15, 1959.

Manufacturing.—The state's 2,835 manufacturing plants in 1958 employed an average of 141,606 persons who received $644,145,009 in wages.

MAJOR LOUISANA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Chemicals and products	16,915	$ 97,487	$304,826
Petroleum and coal products	14,270	92,545	292,456
Food and kindred products	30,546	101,024	266,676
Pulp, paper, and products	17,129	83,949	196,990
Lumber and wood products	17,919	45,285	77,668
Transportation equipment	9,412	45,013	73,328
Primary metal industries	3,847	20,823	70,700
Fabricated metal products	7,284	31,839	58,908
Stone, clay, glass products	4,947	22,206	57,233

* For definition see footnote 1 in the article *Industrial Production*. (Source: *Annual Survey of Manufactures: 1957.*)

Value added by manufacture (1957) totaled $1,508,640,000, and outlays for new plant and equipment amounted to $300,655,000. Production workers averaged $87.78 for an average workweek of 41.8 hours in August 1959.

Mining.—In 1958 Louisiana ranked second among the states in the value of its mineral output, with 9.18% of the national total. It was second in the output of carbon black, natural gas, and Frasch sulfur; third in aluminum capacity; and fourth in salt production (16% of national output).

LOUISIANA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	755,000	$ 755,000
Natural gas (1,000 cu. ft.)[2]	2,451,587,000	316,255,000
Natural gasoline (bbl.)	18,645,214	50,371,000
Petroleum (bbl.)[2]	312,070,000	1,017,562,000
Petroleum gases (bbl.)	9,782,595	21,435,000
Salt, common	3,442,000	18,960,000
Sand and gravel	15,061,000	17,119,000
Stone	5,453,000	9,532,000
Sulfur, Frasch (long tons)	2,028,000	47,651,000
Other minerals	...	20,475,000
Total[3]	...	$1,517,415,000[3]

[1] Excludes certain clays, value for which is included under "Other minerals." [2] Preliminary. [3] Total adjusted to avoid duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 was up to $208,157,000 from $199,196,000 for the corresponding period of 1958. For the full year 1958, income comprised $162,670,000 from livestock and livestock products, $198,885,000 from crops, and $29,702,000 from government payments. Principal income sources in 1958 were: cattle, $92,355,000; rice, $59,963,000; and cotton lint, $49,148,000.

LOUISIANA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Corn (1,000 bu.)	14,559	15,960	17,490
Cotton lint (1,000 bales)	624	297	495
Cottonseed (1,000 tons)	253	127	206
Hay (1,000 tons)	462	605	572
Pecans (1,000 lb.)	16,490	14,000	21,000
Potatoes (1,000 cwt.)	456*	306	374
Rice (1,000 bags)	12,347	10,812	12,910
Soybeans (1,000 bu.)	1,196	2,860	3,312
Strawberries (1,000 lb.)	20,922*	14,060	14,800
Sugarcane for sugar & seed (1,000 short tons)	5,659	5,325	5,896
Sugarcane sirup (1,000 gal.)	2,728	2,275	2,240
Sweet potatoes (1,000 cwt.)	4,882*	4,779	5,022

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 114,000 farms in the state in 1958. Total acreage (1954) of 11,441,000 included 3,011,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,808,000 cattle and 3,385,000 chickens (excluding commercial broilers). Some 139,000 family and hired workers were engaged in farming during the week of Nov. 22–29, 1959.

Ports.—In the first nine months of 1959, overall tonnage crossing the public wharves of the Port of New Orleans was 5% greater than in the same period of 1958—or 6,845,051 tons compared with 6,528,702 in 1958. Significant rises in imports accounted for the gain. Export totals for the period were lower except in steadily increasing grain shipments, which rose 14%.

An 86% increase in the port's business is anticipated by 1970, when a 12-year, $120 million expansion program is scheduled for completion. In addition to $9 million spent on improvements in 1958–59, an investment of $51 million was to be made by 1961. Improvements during 1959 included expansion of the public grain elevator and construction of new wharf facilities.

The first five-mile section of the 76.5-mile, $100 million Mississippi River–Gulf Outlet was built in 1959. Scheduled for completion by 1967, this tidewater channel will provide Louisiana with a new outlet to the Gulf of Mexico.

The port of Baton Rouge in 1959 put into service a new $15 million bulk cargo terminal.

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $136,637,900, and 1,907 miles of new construction were completed.

Highways and roads on Dec. 31, 1958, totaled 47,507 miles (36,823 surfaced), including 6,527 miles of streets in incorporated places. Registered *motor vehicles* numbered 1,144,776 on July 31, 1959, including 864,331 passenger cars. There were (1958) 32 *railroads* operating 7,088.36 track miles and (1959) 11 regularly scheduled *airlines* and 176 *airports and airfields* (48 commercial and municipal, 5 military, and 123 private). In November a new $7.5 million terminal was dedicated at New Orleans' Moisant International Airport.

Communications media (1958) included 78 AM and 10 FM *radio stations;* 12 *television stations;* (1957) 19 daily *newspapers* (circulation, 731,610) and 100 other newspapers; and (Jan. 1, 1959) 254,600 business and 695,400 residential *telephones.*

Principal Events, 1959.—Gov. Earl K. Long made news headlines as a result of his efforts, May 24–26, to coerce the Louisiana Legislature into approving some measures he favored. His appearance before the legislature was televised, and tape recordings were made. His behavior alarmed his family and political friends, and he was flown to John Sealy Hospital, Galveston, Texas, where he entered the Harris Psychiatric Clinic on May 30. His wife, Mrs. Blanche Long, and Dr. Arthur Long, a cousin of the governor, appeared before Judge Hugh Gibson on June 2 and signed papers committing the governor for two weeks. A sanity hearing was held on June 16, and the next day Governor Long was moved to the Ochsner Foundation Hospital in New Orleans. Within 24 hours the governor walked out of the hospital and went by automobile to Baton Rouge. Sheriff's deputies of East Baton Rouge Parish and state police stopped the governor at the parish line, presumably on the request of his wife, and took him to the Southeast Louisiana State Mental Hospital in Mandeville.

The governor procured a legal staff headed by Joseph Arthur Sims of Hammond, to get him out of the hospital. A few minutes before the appropriate court was to convene for his sanity hearing on June 26, Long met with a quorum of the Board of Institutions. This board fired the director of institutions and the superintendent of the Mandeville hospital, and appointed a new superintendent. When the governor went into court, the new superintendent testified that the governor was sane, Mrs. Long did not make an appearance to offer testimony, and the court had no cause for action. Long again assumed his duties as governor and fired the state superintendent of police and a number of other state employees.

In related developments the governor, on the day before his hearing, filed a separation suit against his wife, and Mrs. Long filed an answer five days later. The suit was still pending as the year ended. Governor Long went on a vacation, starting July 11, into Texas, Juárez (Mexico), New Mexico, and Colorado. His unusual behavior attracted attention everywhere he went.

The governor's demeanor affected developments preparatory to the forthcoming gubernatorial campaign. Long contended that he would resign office in September and file as a candidate for governor, thereby circumventing the constitutional provision that a governor is ineligible to succeed himself. The State Central Democratic Executive

Committee refused to permit him to file as a candidate for governor unless he resigned first. Long eventually filed in the Democratic primary of December 6 for lieutenant governor on a ticket headed by James A. Noe. In the primary, Noe and Long finished well behind New Orleans Mayor de Lesseps S. Morrison, who topped the nearest of his 10 rivals, former Gov. Jimmie Davis, by a substantial plurality. Lacking the majority of total votes necessary for nomination, Morrison faced Davis in a runoff primary on Jan. 9, 1960. Davis won, and was virtually assured of election on April 19 against his Republican opponent.

Louisiana experienced no unusual weather in 1959. Rainfall was evenly distributed throughout the year, although total precipitation was less than in 1958. Hurricane Arlene was the only storm that caused any significant damage—more than $500,000 worth in St. James Parish. A 10-foot marble figure was dedicated at Lake Charles on June 27 in memory of the 500 people who lost their lives as a result of hurricane Audrey in 1957.

The level of business activity was approximately 9% higher in June 1959 than a year earlier, and through the year, unemployment generally declined, although it remained above average for the state. Other economic indexes were encouraging. By November, state tax collections were $52 million higher than a year earlier; for the first six months of 1959, deposits in state banks were $67,267,000 above those for the corresponding 1958 period; and as of October 1, 169,749 bales of cotton had been ginned, compared with 72,070 bales the year before. Production of all major crops except hay and sugarcane was higher than in 1958 (see above, *Agriculture*). In other economic developments, the year's income from the tourist trade amounted to an estimated $500 million, and industrial expansion continued. One of the state's major new industrial plants, a $31 million Crown Zellerbach paper mill, began operations at St. Francisville.

Legislature and Principal Events by:
G. W. McGinty,
Professor of History; Head, Department of Social Sciences, Louisiana Polytechnic Institute.

LUMBER. Production of lumber in the United States in 1958 was below the previous year's level, according to reports of the National Lumber Manufacturers Association. The preliminary estimate for 1958 was 33,579 million board feet, and the revised estimate for 1957 was 34,214 million board feet.

United States lumber production in the first half of 1959 was 17,756 million board feet, a gain of 12% over the first half of 1958. An increase in housing starts during 1959 (see Housing) was expected to bring an upturn in lumber production for the entire year. (For information on wood pulp production, see Paper Industry.)

UNITED STATES LUMBER PRODUCTION, 1957–58
(In million board feet)

Region	1957	1958
Southern pine	6,724	6,892
Douglas fir	7,728	8,078
Western pine	8,014	8,081
California redwood	2,608	2,251
Other (softwoods)	1,684	1,699
Total softwoods	26,758	27,001
Southern hardwoods	3,770	3,326
Other hardwoods	3,686	3,252
Total hardwoods	7,456	6,578

Lumber output by principal producing regions for 1957 and 1958 is indicated in the accompanying table.

United States imports of lumber in 1958 totaled 3,392 million board feet, according to the U.S. Department of Commerce. The total comprised 3,155 million feet of softwood lumber, 235 million feet of hardwood, and 2 million feet of railroad ties. Softwood lumber from Canada accounted for most of the imports. Exports totaled 727 million board feet, comprising 540 million feet of softwood, 133 million feet of hardwood, 1 million feet of box shooks, and 53 million feet of sawn railroad ties.

The wholesale price index of lumber, according to the Bureau of Labor Statistics, dropped from an average of 119.7 for 1957 to 118.0 for 1958. By June 1959, however, the index had risen to 130.4, almost equaling the all-time high point of 130.6 reached in April 1956. In July 1959 the lumber price index tapered off slightly to 129.8 (1947–49 = 100).

The Department of Commerce reported 41,484 establishments in lumber and related products manufacture (excluding furniture). Expenditures for new plant and equipment in 1957 were $211 million, compared with $307 million in 1956. Employees numbered 646,000, including 579,000 classed as production workers. Man-hours worked by production workers totaled 1,072,000,000; wages $1,723,000,000.

Canada.—The Department of Northern Affairs and National Resources, Forestry Branch, issued a preliminary total of 6,805 million board feet for Canada's production of lumber in 1957. Estimated production in the preceding year was 7,830 million board feet. More than 90% of Canada's total lumber production is softwood lumber. Canada exported 3,646 million board feet of lumber in 1957. The United States and the United Kingdom were the largest customers. Canada's lumber imports in 1957 amounted to 237 million board feet.

World Production.—The Forestry Division of the Food and Agriculture Organization of the United Nations (FAO) reported the estimated world production of sawn wood in 1957 at 283,310,000 cubic meters (1 cubic meter = 424 board feet). This was a slight drop from the revised estimate for 1956 (294,025,000 cubic meters). Increased production in Asia, the Soviet Union, Central America, and Africa was more than offset by declines in North and South America, Europe, and the Pacific area.

The USSR became the world's leading producer of sawn wood in 1957. Its reported production of 79 million cubic meters topped that of the United States by about 200,000 cubic meters. Other large producers were Japan (23.1 million cubic meters), and Canada (15.8 million). Sweden, Poland, and France each produced more than 7 million cubic meters; and West Germany, 6.9 million.

Coniferous species accounted for approximately 80% of the total production of sawn lumber in 1957, and for 90% of exported volume. A review by FAO of general trends in the world trade of lumber showed that during the ten-year period ending in 1957 Europe changed from a net exporter to a net importer of sawn softwood, while the opposite development was reported for the USSR. Canada was the world's leading exporter, and the United States continued to be a net importer of lumber. (See also Forestry.)

Charles E. Randall,
Forestry Information Specialist, Formerly with U.S. Forest Service.

LUNAR ROCKETS. See Space Flight.
LUNIK SPACE VEHICLES. See Space Flight.

LUTHERAN CHURCHES OF AMERICA. Membership in 1959 of the 16 Lutheran Church bodies in the

United States and Canada was reported at 8,090,000 by the National Lutheran Council, with 250,149 members in Canada.

On July 7, at Northfield, Minn., three Lutheran Church bodies—the 1,119,000-member Evangelical Lutheran Church, the 1,005,000-member American Lutheran Church, and the 67,000-member United Evangelical Lutheran Church—reached final agreement on terms of union. Also, board members and key administrators were elected for the new group, which will be known as The American Lutheran Church. A formal merger is scheduled to take place at a joint convention in Minneapolis, Minn., in April 1960.

After rapid progress in negotiations toward another merger, hope was expressed in 1959 that all documents may be ready by early 1960 for union between the 2,440,000-member United Lutheran Church in America (the largest Lutheran body in the United States), the 591,000-member Augustana Lutheran Church, the 40,000-member Suomi Synod, and the 23,000-member American Evangelical Lutheran Church. If the merging churches will approve the proposed constitution at their 1960 conventions, the new 3,000,000-member Church should begin functioning by late 1962.

The possibility of closer cooperation among divided Lutheran groups in America was evidenced by an announcement that the 2,315,000-member Lutheran Church–Missouri Synod will discuss future participation in the National Lutheran Council and in the Lutheran World Federation. The announcement, made at the synod's 44th triennial convention (June 17–26, 1959), followed an earlier refusal to discuss extended cooperation with the National Lutheran Council.

Also at the convention, which re-elected Dr. John W. Behnken president of the synod for a record ninth term, a Statement on Scripture was approved, reaffirming a literal approach to the Biblical revelation. This action marked a step toward complete doctrinal agreement with three smaller, conservative bodies cooperating in The Evangelical Lutheran Synodical Conference of North America.

Two member groups of this conference changed their names during 1959. The 347,000-member Evangelical Lutheran Joint Synod of Wisconsin and Other States became The Wisconsin Evangelical Lutheran Synod. The 20,000-member Slovak Evangelical Lutheran Church became The Synod of Evangelical Lutheran Churches. The 9,500-member National Evangelical Lutheran Church was invited to merge with the Missouri Synod.

Overseas shipments by Lutheran World Relief, Inc., of food, clothing, and medicines for refugees and needy people passed the $100,000,000 mark by mid-1959. This agency, founded in 1946 as a material aid arm of the National Lutheran Council, also receives support from the Missouri Synod.

ALEX LIEPA,
Editor, "The National Lutheran."

LUXEMBOURG. A grand duchy of western Europe, bounded by Belgium, France, and Germany. Area, 998 square miles; pop. (est. 1958), 321,858. The capital and chief city is Luxembourg (70,158). French and Letzeburgesch, a German-French-Dutch admixture, are the principal languages.

Government.—Grand Duchess Charlotte (b. 1896; acceded 1919) is the sovereign. The Chamber of Deputies consists of 52 members elected by universal suffrage for a 5-year term. Party seating following the elections of Feb. 1, 1959, was: Christian Social (Roman Catholic), 21; Socialists, 17; Democrats (Liberals), 11; and Communists, 3. The Council of State, consisting of 15 members appointed for life by the sovereign, may exercise a temporary suspensive veto on legislation. Pierre Werner (Christian Social) heads a Christian Social–Democratic coalition cabinet formed on Feb. 26, 1959.

Education and Religion.—In 1957–58 there were 28,850 pupils in primary schools and 7,427 students in higher elementary, commercial, technical, and other secondary schools and colleges. The majority of the population is Roman Catholic.

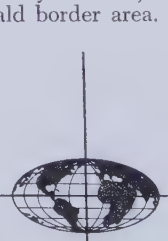
Finance.—The estimated budget for 1958 (ordinary and extraordinary) was: revenue, 4,997.7 million francs; expenditure, 5,080.9 million. The consolidated debt in September 1958 included 4,188.3 million francs of long-term debt and 3,144.5 million of short-term. The Luxembourg franc equals U.S.$0.02.

Transportation and Communications.—The road network in 1958 included 1,733 miles of state roads and 1,240 miles of local roads. Railways total 244 miles. Passenger cars numbered 28,862 in 1958; telephones, 38,420; television sets, 1,600 (December 1957); daily newspapers, 5 (total circulation, 1957: 137,000).

Production.—Luxembourg's iron and steel industry accounts for about 55% of industrial employment, provides some 70% of industrial output value, and contributes about 90% of exports. Crude steel production in 1958 totaled 3,378,820 metric tons (down 3% from the record 1957 figure); pig iron and ferroalloys, 3,285,355 (down 2.5%); and iron ore, 6,637,998 (down 9%). Other manufactures are shoe leather, gloves, cement, rubber products, china, and textiles. The index of industrial production (1953 = 100) fell about 4% to 121 in 1958, but recovered somewhat to 123 in the first half of 1959. Agriculture engages about a fourth of the economically active population. Chief products are wheat, rye, oats, barley, potatoes, dairy products, and wine. National income in 1958 was estimated at 16 billion francs, down about 5.3% from 1957. Luxembourg has had an economic union with Belgium since 1922.

Principal Events, 1959.—The cabinet crisis of December 1958, resulting from the Socialists' withdrawal from the coalition government of Premier Pierre Frieden over charges of bribery against a Socialist minister, was resolved following the national elections of Feb. 1, 1959. The elections resulted in a gain of five seats for the Democrats and an equivalent loss for the Christian Socials. The Socialist and Communist seating remained unchanged. Pierre Werner formed a Christian Social–Democratic coalition government on February 26, succeeding the caretaker government of Frieden (who died in Zurich, Switzerland, on February 23). Eugène Schaus was named minister of foreign affairs and defense minister.

Under an agreement signed with West Germany on July 11 settling certain problems arising out of World War II, Luxembourg returned to West Germany some 1,200 acres of land in the Kammerwald border area.



MACAO. See PORTUGUESE TERRITORIES.

McELROY, Neil Hosler, former U.S. secretary of defense (succeeded on Dec. 1, 1959, by Thomas S. Gates, Jr.). (See GATES and the Index entry, *McElroy.*)

MACHINE TOOLS. Machine tools, the power-driven machines that cut and shape metal, are required directly or indirectly for the manufacture and the delivery to the user of practically every product known today.

Although the industry is therefore a basic industry, it is small by comparison with other industries. In the United States it comprises about 300 companies located chiefly north of the Ohio and Potomac rivers, and east of the Mississippi, with a few as far west as California. A few machine tool companies employ as high as 5,000 men, but the average machine tool builder has normally from 200 to 250 employees.

In 1959 the industry was recovering from the economic recession in the capital goods field which began in 1957 and continued through 1958. The trend since the beginning of 1959 has been slowly upward. Comparative shipments of cutting and forming types of machine tools in the years 1957–59 were as follows: 1957, $1,088,450,000; 1958, $519,900,000; and 1959 (estimated), $525,000,000. In 1957 exports accounted for 11% of the total; in 1958, 14%. It was expected that the percentage in 1959 would be much the same as in 1958.

The United States government now recognizes over 500 types of machine tools, aside from the number of sizes in each type, and their various combinations. In size, machine tools range from that of a small desk to that of a house; and in cost, from less than a thousand dollars to over a million.

During the recent recession in the industry—while uncertain conditions led manufacturers in the metalworking field to postpone modernization—the machine tool industry concentrated its efforts on research and product development in order that it would have new and better models available to stimulate buying as general business conditions improved. Such efforts have been accelerating, looking forward to The Machine Tool Exposition—1960, to be held in Chicago in September, at which new models of American-built machine tools will be on display.

Recent advances in machine tool product development have included the following:

(1) Increased metal cutting and forming capacity. The machines being developed today are, in the main, larger, more rugged, and capable of doing more work in less time.

(2) Advances in accuracy. Throughout industry the trend has been toward closer tolerances, with some specifications calling for accuracy within millionths of an inch. Remarkable advances are being made in this direction.

(3) Improvements in electrical, mechanical and hydraulic controls. The trend toward automatic operation is accelerating rapidly. By this means the production pace is built into the machine; it is not subject to the skill or the working pace of the operator. At the same time, the required accuracy is assured.

(4) The application of numerical controls. These devices, by which the desired operation of the machine is determined in advance, and performance is automatic, are finding more and more applications.

(5) The use of profiling machines, templates, and other devices, which enable a machine to perform a repetitive pattern, duplicating the work piece desired.

(6) The development of automatic loading and unloading devices, and devices for moving work pieces from one machine to the next, eliminating hand operations.

(7) The production of machine tools for the machining of new materials, particularly extremely hard materials required for the manufacture of missiles and other special purposes.

(8) The development of entirely new machining methods, such as electrolytic machining and ultrasonic machining.

It is generally accepted that the major share of the machine tools in the metalworking plants of the United States are obsolete by comparison with models being developed today. The need for modernization is universally recognized. How rapidly this will be reflected, however, in machine tool sales will depend on the willingness of metalworking companies to make the necessary capital expenditures. This, in turn, is affected by the general business outlook and the degree of confidence with which industries can look forward to the future.

Another factor having a bearing on the expansion of the industry is the national defense program. Machine tools are essential to the making of practically every military item; but the number of machine tools needed varies with the nature of the defense items to be produced, and the volume of defense procurement.

Sheer economic necessity and the pressure of price competition, both domestic and from abroad, must inevitably push metalworking concerns into modernization programs. It would appear probable, therefore, that the present upturn in machine tool sales and operations will continue, the only uncertainty being the rate at which this improvement will materialize.

LUDLOW KING,
Executive Vice President,
National Machine Tool Builders' Association.

MACHINERY. See Index entry.

MacLEISH, Archibald, American poet: b. Glencoe, Ill., May 7, 1892. Twice winner of the Pulitzer Prize for poetry—in 1933 for his long narrative poem *Conquistador* and in 1953 for *Collected Poems, 1917–1952*—Archibald MacLeish received the 1959 Pulitzer Prize for drama (announced May 4) for his verse play *J.B.* Opening on Broadway on Dec. 11, 1958, to general critical acclaim (it had been presented first at Yale University in April 1958), *J.B.* is a restatement in 20th century terms of the Book of Job.

After attending Hotchkiss School, Lakeville, Conn., and Yale University (B.A., 1915), Archibald MacLeish became a law student at Harvard University. His legal training was interrupted by service in the U.S. Army during World War I, following which he returned to Harvard and completed his studies in 1919. He spent a brief period there as a law instructor, and then practiced privately until 1923, when he began to devote himself fully to writing. From that year until 1928 he lived abroad, mostly in France. While in Europe, MacLeish published *The Happy Marriage* (1924), *The Pot of Earth* (1925), *Streets in the Moon* (1926), and *The Hamlet of A. MacLeish* (1928), which, like the earlier *Tower of Ivory* (1917), are highly subjective and reflect the poet's indebtedness to T. S. Eliot and Ezra Pound.

After MacLeish's return to the United States in 1928, he became less subjective and more aware of his national cultural heritage. This period, continuing until about the publication of *Poems, 1923–*

1933 (1933), saw the appearance of *New Found Land* (1930), *Conquistador* (1932), and *Frescoes for Mr. Rockefeller's City* (1933).

In 1935, with the appearance of *Panic*, a verse drama, MacLeish exhibited a markedly increased awareness of contemporary social issues. *The Fall of the City* (1937) and *Air Raid* (1938), both plays in verse, and *The Irresponsibles* (1940), *The American Cause* (1941), *A Time to Speak* (1941), *A Time to Act* (1943), and *The American Story* (1944), all in prose, further reflected the author's concern with the economic crisis of the 1930's and, more especially, with the rise of totalitarianism and its threat to American democracy. His post-World War II volumes of poetry include *Actfive* (1948) and *Songs for Eve* (1954).

In 1938 he was appointed custodian of the Nieman Collection at Harvard, and a year later President Roosevelt named him librarian of Congress, which post he held until his appointment as assistant secretary of state for public and cultural relations (1944–45). In addition, during World War II he was director of the U.S. Office of Facts and Figures (1941–42) and assistant director of the Office of War Information (1942–43). He also held various posts in connection with the U.N. Educational, Scientific and Cultural Organization (UNESCO). In 1949 he became Boylston professor of rhetoric and oratory at Harvard.

MACMILLAN, (Maurice) Harold, prime minister of Great Britain: b. London, England, Feb. 10, 1894. Great Britain's rising fortunes during 1959, internally and internationally, were in good part due to the effectiveness of her prime minister, whose personal fortunes were crowned with a triumphant re-election in October.

Educated at Eton and at Balliol College, Oxford (B.A. 1919), he was a director of Macmillan and Company, Ltd. (1920–40) and a Conservative member of Parliament (1924–29; 1931–45). He served in the postwar Conservative government as minister of housing and local government (1951–54), minister of defense (1954–55), secretary of state for foreign affairs (1955), and chancellor of the exchequer (1955–57) before succeeding Sir Anthony Eden as prime minister on Jan. 10, 1957.

Macmillan pressed more actively than any other Western head of state during 1959 for negotiations with the Soviet Union and exploration of new means of coexistence with the Communists. On February 21 (two days after signing the agreements for a settlement on Cyprus, q.v.) he flew to the Soviet Union for a ten-day visit to explore the possibility of an East-West meeting on the problem of Germany (q.v.) and West Berlin. The prime minister reported his findings, in visits during March, to President de Gaulle in Paris, Chancellor Adenauer in Bonn, and President Eisenhower in Washington, D.C. Finally, after a meeting of the four leaders in Paris (December 19–21), an invitation to Soviet Premier Khrushchev was issued and accepted for a Big Four summit meeting to begin in Paris on May 16, 1960. (See also SUMMIT CONFERENCE.)

Prime Minister Macmillan (l.) and his guest, French Premier Debré, visiting London, April 14, admire cherry blossoms in the garden of Macmillan's residence, 10 Downing Street.

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Domestically, under Macmillan's leadership in 1959, Britain's economy improved as, for example, the country's production and export trade rose steadily. The prime minister's prestige was high in the general election of Oct. 8, 1959, when the Conservative Party nearly doubled its majority in the House of Commons and set precedent by being the only British party in the 20th century to win three successive elections with increased majorities. Macmillan himself was re-elected by his own constituency (Bromley) by the largest plurality in his career.

(See also GREAT BRITAIN.)

MADAGASCAR. See MALGACHE REPUBLIC.

MADEIRA. A group of Atlantic islands about 535 miles southwest of Lisbon, forming the Funchal District of Portugal. Area, 305 square miles; pop. (1950), 269,769. The capital is Funchal (37,215). Madeira (286 sq. mi.), a noted health resort, and Porto Santo (16 sq. mi.) are the only inhabited islands. Oranges, grapes, bananas, and sugarcane are grown. Industries include fishing, wine making, and handicrafts.

MAGAZINES. Despite continued cost increases, the magazine industry registered an increase in profits from about 2% in 1958 to nearly 3% in 1959, and most publishers felt confident that 1960 would be at least as good a year.

The increase in profits was due both to strict industrywide cost controls and to better business conditions. Advertising revenue for the year 1959 was estimated at $780 million, compared with $696,265,655 in 1958 and $741,434,426 in 1957. The number of advertising pages sold in the first nine months of 1959 was up 5.7% over the comparable 1958 period, and the year's total was estimated at 73,000, compared with 72,256 pages in 1958, according to the Magazine Advertising Bureau.

Circulation of general and farm magazines reversed a slight downward trend, with 269 magazines distributing 182,310,061 copies per month in the first six months of 1959, compared with 278 publications with a monthly circulation of 180,997,478 copies in the first half of 1958.

The industry in 1959 stepped up its efforts, particularly in competition with television, to gain a larger share of the advertising dollar. A survey by the National Consumer Panel of the Market Research Corp. of America, made through "diary reports" from 5,800 households, reported in part "a buying rate which increases in almost direct proportion with magazine exposure to household heads."

Beyond the normal business competition for advertising revenue, the Magazine Publishers Association continued during the year to urge concerted action against what it considered serious threats to magazine circulation and advertising by various federal and local government activities, including increased postal rates.

Canadian Developments.—In general, business developments in Canadian magazine publishing in 1959 were much the same as in the United States, with advertising revenues and circulation con-

tinuing to increase. The one circulation exception was *Macleans* magazine, which took the nearly unprecedented step of moving to reduce both circulation and circulation guarantees. The policy behind the move was reported as one of not going all-out for circulation for its own sake, but of giving added importance to readership quality.

Business Publications.—Advertising and circulation indices of business publications generally showed increases in 1959, according to an annual study by Angelo R. Venezian, vice president of McGraw-Hill Publishing Co., and his forecasts for 1960 were optimistic. Advertising pages published in 1959, the Venezian study showed, totaled approximately 1,183,000, some 2,000 over 1958, and appeared headed for a 1960 level of some 1,220,000 pages. He estimated advertising revenue, exclusive of production costs, at $503,500,000 for 1959, with a 1960 volume predicted at $550 million. Circulation also continued to grow, with the 1959 average monthly distribution estimated at 43.1 million, compared with about 41 million in 1958.

As with other types of publications, increased efficiency in the management of business magazines will be necessary, for Venezian estimated that by 1961 costs will be up 6% for printing, 5% for paper, 20% for postage, and 10–15% for wages.

New Publications.—Despite the greater capital needed to start a magazine, the year 1959 saw the birth of some 53 new publications, compared with 41 in 1958, with business magazines again leading general publications by about 2 to 1.

Among new consumer publications were: *Air Travel; Best Articles and Stories; Direction, The Dial,* and *Noonday,* all by book publishers; *Echo* and *Living Music,* phonograph record magazines; *Ingénue; Jazz; Leisure; Overview; Power Boating Quarterly; Save* (premiums and contests); *Ski Life; U.S. Amateur Hockey; Western Family Outlook;* and *World Farming.*

Entering the business field were: *Advertising Contact; Agricultural Banker; Agricultural Equipment Dealer* (in tabloid format); *Air Engineering; Builder's Kitchen Guide; Carpenter and Joiner; Construction Machinery Distribution; Convention Planning; Coupon; Effective Marketing Action; Environment; Empire; Feedlot; Food and Drug Packaging; Graphic Arts Buyer Of Chicagoland; Great Lakes Seaway Journal; Ground Support Equipment; Imported Auto Trade; Industrial Research; Industrial Supplier and Distribution News; Irrigation Farmer and Water Management; Irrigation Dealer and Well Driller; Journal of Chemical and Engineering Data; Magazine of Urban/Rural Planning; Management and Business Automation; Midwest Port; National Real Estate Investor; Nursing Home Management; Power Drive Engineering; Power Transmission Design; Salesweek; Scientific Research;* and *Stereo Hi-Fi Retailing.*

Mergers and Transfers.—During the year, Hearst Corporation bought *Popular Mechanics;* Conover-Mast Publications, Inc., acquired *Boating Industry* and *Electrical Manufacturing;* and American Aviation Publications, Inc., purchased *Garden Supply Merchandiser.* Mergers included Street & Smith Publications, Inc., with Condé Nast Publications, Inc., and Cahners Publications with Industrial Publications, bringing the new house total to 14 business publications in the building and materials handling fields.

(See also CENSORSHIP and the Index entry, *Magazines.*)

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MAGNESIUM. In 1958, world production of magnesium metal declined to 101,000 short tons or 34% below that in 1957, according to U.S. Bureau of Mines data. It was the lowest output since 1951. (See MINERAL PRODUCTION for table showing output by major producing countries.) The United States reported 30% of this total, compared with 52% in 1957. Therefore, the decrease in world production resulted chiefly because of curtailed United States output. Domestic output of primary magnesium was 30,096 short tons; stocks had accumulated beyond average annual consumption. In 1958, domestic consumption of the metal was 17% above production. The Dow Chemical Company closed its plant at Velasco, Texas, on March 1, 1958, but produced magnesium at its Freeport plant throughout the year. The government-owned silico-thermic plant at Canaan, Conn., continued to produce magnesium and calcium. In the first nine months of 1959, domestic production of primary magnesium totaled 21,444 tons. In the first eight months of 1959, imports of magnesium totaled 477 tons and exports totaled 1,247 tons.

MAGNETISM, Terrestrial. See the Index entry, *Terrestrial Magnetism and Electricity.*

MAIL SERVICE. See POST OFFICE DEPARTMENT.

MAINE. New England State, United States; admitted to the Union, March 15, 1820. The "Pine Tree State" ranks 39th in area and 36th in population among the 50 states.

Area and Population.—Area: 33,215 square miles (land, 31,040; inland water, 2,175), divided into 16 counties. Population: (1950) 913,774; (est., July 1, 1958) 944,000. Urban places with 1950 populations above 10,000 are:

Auburn	23,134	Portland	77,634
Augusta (*capital*)	20,913	Saco	10,324
Bangor	31,558	Sanford town*	15,177
Bath	10,664	South Portland	21,866
Biddeford	20,836	Waterville	18,287
Brunswick town*	10,996	Westbrook	12,284
Lewiston	40,974		

* Civil division.

Executive.—Chief state officers in 1959:
Governor: Clinton A. Clauson, Democrat (died December 30; succeeded by John Reed, Republican, president of the Senate)
Secretary of State: Harold I. Goss
Treasurer: Frank S. Carpenter
Attorney General: Frank E. Hancock
Auditor: Michael A. Napolitano
Commissioner of Education: Warren G. Hill

Constitution and Judiciary.—The present constitution went into effect in 1820, and was most recently codified in 1951. The highest tribunal, the Supreme Judicial Court, comprises six justices; chief justice in 1959 was Robert B. Williamson.

Legislature.—The Maine Legislature comprises a 33-member Senate (in 1959, 21 Republicans and 12 Democrats) and a 151-member House of Representatives (93 Republicans and 58 Democrats). It convened in 1959 for its 99th regular session on the first Wednesday of January, which fell on the 7th of the month, and adjourned on June 14 after the longest session in its history. The length of the session was due chiefly to a prolonged battle over tax measures to finance a budget which, after some cutting, was larger than anticipated revenues. Tax measures proposed by Democratic Gov. Clinton A. Clauson were defeated, and the budget was balanced by enactment of a Republican proposal to tax hotel and motel rentals. General Fund expenditures of $104 million and highway costs of $77 million were charged to current revenues for the 1959–61 biennium, while $3.9 million in bond issues for highways and building construction (chiefly at teachers colleges and the state university) were approved by the legislature and accepted by the voters at a referendum election on October 12.

Two studies were financed by the legislature—one on state and local taxation problems of Maine, and the other dealing with the lower courts of the state. Other legislative acts included a "right to know" law, the state's first minimum-wage act, a revision of juvenile offender laws, and a measure punishing acts of discrimination in "public accommodation" by reason of "race, color, religious creed, ancestry or national origin."

Finance.—In the 1959–60 fiscal year, state revenue of $130,929,388.57 comprised $77,322,516.20 from state tax sources, $37,473,345.59 from the federal government, and

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Maine's Governor Clauson (l.), who died on December 30, was succeeded by John Reed (r.), president of state Senate.

$16,133,526.78 from other sources. Tax revenue consisted of $24,482,180.41 from a 3% general sales tax, $22,241,686.12 from motor fuel taxes, $10,502,929.34 from licensing, and $20,095,720.33 from other sources. Expenditures of $127,891,737.15 comprised $18,260,475.81 for education, $24,534,947.05 for health, welfare, and safety, $52,589,912.10 for highways, and $32,506,402.19 for other purposes. Long-term indebtedness on June 20, 1959, amounted to $37,190,000.

Banking.—As of June 10, 1959, the state's 29 national banks had $342,548,000 in assets, $181,114,000 in demand deposits, and $122,846,000 in time deposits. The 57 state banks (June 30, 1959) had assets of $803,824,000, time deposits of $546,819,000, and demand deposits of $166,940,000.

Education.—School attendance is compulsory between the ages of 6 and 17, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $39,093,703 ($231.24 per pupil), and revenue comprised $34,185,030 from local school districts, $12,567,027 from the state, and $1,743,319 from the federal government. Outlays for construction and improvements amounted to $3,986,073, and teachers' salaries averaged $3,579 (high school, $4,110; elementary, $3,352).

MAINE SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (k-8)	1,050	5,309	143,490
Public junior & senior high (7–12)	183	2,273	40,736
Parochial elementary & high schools	85	837	26,310
Private academies & institutes	35	411	6,913
Vocational & special schools	1	17	274
Teachers colleges	5*	148	1,418
Colleges and universities	4	524	6,825

* Includes 1 normal school.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $15,886,072, including $8,180,472 for the aged, $6,130,766 for dependent children, and $1,235,651 for the permanently and totally disabled. A monthly average of 32,535 persons received public assistance. State expenditures for mental health activities amounted to $6,439,257; for correctional and penal programs, $1,740,026.

Labor Force.—The state's labor force on Aug. 15, 1959, totaled 397,100, including 42,100 agricultural workers. Nonfarm employment of 339,100 was up slightly from 332,300 a year earlier, more substantially above the average of 319,300 for the intervening 12 months. Of all nonfarm employees in August 1959, 32.2% were in manufacturing, 16.1% in trade, and 13.1% in government. Unemployment dropped sharply in August 1959 to 15,900 from 26,400 in the previous August. The state paid $19,838,870 in unemployment compensation during 1958.

Manufacturing.—The state's 2,387 manufacturing plants in 1958 employed 100,874 persons who received $369,175,413 in wages. Value of production amounted to $1,343,655,606, and investment in new plant and equipment totaled $39.5 million. Production workers averaged $69.49 for an average workweek of 40.4 hours during August 1959.

MAJOR MAINE MANUFACTURES, 1958

Product or industry	Employees	Gross wages	Value of product
Paper and allied products	16,716	$83,577,522	$363,825,317
Food and kindred products	11,366	34,362,604	247,929,056
Leather & leather products	20,817	59,241,680	196,985,831
Textile mill products	13,651	40,745,055	161,682,355
Lumber and wood products (except furniture)	11,869	35,480,433	109,574,771
Transportation equipment*	12,530	65,620,077	90,032,712
Fabricated metal products	1,718	7,375,828	34,241,782

* Includes Kittery Naval Shipyard, except for value of product. (Source: Maine Department of Labor and Industry.)

Mining.—In 1958 Maine ranked 46th among the states in the value of its mineral output, with 0.08% of the national total. Production was principally of construction materials.

MAINE MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	23,000	$ 26,000
Feldspar (long tons)	13,034	83,000
Mica, sheet	10	278,000
Sand and gravel	8,941,000	3,746,000
Stone	880,000	2,760,000
Other minerals	...	6,371,000
Total	...	$12,574,000*

* Total adjusted to eliminate duplication in value of raw materials used in the manufacture of cement. (Source: U.S. Bureau of Mines.)

Fisheries.—Commercial fish and shellfish landings in Maine ports during 1958 totaled 316,954,664 pounds valued at $19,024,410, up 8% in volume and 13% in value over 1957 totals. Principal species were: lobster (21,312,000 pounds valued at $10,445,004), ocean perch (71,067,781; $3,002,566), and sea herring (170,977,322; $2,562,805).

Agriculture.—Cash farm income for the first nine months of 1959 dropped sharply to $129,172,000 from $169,777,000 for the corresponding period of 1958. For the full year 1958, income comprised $121,338,000 from livestock and livestock products, $87,209,000 from crops, and $1,688,000 from government payments. Principal income sources in 1958 were potatoes, $67,403,000; broilers, $41,633,000; dairy products, $33,767,000; and eggs, $31,302,000.

MAINE CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,000	1,250	1,430
Hay (1,000 tons)	694	615	599
Maple sirup (1,000 gal.)	18	15	15
Oats (1,000 bu.)	3,454	3,015	3,337
Potatoes (1,000 cwt.)	35,390*	37,250	34,606

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 22,800 farms in the state in 1958. Total acreage (1954) of 3,614,000 included 796,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 192,000 cattle and 3,950,000 chickens (excluding commercial broilers). A monthly average of 50,000 persons was employed in agriculture during 1958.

Transportation and Communications.—State and federal funds spent for highways in 1958 totaled

$52,076,944, and 331 miles of new construction were completed.

Highways and roads on March 1, 1959, totaled 20,761 miles (17,130 surfaced). Registered *motor vehicles* numbered 356,830 on Dec. 31, 1958, including 282,011 passenger cars. There were (1958) 9 *railroads* operating 1,929 line miles and (1959) 1 regularly scheduled *airline* and 151 *airports and airfields* (27 commercial and municipal, 4 military, and 54 private; also 17 commercial and 49 private seaplane bases).

Communications media (1958) included 24 AM and 2 FM *radio stations;* 6 VHF *television stations;* 9 daily *newspapers* (circulation, 240,021) and 54 other newspapers (242,106); and (Jan. 1, 1959) 76,900 business and 212,500 residential *telephones.*

Principal Events, 1959.—Democrat Clinton A. Clauson, who in 1959 became Maine's first four-year governor as the constitutional amendment abolishing the two-year term went into effect, died at Augusta on December 30.[1] His year in office had been marked by conflict with the Republican-controlled legislature and the all-Republican seven-man Executive Council. The governor's appointive power is limited by the confirmation power of the majority of the council, and in 1959 the governor's nominees for several top positions were rejected and vacancies remained unfilled for months. A proposed amendment to the Maine Constitution which would have eliminated the council was defeated in the 1959 legislature.

A controversial matter since it was first suggested in 1919, the proposed Passamaquoddy Bay tidal project was in the headlines again in 1959 when a three-year report was released indicating that the project was "economically feasible." Product of a joint American-Canadian board, the October 16 report states that a dependable yield of 550,000 kilowatts of electricity could be expected. The International Joint Commission will next decide whether to recommend construction.

As 1959 neared its end, the fate of steam railway passenger service in Maine was still unsettled. Pending before the state Public Utilities Commission was a request from Maine railroads to drop passenger car service. After protracted public hearings it was obvious that the railroads were losing money. It was not clear whether, if rail passenger service was abandoned, the improvement of freight service would sufficiently offset the inconvenience caused the traveling public.

In May 1959 the Maine Supreme Court ruled that no state law allowed local governments to spend tax money to transport pupils to private (chiefly parochial) schools. At the year's end the problem was still unsettled, since the legislature had not acted. Because of this matter and another educational tangle caused by the unwillingness of banks to lend money to two school districts whose legality was questioned, Governor Clauson had announced that there would be a special session of the legislature in January 1960. It would be asked to authorize transportation of parochial school children by public school buses, and to validate the two questioned school districts so that they might borrow money to build schools.

The economic picture in Maine in 1959 was considerably brighter than in 1958, with greater employment, a larger tourist business, and gains in various industries, including lumber and wood products, leather products, and textiles. The only large segment failing to gain was agriculture.

Legislature and Principal Events by:
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[1] Clinton Amos Clauson (64), Iowa-born, set up a chiropractic office in Waterville, Me., following military service in World War I. He entered politics in 1923, and continued active as a Democrat. From 1934 until 1953 he served as U.S. collector of internal revenue for Maine, meanwhile active as a chiropractor until 1938. He served as mayor of Waterville in 1956 and 1957, and the following year, capitalizing in part on his immense personal popularity, he defeated a party-picked candidate for governor in the June primary. Helped by the tremendous popularity of his gubernatorial predecessor, Edmund S. Muskie, who was running for the U.S. Senate, he won out over former Gov. Horace A. Hildreth in the November 1958 election.

MALAGASH REPUBLIC. See MALGACHE REPUBLIC.

MALAYA, Federation of. This British federated territory in Southeast Asia, comprising nine Malay states and the former British settlements of Penang and Malacca, was constituted a fully self-governing independent nation on Aug. 31, 1957. It retained its ties with Great Britain as the 11th sovereign member of the Commonwealth of Nations, and is the only member to have a constitutional elective monarchy. Aggregating 50,680 square miles in area, it occupies the whole of the Malay Peninsula, south of which the Johore Strait separates the federation from Singapore (q.v.). The federal capital is Kuala Lumpur (pop. est., 316,230).

The federation's estimated population (1958) is 6,515,000. Its multiracial distribution (1957 census) comprises 3,126,706 Malaysians, 2,332,936 Chinese, 695,985 Indians, and 123,136 others. At the time independence was granted, the component states and their areas, populations, and capital cities were as follows:

FEDERATION OF MALAYA

State	Area (sq. mi.)	Pop. (1957)	Capital
Perak	7,980	1,221,390	Ipoh
Selangor	3,160	1,012,891	Kuala Lumpur
Negri Sembilan	2,580	364,331	Seremban
Pahang[1]	13,820	312,949	Kuantan
Johore	7,330	927,565	Johore Bahru
Kedah[2]	3,660	701,643	Alor Star
Kelantan	5,750	505,585	Kota Bahru
Perlis	310	90,866	Kangar
Trengganu	5,050	278,165	Kuala Trengganu
Penang[3]	400	572,132	George Town
Malacca	640	291,246	Malacca
Total	50,680	6,278,763	

[1] Includes Tioman Island in South China Sea. [2] Includes Langkawi and adjoining islands. [3] Penang State comprises Penang Island (110 square miles) and Province Wellesley (290 square miles).

Government.—The Malayan constitution provides for a paramount ruler (Yang di-Pertuan Agong) who is elected for a five-year term by nine Malay rulers from among

Malayan women, including a veiled Moslem, walk to the polls in Kuala Lumpur on August 19, in the Federation of Malaya's first general elections since gaining self-government.

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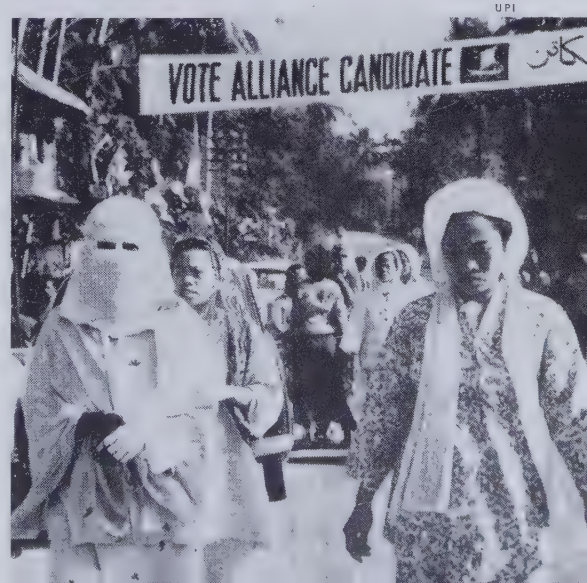


their number. Tuanku Sir Abdul Rahman, ruler of Negri Sembilan, was chosen the first such head of state and was formally installed with the title of "king and ruler of the Federation of Malaya" at Kuala Lumpur on Sept. 2, 1957. Owing to illness he was succeeded on Sept. 26, 1959, by an acting chief of state, the sultan of Selangor. The paramount ruler is advised by a cabinet headed by a prime minister. Tengu (Prince) Abdul Rahman has served in this post since Malayan independence, except for a brief period (April 16–August 21) in 1959, when the prime minister was Dato Abdul Razak bih Dato Hussein. (Though bearing the same name, the prime minister is not related to the former ruler.)

The legislature comprises a Senate (Dewan Negara), consisting of 22 elected members (2 from each state) and 16 appointed members; and a House of Representatives (Dewan Ra'ayat), consisting initially of 104 elected members. Residual legislative power remains with the individual states, in which there are executive councils, state legislative assemblies, and numerous local authorities, including 286 elected local councils.

Finance and Development.—Actual expenditure for 1958 was M$848,763,389 and revenue totaled M$762,946,972, leaving a deficit of M$85,816,417 for the year. (The Malayan dollar equals 32.667 U.S. cents.) Budget estimates for 1959 indicated an expenditure of M$873,762,602, revenue of M$759,798,615, and a deficit of M$113,963,987. To increase the tax yield by M$36 million, the government proposed a new export duty on rubber planting materials, and increases in the rate of the company tax and in the duty on gasoline.

As a result of diminished revenue from tin exports the government reduced capital expenditure for 1959 under the five-year (1956–60), M$1,358 million development plan. The revised amount of M$152 million, or M$16 million less than budgeted, was to be distributed as follows: economic sector, M$110 million; social sector, M$28 million; armed forces, M$8 million; and public administration, M$6 million.

The federation is a member of the World Bank, which on Sept. 22, 1958, granted Malaya a loan equivalent to $35,600,000 toward a $51,200,000 hydroelectric power project in the Cameron Highlands. In July 1958 the U.S. Development Loan Fund announced a $10 million, 30-year loan for the development of new port facilities in North Klang Straits, near Kuala Lumpur, and in March 1959 granted a second $10 million loan toward the construction and rehabilitation of roads and bridges. Another $33 million was lent on Nov. 19, 1958, by the sultan of Brunei for road and land development. Total aid given and promised by the United Kingdom since the period just before independence has been over £33 million (see also below, *Principal Events, 1959*).

Education.—Schools numbered 5,366 in January 1959 (pupils, 1,229,855; teachers, 41,617), comprising 843 English, 2,249 Malay, 1,417 Chinese, and 857 Indian schools. Vocational training is given in 2 junior technical trade schools and 6 rural trade schools, and there are 2 technical institutes. Postsecondary professional education is given at the Technical College, Kuala Lumpur; the College of Agriculture, Serdang; and the University of Malaya, which in 1959 was building a new campus at Kuala Lumpur. Teacher training is furnished at local centers and colleges and at institutions in England.

Transportation and Communications.—In 1958 the government-owned Malayan Railway operated 1,028 route miles of track, including a main line running from Singapore to Prai via Kuala Lumpur, and branches extending to the border of Thailand and to the federation's principal ports. Some 6,780 miles of roads (5,309 miles metalled surface) are maintained by the Public Works Department. A total of 138,546 motor vehicles were registered in 1958. Internal air services are maintained by Federation Air Service (FAS), using 8 airports and 36 additional airfields, and by Malayan Airways Ltd. (owned by the British Overseas Airways Corporation), which also operates services to the principal towns of British Borneo, Indonesia, Thailand, and Hong Kong. Kuala Lumpur is served by BOAC and 6 other international airlines.

Production.—The economy is diversified by forestry, fisheries, and a prosperous agriculture, but is based principally on rubber and tin. Tin production in Malaya, the world's largest producer, was severely curtailed in 1958 by export controls imposed by the International Tin Council. The number of Malayan mines in operation fell from 738 at the end of 1957 to 417 in December 1958, and 13,000 miners were idled. Production of tin concentrates in 1958 amounted to 38,458 long tons, compared with 59,293 long tons in 1957.

The rubber yield in 1958 totaled 664,000 tons (638,000 tons in 1957), of which 391,000 tons (59%) were grown on estates and 273,000 tons by smallholders.

Reserved forests cover 24% of the country. Production of sawn timber in 1958 totaled 58 million cubic feet; over 8 million cubic feet were exported from the federation and Singapore.

Gold production, averaging 18,882 troy ounces during six previous years, increased to 22,484 ounces in 1958. Other mineral production in that year included bauxite (262,354 tons), coal (66,452 tons, compared with 152,711 tons in 1957), ilmenite, columbite, and china clay (kaolin, 1,200 tons). Iron ore output in 1958 was 2,795,261 tons, compared with 2,972,359 tons in 1957.

Other primary production in 1958 included fishery products, 112,100 long tons; copra, 108,000 tons; palm oil, 69,273 tons; tea, 4,878,000 pounds; paddy (1958–59), 696,000 tons; and milled rice (1957–58), 495,000 tons.

Industrial production in 1958 included 108,327 long tons of cement, 11,644,572 pairs of rubber footwear, and 10,608,000 gallons of soft drinks. More than 100 factories produced cigars, cigarettes, and pipe tobacco. Other manufactures included furniture, paper, and soap.

Electric power generation declined from 1,069,300,000 kw.-hr. in 1957 to 893,200,000 kw.-hr. in 1958, of which the tin industry used slightly less than half.

External Trade.—A favorable trade balance was recorded in 1958 in spite of the curtailment of tin exports, which yielded M$236,558,545, compared with M$439,400,000 in 1957. Total exports were M$1,882,866,061 (in 1957, M$2,179,500,000), to which rubber contributed M$1,196,313,300. Other important exports in 1958 were iron ore (M$62,540,093), coconut oil (M$40,549,307), palm oil (M$47,385,786), and timber (M$31,768,501). Imports totaling M$1,656,126,587 in 1958 (in 1957 M$1,806,800,000) were principally food (M$525,806,591) and manufactured goods (M$260,794,784).

Principal Events, 1959.—In elections held in August the Alliance Party won 73 of the 104 seats in the national legislature. In the new government Tengu (Prince) Abdul Rahman resumed office as prime minister on August 21. He had resigned on February 9 to lead his party's election campaign.

Only 350 Communist guerrillas remained at large on federal territory at the beginning of 1959. Since the start of Communist terrorism in 1948, 10,527 Communists had been killed or captured. A government white paper, published in March, warned that the Chinese Communists persisted in their efforts to gain control of Malaya by long-term methods of subversion.

A central government bank, with assets of $33 million, was opened ceremonially at Kuala Lumpur on January 24 by the paramount ruler.

Announcement was made in the House of Commons on June 18 that the United Kingdom would provide the Federation of Malaya with a grant of £2,500,000 in 1960 and another of £1,500,000 in 1961 toward the cost of wiping out Communist terrorism. Further help in cash and kind was to include the gift of the Royal Air Force installations (valued at £2,500,000) at Kuala Lumpur, and of other military installations.

Early in January the prime minister made a state visit to the Philippines. After his discussions with President Carlos P. Garcia, it was announced that a program of close economic and cultural cooperation had been agreed on between the two countries to ward off Communist inroads in Asia.

The Malayan capital, Kuala Lumpur, celebrated its 100th anniversary on June 13. Among distinguished visitors was Singapore Prime Minister Lee Kuan Yew.

(See also FAR EAST.)

DONOVAN ROWSE,
Author and Publicist.

MALDIVE ISLANDS. The Maldive archipelago (land area, 115 square miles) is a sultanate under British protection, comprising more than 2,000 widely scattered coral islands situated some 400 miles southwest of Ceylon. In 1958 the Maldivians, who are almost all Moslems, numbered approximately 90,000, of whom about 8,000 inhabit Male, the capital. Fishing and subsistence farming are the principal occupations, and fish, shells, coir, and copra are exported.

In March 1959 the southernmost atolls, including Addu atoll where the Royal Air Force has been building a staging post on the island of Gan as part of the British Asian defense chain, revolted against new high taxes imposed by the government of Sultan Mohamed Farid Didi. Abdullah Afif Didi, the rebel leader, proclaimed the territory in revolt the United Suvadiva Islands and sought British recognition. Although by treaty Britain had agreed not to interfere in Maldivian internal affairs, she sent food in March to one of the starving atolls, Huvadu, part of the secessionist territory. The government in Male protested that the British were aiding and encouraging the rebels, a charge the British denied in August.

MALGACHE REPUBLIC. An autonomous republic of the French Community (q.v.), comprising the island of Madagascar and island dependencies (chiefly Nossi-Bé and Sainte-Marie), situated about 250 miles off the east coast of Africa. Estimated area, 227,800 square miles; pop. (est. 1958), 5,050,000, including (in 1956) 74,085 nonindigenous persons, mainly French. The indigenous population consists of over 20 different ethnic groups of Negro, Arab, and Malayo-Polynesian origin. Malgache (Malagasy) and French are the official languages. Chief cities and populations (est. 1957): Tananarive, the capital (193,162), Majunga (50,356), and Tamatave, a major port (est. 1952, 39,900).

Government.—Formerly the French overseas territory of Madagascar, the Malgache (or Malagash) Republic chose the status of a member state of the French Community on Oct. 21, 1958. The Malgache Republic has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. The republic adopted its constitution on April 29, 1959. The bicameral legislature consists of a Senate, whose members serve for six years (one third are appointed by the government, two thirds are elected by representatives of the provincial, municipal, and rural communities); and a National Assembly elected directly by universal suffrage for a five-year term. The president of the republic is elected for a seven-year term by an electoral college consisting of members of the Senate and National Assembly, members of the provincial general councils, and delegates of the municipal and rural assemblies. Philibert Tsiranana, leader of the Social Democratic Party, was elected president on May 1, 1959.

Education and Religion.—In 1958 there were 2,674 schools with a total of 344,885 pupils (46.5% of the school-age population). There are schools of medicine, law, and administration at Tananarive. An estimated 66% of the population was illiterate in 1953. Roman Catholic and Protestant missions have converted a considerable portion of the native population to Christianity. Tribesmen in the remote areas are mostly animists.

Transportation and Communications.—The republic's 4 railway lines have a total route length of 538 miles. All-weather roads and trails aggregate about 16,000 miles. There are over 80 airfields, the chief of which is at Tananarive. In 1957 there were 15,500 passenger cars and 11,412 telephones.

Finance.—The general budget for 1958 totaled 14,571 million francs CFA; the budgets of the 6 provinces aggregated 13,381 million (the franc CFA equals 2 metropolitan francs).

Production.—The chief economic activities are agriculture and stock raising (mainly cattle). Over half the cultivated area is devoted to rice, the chief subsistence crop as well as an important export; other subsistence crops are corn, manioc, sorghum, peanuts, peas and beans, and bananas. Cash crops, which provide the bulk of exports, include coffee, rice, sugar, sisal, raffia, tobacco, cloves, vanilla (of which the Malgache Republic is the world's largest producer), and tapioca. Principal minerals are graphite (10,760 metric tons in 1958), mica (921), industrial beryls and garnets, and quartz. Manufactures include canned and frozen meats, hides, rum, alcohol, soap, woven silk and cotton goods, cement and bricks, refined sugar and rice, and other processed agricultural products.

Foreign Trade.—Exports in 1958 totaled 20,248 million francs CFA; imports, 26,563 million. Chief exports and quantities shipped in 1958 were (in metric tons): green coffee, 47,821; rice, 58,228; vanilla, 438; sugar, 39,133; and tobacco, 4,320. France took 58% of 1958 exports and provided 71% of imports.

Principal Events, 1959.—Philibert Tsiranana, the stanchly pro-French premier of the former territorial government, was chosen first president of the Malgache Republic by an almost unanimous vote of the Malgache Parliament on May 1, 1959. French President Charles de Gaulle made a tour of the new autonomous republic beginning July 4, and presided over the French Community's Executive Council meeting in Tananarive, July 7–8. King Mohamed V of Morocco visited the republic, on February 22–March 2. President Tsiranana arrived in New York on November 7, on a two-week visit to the United States. On December 20, following talks with French leaders in Paris, Tsiranana announced that he had obtained French approval of full independence for the Malgache Republic within the Community.

A series of hurricanes and heavy rains, beginning on March 26, resulted in floods over large sections of the island of Madagascar, leaving over 300 persons dead and causing heavy damage to homes, crops, and communications.

M. J. G.

MALI FEDERATION. A federation of African states which came into being in 1959 as an outcome of the movement toward unity in certain of the newly autonomous African republics of the French Community (q.v.). In its first year of existence, the Mali Federation comprised Senegal and Soudan (qq.v.). The seat of administration is at Dakar, Senegal.

On Dec. 29–30, 1958, shortly after seven of the former territories of French West Africa (q.v.) had chosen to become autonomous republics of the French Community, leaders of Senegal, Soudan, Upper Volta, and Dahomey met in Bamako, Soudan, and agreed to form a federation within the French Community. At a conference in Dakar on Jan. 17, 1959, delegates from these four republics adopted a constitution providing for a Federal Assembly and other federal organs, and permitting members to secede or other states to join. Under pressure from antifederalist elements (led by Félix Houphouët-Boigny of Ivory Coast), Dahomey and Upper Volta subsequently withdrew, leaving only Senegal and Soudan. Modibo Keita, premier of Soudan, was chosen first president of the Mali Federation on April 4, and he named a cabinet on the following day. Léopold Senghor of Senegal serves as president of the Federal Assembly. Leading federation proponents of Senegal, Soudan, and other autonomous republics formed a new African Federalist Party at Dakar on March 25.

Senghor, Keita, and Senegalese Premier Mamadou Dia, the federation's leading spokesmen, envision Mali as an independent federation associated with France in loose commonwealth ties. At a meeting of the French Community's Executive Council in Paris, Sept. 10–11, 1959, Keita and Dia stated to French President Charles de Gaulle the Mali Federation's desire for independence. De

Gaulle, in an address at Saint-Louis, Senegal, on December 12, declared that the Mali Federation would accede to full sovereignty with the aid and accord of France.

MALTA. Founded in 1814, this British crown colony, situated about halfway between Gibraltar and Suez, comprises the islands of Malta (95 square miles), base of the Royal Navy and Mediterranean headquarters of the North Atlantic Treaty Organization (NATO); Gozo (26 square miles); and Comino (1 square mile). As of Jan. 1, 1959, the population totaled 323,970. Valletta (pop., 18,403), one of the finest deepwater harbors in the world, is the capital and chief port.

Letters patent (1947) provided for a governor (from June 8, 1959, Admiral Sir Guy Grantham); an elected Legislative Assembly of 40 members; and an Executive Council, consisting of the prime minister and 7 other ministers, which, together with a 5-member Nominated Council, forms also the Privy Council. The colony has been without an elected government since April 21, 1958, when amid riots in Valletta over the United Kingdom's policy toward Malta, the government headed by Prime Minister Dom Mintoff resigned and the Legislative Assembly was dissolved.

Ten persons were injured in resumed rioting on Feb. 27, 1959, following the dismissal of more than 6,000 workers at the transfer of the Admiralty dockyard to private operation. On February 16, the British House of Commons voted to revoke Malta's 1947 constitution in favor of an interim government (effective April 15), headed by the governor, who is advised by an Executive Council comprising both official and nominated members. The United Kingdom government meanwhile announced that further constitutional talks would be held with Maltese political parties with a view to the restoration of self-government; also, that a contribution of £29 million would be made to Malta in the next 5 years toward the cost of the government's capital program, conversion of the naval dockyards to civil use, and the encouragement of new industries.

Valletta was relinquished on Sept. 29, 1959, as base of the United States Sixth Fleet, which was being transferred to Sicily.

In 1958–59 actual revenue totaled £12,835,983, and actual expenditure, £13,469,633. Educational facilities in 1959 included 109 primary schools (55,251 pupils), 6 secondary schools (3,190 pupils), 5 technical schools (875 students), 91 private schools (17,830 pupils), and the Royal University of Malta (300 students). Adult education classes, instituted in 1946, had an attendance of 1,200 in 1958.

Exports were valued in 1958 at £995,461, and included hides and skins, gloves, scrap metal, potatoes, flower seed, and beer. Re-exports were valued at £2,599,811, and imports at £28,820,474. Air services connect the colony with Britain, France, Italy, the Netherlands, Tunisia, Libya, Cyprus, Egypt, the Sudan, Kenya, Iraq, and Malaya.

MANCHURIA. A region of northeastern China. See CHINA, PEOPLE'S REPUBLIC OF.

MANGANESE. World production of manganese ore was estimated at 13,049,000 short tons in 1958, compared with 14,126,000 short tons in 1957. The accompanying table shows data on the United States manganese industry, based on compilations by the U.S. Bureau of Mines.

United States output (shipments) of 323,108 short tons (consisting of ore, concentrate, and nodules containing 35% or more of manganese) constituted 2% of world output in 1958, compared with 3% in 1957. Nevada, Arizona, and Montana continued to supply the chief part of the total. The average grade of imported manganese ore was 46.9% manganese, the highest grade recorded for general imports since 1947 (46.1% in 1957 and 45.4% in 1956), based on U.S. Bureau of Census figures. Brazil supplied 27% of total ore received in 1958; India, 26%; Ghana, 13%; Union of South Africa, 11%; and the Belgian Congo, 6%.

MANGANESE IN THE UNITED STATES
(Thousands of short tons)

	1955	1956	1957	1958
Mine shipments	287.3	344.7	366.3	323.1
Metallurgical ore	275.5	341.3	364.2	323.1
Battery ore	11.7	3.4	2.1	... [1]
Imports, general	2,078.2[1]	2,238.6	3,105.2	2,452.6
For consumption	2,109.6[1]	2,264.2	2,539.2	1,798.6
Available supply[2]	2 385.1[1]	2,608.9	2,905.5	2,121.7
Consumption	2,103.5	2,606.9	2,740.4	1,497.6
Ferromanganese-made	870.0	923.0	963.8	636.7

[1] Battery and metallurgical ore lumped. [2] Mine shipments plus imports for consumption.

In the first eight months of 1959, domestic mine shipments totaled 189,000 tons; general imports of ore, 1,659,523 tons; ferromanganese, 147,696 tons; exports of ore, 4,038 tons; and exports of ferromanganese, 2,724 tons—giving a net supply of 2,088,000 tons.

(See also MINERAL PRODUCTION.)

MANITOBA. The central province of Canada, Manitoba is bounded on the east by Ontario, on the west by Saskatchewan, on the south by the states of North Dakota and Minnesota, and on the north by the Northwest Territories and the 440-mile shoreline of Hudson Bay. Its area is 251,000 square miles, including 39,225 square miles of water. The population (1956 census) is 850,040 (est. Sept. 1, 1959, 888,000), of which approximately 60% is urban. The capital of the province is Winnipeg, with a population (1956) of 255,093; Greater Winnipeg, 409,121 (1959 est., 420,000). Other cities and populations (1956) are St. Boniface, 28,851; St. James, 26,502; Brandon, 24,796; East Kildonan, 18,718; Portage la Prairie, 10,525; Flin Flon, 10,234.

Government.—The crown is represented by a lieutenant-governor (Hon. Errick F. Willis). The government is headed by Premier Dufferin Roblin. The Progressive Conservatives were elected to office in provincial elections held on May 14, 1959. Party standings in the provincial Legislative Assembly are: Progressive Conservative, 35; Liberal Progressives, 11; Cooperative Commonwealth Federation (CCF), 10; Social Credit, 1. Manitoba has 14 members in the House of Commons and 6 representatives in the Senate in Ottawa.

Finance.—As of March 31, 1958, surplus over expenditure was $4,367.25, from revenue of $80,123,614.74.

Education.—There were 1,651 school districts with 169,482 pupils in 1957–58, and 6,645 qualified and 340 permit teachers. Six colleges are affiliated with the University of Manitoba. There is one teacher-training college, a technical vocational school, a medical college, and a new dental college which opened in the fall of 1958.

Public Health and Welfare.—Under the Manitoba Health Services Act there were 13 local health units in 1958 serving a total population of over 320,000. Laboratory and X-ray units operate with headquarters at Selkirk, Virden, Dauphin, Neepawa, and Portage la Prairie. There are mental hospitals at Brandon, Selkirk, and Portage la Prairie, and a psychopathic hospital in Winnipeg. The compulsory provincial health insurance covers standard (public) ward care and includes X-rays, operating and laboratory facilities, and nursing services.

Transportation and Communication.—As of Dec. 31, 1958, the government-owned telephone system had 248,054 subscribers. Exclusive of yard tracks and sidings there are 5,079 miles of railway. Estimated lengths of all-weather roads were: graveled, 2,386 miles; bituminized, 1,604; concrete, 166; provincial trunk highways, 3,644; secondary, 307; and others, 928 (not including municipal roads). Motor vehicle registrations numbered 249,860 in 1958.

Production.—Shipments of grain through the port of Churchill in 1958 totaled 20,109,155

bushels. The value of field crops (including only initial payments for wheat, oats, and barley) amounted to $167,307,000; livestock products, $76,030,000; dairy products, $33,821,000; poultry products, $28,725,000; and garden products, $9,000,000. Fur output was valued at $5,264,000, including $3,600,000 from fur farming. Wild pelts taken in the 1957–58 season included 360,287 muskrat, 123,246 squirrel, 43,236 weasel, 30,564 beaver, and 27,397 mink. The fish catch in 1957 totaled 31,963,600 pounds; fish products were valued at $6,253,524.

The estimated gross value of manufactured products in 1958 was $667 million. There were 55 new industries established in 1958.

The estimated value of mineral production in 1958 was $55,942,900, of which $26,553,300 represented metals. Crude oil production totaled 5,829,226 barrels, valued at $14,264,513. Other minerals include clay, structural materials, peat moss, and salt.

Principal Events, 1959.—Manitoba's Progressive Conservative government obtained an absolute majority in the Legislative Assembly as the result of provincial elections held May 14. The Progressive Conservative Party, which constituted a minority government prior to the elections, gained eight seats for a total of 34, and received 45% of the popular vote. The opposition Liberal Progressive Party won 11 seats, a loss of eight from its previous total, and the CCF took 10 seats, representing a drop of one. The assembly had been dissolved on March 30 following the government's defeat on a proposed budget.

Changes in the field of education emanated directly from recommendations by the Royal Commission on Education in its interim report. The changes included new methods of school financing, innovations in the grants system, and new administrative units. In February a provincial referendum on school districts resulted in the formation of 32 larger school area units.

Action on the Greater Winnipeg Investigating Committee's report on a system of metropolitan government for Greater Winnipeg was postponed until 1960. Also in 1960, test areas will be formed to determine the basis of crop insurance rates. Four new regional libraries were opened in 1959, making a total of six for the province.

Queen Elizabeth II and Prince Philip received an enthusiastic welcome to the province on their arrival at Winnipeg on July 24 during their Canadian tour (see also WINNIPEG).

In October it was announced that Errick F. Willis, former deputy premier who had also held the portfolios of agriculture and public works, had been appointed lieutenant-governor of the province (succeeding the Hon. John S. McDiarmid), his term to begin Jan. 15, 1960.

MARJORIE MORLEY,
Provincial Librarian and Director of Library Services.

MANUFACTURING. See BUSINESS DATA, U.S.; INDUSTRIAL PRODUCTION.

MAO TSE-TUNG. See Index entry.

MAPLE PRODUCTS. Maple sirup production in the United States in 1959 (including sirup later made into sugar) was estimated at 1,191,000 gallons in the 11 major producing states. Unfavorable weather accounted for this drop of more than 21% from the 1958 production figure and of almost 28% from the 1948–57 average. The number of trees tapped was estimated at 5,075,000, compared with a ten-year average of 6,983,000. Major sirup-producing states, with estimated 1959 output in thousands of gallons, were: Vermont, 390; New York, 344; Ohio, 118; Pennsylvania, 90; Wisconsin, 88; Michigan, 51; and New Hampshire, 43.

Canada.—The 1958 farm value of Canadian maple products amounted to $8,440,000 (maple sirup, $8,064,000; maple sugar, $376,000), down 18% from 1957 and 15.5% below the 1951–55 average of $9,991,000. Production in 1958 comprised 2,403,000 gallons of sirup, compared with 3,068,000 in 1957, and 815,000 pounds of sugar, up from 661,000 in 1957. Quebec Province yielded approximately 80% of the total value, with Ontario the second-ranking producer.

MAPPING. See CARTOGRAPHY.

MARCUS ISLAND. See PACIFIC ISLANDS.

MARGARINE. See DAIRY PRODUCTS.

MARIANA ISLANDS. See PACIFIC ISLANDS.

MARINE BIOLOGY. Deep sea animals have held a fascination for man ever since he first began to sail the seven seas. There is still the possibility that legendary deep sea monsters may actually exist. Biological oceanographers are intensely interested in the many deep sea animals that have never been captured, and in learning more about those that have been described. Their interest transcends mere curiosity, for the sea is still a great unknown frontier, one that man must learn to utilize more and more as a source of food and raw materials.

Deep Sea Fish Trap.—Dredging and trawling become increasingly difficult and inadequate at depths exceeding 1,000 feet. In an effort to obtain deep sea specimens not caught in trawls, Dr. John Isaacs of the Scripps Institution of Oceanography has designed a deep sea fish trap in the form of a pyramid. The trap is baited and lowered to the bottom, where it is left for the desired length of time. It can be marked with a sonic buoy and easily relocated. Already the trap gives promise of being a valuable new tool in deep water research.

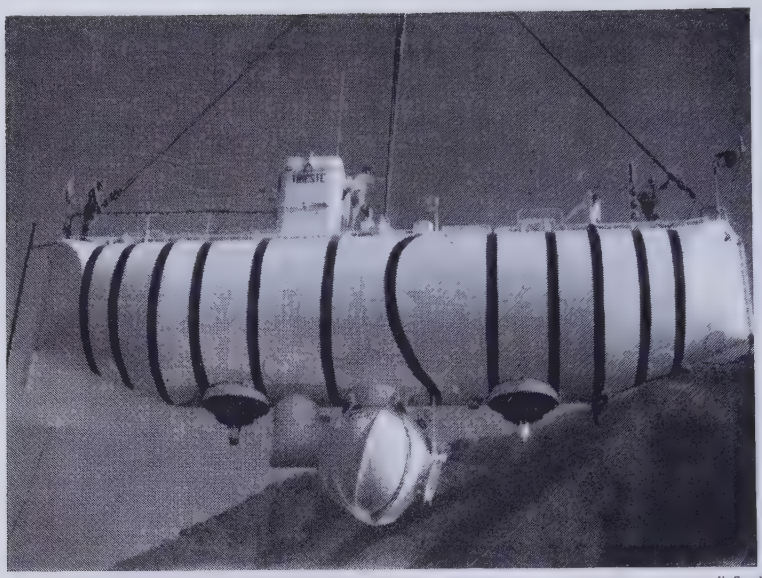
New Deep Sea Cameras.—Dr. R. H. Backus of the Woods Hole Oceanographic Institution began work in 1959 with a deep sea camera designed to photograph passing sea animals. Part of the camera's equipment is a device that sends out sound signals. Whenever an animal comes within range of the camera, the sound signal bounces off the animal and back to a receiving device, which, in turn, simultaneously fires an electronic flash unit and sets off the camera.

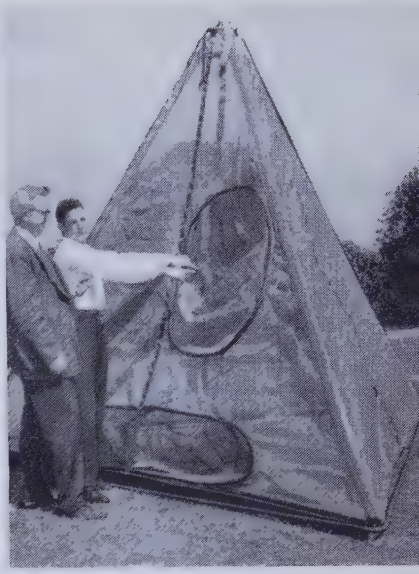
A luminescence camera, developed in 1959 by Drs. L. R. Breslau and H. E. Edgerton, is also in use. This camera takes a picture whenever a luminescent organism flashes within the camera's plane of focus. The light from the animal triggers the camera, which is equipped with an electronic flash that illuminates the organism. Both cameras can be used at depths of two miles or more.

Exploration with the Bathyscaphe.—Results of a 2½-hour, 3,600-foot descent into the Mediterranean by the bathyscaphe *Trieste*, another important tool in deep sea biology, were summarized in an article entitled "1100-Meter Dive in the Bathyscaph *Trieste*" in the January 1959 issue of *Limnology and Oceanography*. The *Trieste*, designed to withstand great pressures, is potentially capable of exploring some 99% of the sea floor.[1] (For details of the *Trieste*'s construction, the reader is referred to Auguste Piccard's book, *Earth, Sky and Sea*, 1956.)

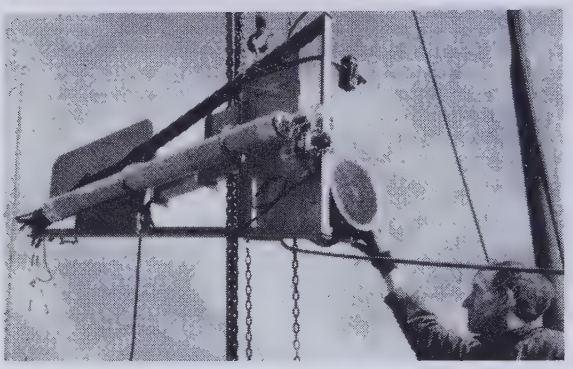
Dr. Robert S. Dietz of the Office of Naval Re-

[1] The *Trieste* made record-breaking descents to 18,600 feet (Nov. 14, 1959), 24,000 feet (Jan. 7, 1960), and 35,800 feet (Jan. 23, 1960) in the Marianas Trench.





U.S. NAVY; WOODS HOLE OCEANOGRAPHIC INSTITUTION; THE SAN DIEGO EVENING TRIBUNE



(*Top left*) The U.S. Navy bathyscaphe *Trieste*, designed to explore the ocean depths, is lowered into the water at San Diego, Calif. Main structure houses gasoline storage tanks to provide buoyancy, and spherical gondola underneath holds the two-man crew. The *Trieste* reached record depths of 18,600 feet on Nov. 14, 1959, 24,000 feet on Jan. 7, 1960, and 35,800 feet on Jan. 23, 1960—all in the Marianas Trench of the Pacific. (See also the picture under *Oceanography*.) (*Bottom left*) R. H. Backus of the Woods Hole Oceanographic Institution is shown with new deep sea camera. When a sea creature comes within range, sound signals sent out by the device are reflected back, triggering an electronic flash and setting off the camera. (*Above*) New deep sea fish trap developed at Scripps Institution of Oceanography enables scientists to catch and study marine specimens from extreme depths. Free-floating device, which returns to surface automatically, was invented by John Isaacs (l.), George Schick (r.), and Lewis Kidd.

search was the scientific observer on the dive reported. After 15 minutes of descent, the *Trieste* was down 150 feet, where surface wave action was no longer felt. At 520 feet (25 minutes) the twilight zone was reached. With floodlights on at this depth, it was apparent that particles visible in the water were increasing in abundance and that most of them were plankton organisms. At 1,150 feet the first flash of bioluminescence was seen, and at 1,300 feet steady luminescence was observed in the form of a row of lights, probably a fish. Between 1,625 and 1,700 feet, as the zone of complete darkness for man was entered, the superstructure of the craft became invisible from the observation windows. (Piccard had found on previous dives that this occurred at about 1,950 feet if the eyes were fully adapted to the dark.) Although there is total darkness to the human eye at 2,000 feet in the clearest sea water, it has been postulated that the eyes of deep sea fish, probably 60 to 120 times as sensitive as the human eye, are able to perceive daylight at a depth of 3,500 feet or more.

Zooplankton appeared to be most concentrated between 1,600 and 2,300 feet. However, since the organisms seen were too small to be effective in reflecting the sound waves of depth recorders, it does not seem possible that zooplankton could be responsible for the "false bottom" or "deep scattering layer" often observed with sonic depth recorders. At about 135 feet above the ocean floor a small fish was seen, evidently of the deep sea genus *Bonapartia*.

After 75 minutes of descent the *Trieste* came to an imperceptible rest on the bottom at a depth of 3,600 feet. Here were seen several other fish, some animals resembling heart urchins, and a small shrimp. When ballast was dropped for the ascent, a swarm of small crustacea resembling isopods rose from the bottom above the cloud of mud. During the ascent, bioluminescence seemed to be greatest in the zone from 2,300 to 1,600 feet, where the greatest concentration of zooplankton was noted on the descent.

Dr. Athelstan Spilhaus, in *Turn to the Sea*, a 1959 publication of the National Academy of Sciences, predicts that man will soon have much more versatile bathyscaphes that can go to the deepest bottom. In line with this prediction is a newly designed undersea craft described by Dr. R. L. Engel and F. Pierce at the 1st International Oceanographic Congress held at the United Nations in New York in August and September 1959. Although based on the principle of Piccard's bathyscaphe, the new undersea exploring vessel will be more mobile, have greater range, and contain more scientific equipment. It will be 69 feet long and 9 feet in diameter, and will weight 83 tons. Two 20 hp. motors will propel it at about 7 mph. within a 150-mile range. It will withstand the deepest sea pressures, will accommodate 3 persons, and may remain submerged up to 48 hours.

Seafood from Deeper Water.—The possibility of a fishery in deeper water has been suggested by Dr. W. C. Schroeder of the Woods Hole Oceanographic Institution. It has been discovered that New England lobsters, living at a depth of 360 to 1,500 feet, inhabit an area 400 miles long and 5 to 10 miles wide between the eastern part of Georges Bank and Delaware Bay. Thus far, 99% of the lobsters caught along the New England coast are taken in lobster pots in shallow water.

In the same area, at 900 to 4,200 feet or

deeper, there exists a species of crab, *Geryon quinquedans,* which ranges southward from Nova Scotia to at least Cuba. Dr. Schroeder believes this animal could become an important item of seafood.

(See also OCEANOGRAPHY.)

HAROLD J. HUMM,
Jacques Loeb Associate in Marine Biology, The Rockefeller Institute.

MARINE CORPS, U.S. The U.S. Marine Corps, the amphibious branch of the nation's armed forces and one of the two services within the Department of the Navy, had a strength of 175,000 officers and men at the close of 1959, as compared with just under 190,000 in 1958. In spite of this reduction in manpower, however, the corps continued to maintain three combat divisions and three aircraft wings in a state of immediate readiness. Lt. Gen. David M. Shoup became the corps' new commandant on Jan. 1, 1960, succeeding Gen. Randolph McC. Pate.

In a continuing program of strengthening its capabilities for amphibious assault, the corps during 1959 acquired two converted aircraft carriers for service as helicopter platforms with the Navy's Atlantic and Pacific fleets. These ships, formerly the U.S.S. *Boxer* and the U.S.S. *Princeton,* are capable of transporting troops, helicopters, and equipment over long distances at high speed and then launching an airborne assault by helicopter while still far out at sea. Two fleet Marine forces provide fleet commanders with means of projecting naval power ashore wherever and whenever required, by means of integrated air-ground teams and landing forces.

In the field of research and development, the Marine Corps pursued work on a new surface-to-air shoulder-fired missile system capable of destroying low-flying aircraft. Also under study were air-suspension vehicles, hydrofoils, one-man helicopters, and body armor.

Augmenting the regular forces in 1959 was a trained Marine Corps Reserve of approximately 300,000. Of these, 42,000 officers and men received drill pay for participation in drills and summer encampments as members of 228 ground and 85 air units. Members of the Ready Reserve element, subject to mobilization by the president in an emergency, numbered the authorized 208,000. The remaining reservists were members of the Standby Reserve, subject to recall only by Congress. Five new helicopter units were added to the Marine Reserve air arm during the year.

The major Marine Corps bases in the United States in 1959 were located at Camp Lejeune, N.C., and Camp Pendleton and Twentynine Palms, Calif.; fixed-wing air stations, at Cherry Point, N.C., Beaufort, S.C., and El Toro, Calif.; rotary-wing bases at Santa Ana, Calif., and New River, N.C.; recruit depots, at San Diego, Calif., and Parris Island, S.C.; and the Marine Corps School, at Quantico, Va. A new auxiliary air station was commissioned at Yuma, Ariz., in January as a fixed-wing training base.

Among the highlights of 1959 in the Marine Corps was the crossing of the Atlantic in just over five hours by two Marine Corps A4D-2 Skyhawk jet attack bombers on May 4. This marked the first transoceanic flight of single-engine jets using the "buddy system" of in-flight refueling. The 2,270-mile flight was from Argentia, Newfoundland, to Rota, Spain.

In July more than two million people saw the Marines storm ashore with combat realism in amphibious landing demonstrations at five major port cities around the Great Lakes. These maneuvers were part of Operation Inland Sea, the Navy's tribute to the newly opened St. Lawrence Seaway (q.v.).

In August, Marine Helicopter Squadron 261, aboard the U.S.S. *Thetis Bay,* was rushed to Taiwan to carry out a week-long mercy mission during the worst floods in the island's history. The helicopters lifted more than 1,600,000 pounds of relief supplies during 897 missions and transported some 855 passengers.

(*Information for the foregoing article was furnished by Headquarters, U.S. Marine Corps.*)

MARITIME ADMINISTRATION. See SHIPBUILDING; and for merchant marine data, see MERCHANT MARINE.

MARRIAGE AND DIVORCE. Marriage.—The marriage rate is highly susceptible to economic conditions. During the business recession of September 1957 through March 1958, marriage rates dropped 10 per cent below the rates of the same months of the preceding year. As business conditions revived in the spring of 1958, the marriage rate picked up. The trend in the annual number of marriages since 1956 has been decidedly downward, however, due to the relatively small number of persons in the marriageable ages, resulting from the low birth rate during the economic depression of the 1930's.

In the early 1960's, if the present popularity of marriage should continue, there will be a rapid increase in number of marriages. At that time the high birth rate during World War II will show up in the greater number of young people reaching marriageable age.

Youthful marriages continue to increase, and vital statistics data indicate that married persons continue to have greater longevity. The death rate of married men aged 20 to 44 is only one half that of single males and less than one half that of the widowed and divorced. Married women also have a lower death rate than single women in every age group.

The accompanying table shows that the all-time high in marriages was reached in 1947. Marriages are now near the low point in both numbers and rate for the years since 1940.

Canadian data show a similar decrease in marriages. In 1958 there were only 131,525 marriages, compared with 133,186 in 1957. At the postwar peak in 1946, Canada had 137,388 marriages and a rate of 10.9 per 1,000 population, compared with a rate of only 7.7 in 1958. Much the same factors in the economic situation and

Wearing protective clothing, these men make up one of the Marine Corps teams which are trained to prevent or reduce casualties in areas hit by nuclear, biological, or chemical attack. This unit is stationed at Kaneohe Bay, Hawaii.

U.S. MARINE CORPS

age structure of the population apply to Canada as to the United States.

U.S. MARRIAGE AND DIVORCE DATA, 1946–59

Year	Marriages			Divorces		
	Number of marriage licenses[1]	Rate per 1,000 pop.	Percentage change	Number of Divorces[1]	Rate per 1,000 pop.	Percentage change
1959	1,501,000[2]	8.5	2.4	407,000[3]	2.4	7.1
1958	1,445,000	8.3	−6.7	380,000	2.2	0.0
1957	1,518,000	8.9	−6.3	381,000	2.2	−1.0
1956	1,585,000	9.5	2.1	382,000	2.3	−4.3
1955	1,531,000	9.3	1.1	377,000	2.3	−4.2
1954	1,490,000	9.2	−6.1	379,000	2.4	−4.0
1953	1,546,000	9.8	−1.0	390,000	2.5	0.0
1952	1,539,318	9.9	−4.8	392,000	2.5	0.0
1951	1,594,694	10.4	−6.3	381,000	2.5	−3.8
1950	1,667,231	11.1	4.7	385,144	2.6	−3.7
1949	1,579,789	10.6	−14.5	397,000	2.7	−3.6
1948	1,811,155	12.4	−10.8	408,000	2.8	−17.6
1947	1,991,878	13.9	−15.2	438,000	3.4	−20.9
1946	2,291,045	16.4	34.4	610,000	4.3	22.9

[1] For 1946, based on population including armed forces overseas; for 1947–59, based on population excluding armed forces overseas. [2] Estimate based on licenses issued during the first six months. [3] Estimate based on number of divorces in 29 states for the first six months.

Divorce.—The divorce rate in the United States increased for the first time since 1946, when divorce rates and numbers were at an all-time peak. It is estimated, on the basis of figures for the first six months of the year, that divorces will total 407,000 in 1959, an increase of 7% over the preceding year. The rate for 1946 was 4.3 per 1,000 population, compared with the anticipated rate of 2.4 for 1959.

The Canadian divorce picture continued to improve through 1958, in which year Canada had only 6,211 divorces. The rate dropped from 0.66 per 1,000 population in the peak year 1947 to 0.36 in 1958. These rates are very low, compared with those of the United States.

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MARSHALL, George Catlett (78), American soldier and diplomat: b. Uniontown, Pa., Dec. 31, 1880; d. Washington, D.C., Oct. 16, 1959. In a half-century of selfless and dedicated service to his country, Marshall won a place in history both as a man of war and as a man of peace. As a soldier he organized and commanded the greatest fighting force the world had ever seen, and as a statesman he helped bring strength and stability to the war-debilitated nations of the free world. Through the historic plan which bears his name, western Europe was able to resist Communist subversion in the postwar era and grow into a strong bastion of democracy. One of the acclaimed battle strategists of history, and holder of the nation's highest military rank, he received the decorations of many countries for his exploits in two world wars, but the most significant honor came to him on Oct. 30, 1953, when General of the Army Marshall was awarded the Nobel Peace Prize.

Denied access to West Point because of the system of political appointments, young Marshall entered Virginia Military Institute in 1897, became a keen student of military tactics (especially those of his lifelong hero, Thomas J. "Stonewall" Jackson), and graduated as senior first captain of the cadet corps. Commissioned a 2d lieutenant in 1901, he was stationed for nearly two years in the Philippines before returning to the United States. From 1907 to 1910 the young lieutenant studied at the Infantry-Cavalry School and at the Army Staff College, Fort Leavenworth, and after graduation stayed on as an instructor. His reputation as a tactician and planner was enhanced in his second tour of duty in the Philippines (1913–16), during which his direction of forces in war maneuvers prompted Gen. James Franklin Bell to declare: "Keep your eyes on George Marshall. He is the greatest military genius of America since Stonewall Jackson."

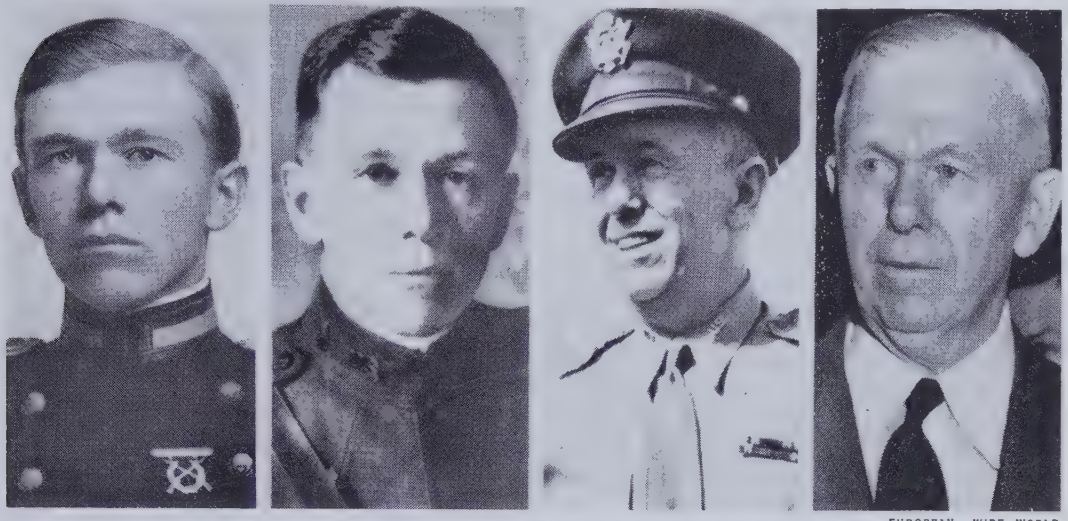
Despite his accomplishments—promotions came slowly in the Army of that day—it was not until 1916 that Marshall advanced to captain. In this rank, as an aide on the General Staff, he went to France in 1917 after the United States entered World War I. In 1918, while attached to the First Army, he planned and executed a brilliant maneuver which transferred, in two weeks of movement by night, some 500,000 troops and 2,700 guns from St.-Mihiel to the Argonne front. The offensive took the Germans completely by surprise, and Marshall's daring stroke earned this tribute from the taciturn Gen. John J. Pershing: "He's a man who understands military."

With the Armistice, Marshall turned down attractive business offers to devote himself to his military career. For five years beginning in 1919, he served as aide-de-camp to Pershing, and the two soldiers labored hard in Washington to convince Congress of the need for a strong military establishment. After serving with the infantry in Tientsin, China, from 1924 to 1927, Marshall, then a lieutenant colonel, joined the Infantry School at Fort Benning as assistant commandant, and in the next five years developed it into a valuable training ground for junior officers. In the years 1932–38 Marshall held a number of command assignments in the states as he rose to colonel (1933) and to brigadier general (1936).

In 1938 Marshall was assigned to the Army General Staff. From assistant chief of the War Plans Division, deputy chief of staff, and, in July 1939, acting chief of staff, he advanced to the position where, on Sept. 1, 1939, the day Hitler sent his *Wehrmacht* plunging into Poland, President Roosevelt tapped Marshall over 34 higher officers to direct the nation's military establishment as chief of staff. Now a general, Marshall set about the task of preparing the poorly trained, 400,000-man Army for the global conflict ahead. But his pleas for expanding and mobilizing the nation's armed forces went unheeded until the fall of 1940 when Congress adopted the program which he and others had been urging. How well Marshall succeeded in strengthening the Army and its command staffs in the year that followed was demonstrated when a force of a million men took part in maneuvers in the fall of 1941—on the eve of Pearl Harbor.

Under his administrative genius the Army reached a World War II peak of more than 8 million men, supported by 69,000 planes of all types. He mapped the master strategy which eventually reduced the Axis powers, and he convinced Roosevelt that a direct thrust across the English Channel was the best route to victory, thus prevailing over Churchill's favored "soft underbelly" invasion through the Balkans. Marshall's belief that the Allies must first conquer Germany before concentrating on Japan also was upheld, over the protests of Gen. Douglas MacArthur. Marshall's service as chief of staff was marked by his astute judgment, his patience and understanding, and his global concept of battle and logistics. Although he earnestly desired to head the Normandy invasion himself, he sacrificed personal feelings and handed the assignment to Gen. Dwight D. Eisenhower. In this decision he deferred to the wishes of President Roosevelt, who told him, "I wouldn't sleep at night with you out of the country." Marshall accompanied Roosevelt as an adviser to the conferences at Casablanca, Quebec, and Teheran (and in 1945 went with President Truman to Potsdam). On Dec. 15, 1944, Marshall was elevated to the five-star rank of general of the army.

The war successfully concluded, Marshall stepped down as chief of staff on Nov. 20, 1945, into retirement. But six days later, President Truman dispatched him as his special representative to China, where for more than a year Marshall tried in vain to negotiate a settlement between the Communists and Nationalists. Recalled to Washington, he was sworn in as secretary of state on Jan. 21, 1947, becoming the first military man to occupy that office. Until he resigned two years later because of poor health, he worked to bolster the free world against the growing Soviet menace. His first accomplishment was in helping to frame the Truman Doctrine, a program of aid which



EUROPEAN; WIDE WORLD

Four stages in the career of George C. Marshall, who died on October 16. He is shown (from left) as a young officer about the time of his commission as a 2d lieutenant in 1901, as a colonel in France in 1919, as Army chief of staff in 1942, and as secretary of state in 1947. He came out of retirement after the Korean War began to serve as secretary of defense.

helped save Greece and Turkey from communism. On June 5, 1947, in his now-famous Harvard commencement address, he pronounced the United States intention to assist militarily and economically any nation which resisted Soviet blandishments. Within the next four years, the Marshall Plan (incorporated into the European Recovery Program) poured $22.4 billion into the economies of 23 countries. Billions more followed under successive programs of both Democratic and Republican administrations. After leaving the State Department, he served as president of the American Red Cross in 1949–50.

With the start of hostilities in Korea, Marshall was once again called out of retirement. On Sept. 12, 1950, he became secretary of defense, remaining in the post for one year. In failing health, he spent the rest of his days at his home in Leesburg, Va., devoting his time to gardening and to reading. Endowed with a deep, abiding sense of honor and integrity, it was characteristic of him that he steadfastly turned down offers of political or financial gain which would have traded on his career. These included a $1 million bid for his memoirs, which he rejected with this observation: "The government of the United States has already paid me for all of my services."

MARSHALL ISLANDS. See PACIFIC ISLANDS.

MARTINIQUE. An island in the Windward Islands group of the Caribbean Sea, forming an overseas department of France. Area, 425 square miles; pop. (est. 1958), 265,000, mainly Negroes. French is the official language, although a creole patois is the popular tongue. Fort-de-France (60,648) is the capital. The department is governed by a prefect and an elected General Council of 36 members. The 1959 budget totaled 4,503 million francs. About 80% of the population is literate. In 1957–58 there were 201 public primary schools (64,244 pupils), 2 lycées (2,841), a vocational school (787), and a law school (328).

The economy is dominated by the production of sugar and related products. Sugar output in 1958–59 totaled 86,000 short tons raw value (75,000 in 1957–58). Bananas, cassava, mangoes, citrus fruits, sweet potatoes, coffee, cacao, tobacco, and vanilla are also grown. Principal industries are sugar mills, rum distilleries, and pineapple and banana canning plants. Exports in 1958 totaled 12,157 million francs; imports, 17,433 million. Chief exports were fresh bananas, 93,343 metric tons (5,581 million francs); sugar, 60,501; and rum, 12,275. About 80% of trade is with France. Air France and other international lines provide air services.

During Dec. 20–22, 1959, rioting in Fort-de-France by nationalists demanding greater self-rule resulted in three persons killed and required the flying of police reinforcements to the capital from nearby Guadeloupe.

MARYLAND. Middle Atlantic state, United States; one of the original 13 states. The "Old Line State" ranks 42d in area and 22d in population among the 50 states.

Area and Population.—Area: 10,577 square miles (land, 9,881; inland water, 696), divided into 23 counties and the independent city of Baltimore. Population: (1950) 2,343,001; (est., July 1, 1958) 2,961,000. Urban places with populations above 7,500 in 1950 (unless another date is given):

Annapolis[1]	10,047	Hagerstown	36,260
Baltimore	984,000[2]	Havre de Grace	7,809
Cambridge	10,351	Hyattsville	12,308
College Park	11,170	Mt. Rainier	10,989
Cumberland	37,679	Salisbury	15,141
Frederick	18,142	Takoma Park	13,341

[1] Capital; population given excludes that of the U.S. Naval Academy. [2] Mid-1958 estimate.

Executive.—Chief state officers in 1959:
Governor: J. Millard Tawes (Democrat)
Secretary of State: Thomas B. Finan
Treasurer: Hooper S. Miles
Attorney General: C. Ferdinand Sybert
Auditor: Leo J. Parr
Supt. of Public Instruction: Thomas G. Pullen

Constitution and Judiciary.—The present constitution went into effect in 1867. The highest tribunal, the Court of Appeals, comprises five justices; chief justice in 1959 was Frederick W. Brune.

Legislature.—The Maryland General Assembly comprises a 29-member Senate (in 1959, 26 Democrats and 3 Republicans) and a 123-member House of Delegates (116 Democrats and 7 Republicans), which meet in a 90-day session beginning on the first Wednesday of January in odd-numbered years, and in a 30-day session, limited to fiscal, emergency, and state-wide matters, commencing the first Wednesday in February of even-numbered years. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $408,016,635 comprised $314,618,233 from state tax sources, $68,443,790 from the federal government, and $24,954,612 from other sources. Tax revenue consisted of $55,803,858 from a 2% (and later 3%) general sales tax,

$81,554,134 from individual income taxes, $18,132,338 from corporate income taxes, $50,974,854 from motor fuel taxes, $29,511,558 from licensing, and $78,641,491 from other sources. Expenditures of $427,085,362 comprised $121,197,448 for education, $78,157,255 for health, welfare, and safety, $123,722,521 for highways, and $104,008,138 for other purposes. Long-term indebtedness amounted to $206,530,000 on June 30, 1959.

Banking.—As of June 10, 1959, the state's 53 national banks had $1,067,186,000 in assets, $706,122,000 in demand deposits, and $252,184,000 in time deposits. The 96 state banks (Dec. 31, 1958) had assets of $2,082,453,846.12, demand deposits of $939,462,241.88, and time deposits of $941,898,273.38.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $160,790,542 ($335.53 per pupil), comprising $97,931,095 from local school districts, $57,827,217 from the state, and $5,032,230 from the federal government. Outlays for construction and improvements amounted to $64,066,528, and teachers' and principals' salaries averaged $4,944 (high school, $5,092; elementary, $4,821).

MARYLAND SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (k-6)	801	11,411	331,619
Public secondary (7–12)	252	9,150	200,502
Private and parochial elementary and secondary	394	3,964	114,836
Public junior colleges	7	187	2,296
State teachers colleges	5	216	2,895
Colleges and universities	...	...	46,029*

* Total enrollment in all colleges and universities for 1958–59, including 17 colleges and universities, 8 private junior colleges, and the 7 public junior colleges and 5 teachers colleges separately listed.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from local, state, and federal funds (excluding institutional costs) totaled $22,562,268, including $6,212,956 for the aged, $10,052,072 for dependent children, and $3,822,426 for the permanently and totally disabled. A monthly average of 54,636 persons received public assistance. State expenditures for mental health activities totaled $19,405,887; for correctional and penal programs, $6,094,519.

Labor Force.—The state's labor force totaled 1,116,300 persons in June 1959, including 58,500 agricultural workers. Nonagricultural employment was up slightly, to 970,100, from 965,000 in the previous June, but below the 1,020,000 average for the 12 intervening months. Of all wage and salaried (nonfarm) workers in 1959, 29.7% were engaged in manufacturing, 20.7% in trade, and 16.5% in government. Unemployment was down to 61,800 in June 1959 from 86,800 a year earlier. The steel strike, which began in mid-July 1959, idled an additional 28,000 workers. During the 12 months ending June 30, 1959, the state paid $52,635,880 in unemployment compensation claims.

Manufacturing.—The state's 3,312 manufacturing plants in 1958 employed 257,930 persons who received $1,253,161,061 in wages. Value added by manufacture (1957) totaled $2,294,868,000, and outlays for new plants and equipment amounted to $270,769,000. Production workers in manufacturing averaged $85.26 for an average workweek of 40.6 hours in August 1959.

MAJOR MARYLAND MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Transportation equipment	51,480	$274,004	$415,262
Primary metal industries	39,165	217,424	389,466
Food and kindred products	35,414	135,706	274,654
Chemicals and products	13,321	60,323	186,676
Electrical machinery	16,738	92,397	146,545
Fabricated metal products	15,851	75,688	139,228
Apparel and related products	26,002	74,236	117,708
Nonelectrical machinery	12,704	60,840	104,444
Printing and publishing	11,529	55,562	93,452
Stone, clay, glass products	8,564	40,532	90,873

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Maryland ranked 38th among the states in the value of its mineral production, with 0.27% of the national total. The state was seventh in the output of coke, and, in addition to the minerals listed in the accompanying table, produced potash, selenium, talc, soapstone, pyrophyllite, and tellurium.

MARYLAND MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clay[1]	605,000	$ 815,000
Coal	838,000	3,161,000
Coke	2,896,268	...
Natural gas (million cu. ft.)[2]	4,266	1,148,000
Sand and gravel	7,864,000	10,312,000
Stone	6,721,000	14,387,000
Other minerals	...	16,226,000
Total	...	$44,679,000[3]

[1] Excludes certain clays; value of which is included in "Other minerals." [2] Preliminary figure. [3] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in 1958 amounted to 66,091,000 pounds valued at $11,953,000. The two principal species were oysters (12,026,000 pounds valued at $6,668,000) and clams (4,985,000; $1,499,000).

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $185,277,000 from $190,024,000 in the corresponding period of 1958. For the full year 1958, income comprised $179,714,000 from livestock and livestock products, $79,418,000 from crops, and $5,403,000 from government payments. Principal income sources in 1958 were: dairy products, $71,553,000, and broilers, $55,691,000.

MARYLAND CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,144	1,270	1,400
Corn (1,000 bu.)	21,820	27,776	27,540
Hay (1,000 tons)	645	823	702
Peaches (1,000 bu.)	451	490	460
Potatoes (1,000 cwt.)	611*	610	502
Soybeans (1,000 bu.)	2,136	4,246	4,202
Sweet potatoes (1,000 cwt.)	513*	621	504
Tobacco (1,000 lb)	38,882	30,940	33,250
Wheat (1,000 bu.)	5,038	4,233	4,032

* Average, 1949–57. (Source: U.S. Department of Agriculture.

There were 33,200 farms in the state in 1958. Total acreage (1954) of 3,897,000 included 1,572,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 529,000 cattle and 2,751,000 chickens (excluding commercial broilers). During the week of Oct. 24–30, 1954, there were 65,993 family and hired workers engaged in farming.

Transportation and Communications.—In the 1958–59 fiscal year, state and federal spending for highways totaled $81,008,156, and new construction completed in the calendar year 1958 amounted to 134 miles.

Highways and roads on Jan. 1, 1959, totaled 19,689 miles (19,625 surfaced). Registered *motor vehicles* numbered 1,063,895 on Aug. 31, 1959, including 889,957 passenger cars. There were (1959) 13 *railroads* operating 1,320 line miles; 12 regularly scheduled *airlines;* and 128 *airports and airfields* (41 commercial and municipal, 6 military, and 80 private; and 1 seaplane base).

Communications media (1959) included 34 AM and 12 FM *radio stations;* 3 VHF and 1 UHF *television stations;* (1958) 11 daily *newspapers* and 75 other newspapers; and (Jan. 1, 1959) 303,900 business and 885,200 residential *telephones.*

Principal Events, 1959.—J. Millard Tawes took office on January 14 as Maryland's 59th governor and the first Democratic one in eight years. The

General Assembly met in 90-day session and enacted a number of reorganization measures. The State Roads Commission was expanded from three to seven members chosen on a geographical basis. Membership on the Tidewater Fisheries Commission and the State Racing Commission was increased from three to five persons each. The State Tax Commission as such was abolished and its quasijudicial and administrative functions were separated. The State Planning Commission was replaced by a Planning Department with a director and advisory board serving at the pleasure of the governor.

Additional legislation provided for the setting up of a penalty point system for drivers and chemical tests for suspected drunken drivers. A proposal to increase the membership of the Board of Regents of the University of Maryland from 11 to 15 was defeated in committee.

Governor Tawes completed executive action on 861 bills enacted by the 1959 General Assembly by signing 831 into law and vetoing 30.

In November, Gov. J. Lindsey Almond, Jr., of Virginia agreed to defer a suit challenging Maryland's right to rescind the Potomac River Compact of 1785 in exchange for a promise from Governor Tawes to support approval of a new agreement which will be voted on in a referendum in Maryland in 1960. The suit grew out of the action of the 1957 Maryland General Assembly which repealed the compact of 1785, charging violations of the fishing laws by Virginians.

The state estimated a surplus of about $20 million for the 1959–60 fiscal year. Governor Tawes indicated that the state would decline to spend a substantial portion of the expected surplus for current expenditures.

In mid-1959 unemployment was 58,800, or 5.4% of the total civilian labor force. By September, unemployment registered 56,700, or 5.1% of the labor force, compared with 71,000, or 6.4%, a year earlier. Workers involved in the steel strike were not included in these figures. (See also above, *Labor Force.*) The severest case of unemployment was in Hagerstown as a result of the cancellation of a contract by the federal government with the Fairchild Engine and Airplane Corporation. From a peak of 7,624 in 1958, employment fell 30% to 5,222 by mid-1959, resulting in some 4,650 unemployed in the county. Surplus food from the Department of Agriculture was distributed to needy persons.

The Legislative Council in November rejected the Walsh plan to give metropolitan counties more representation in the Maryland House of Delegates by increasing total membership from 123 to 141. The plan would not have affected membership in the 29-member Senate.

Governor Tawes opposed committing the Maryland delegation to the Democratic National Convention in 1960 on the basis of the Maryland presidential preference primary to be held the preceding spring.

Principal Events by: MAURICE E. O'DONNELL, *Assistant Director, Bureau of Governmental Research, University of Maryland.*

MASSACHUSETTS. New England state, United States; one of the original 13 states. The "Bay State" ranks 45th in area and 9th in population among the 50 states.

Area and Population.—Area: 8,257 square miles (land, 7,867; inland water, 390), divided into 14 counties. Population: (1950) 4,690,514; (est., July 1, 1958) 4,900,000. Towns (defining civil divisions) and cities with populations above 15,000 (as estimated by the State Division of Vital Statistics for July 1, 1958, unless otherwise indicated) are:

Arlington town	44,353[1]	Methuen town	24,477[1]
Attleboro	25,087	Milford town	15,442[1]
Belmont town	27,381[1]	Milton town	22,395[1]
Beverly	32,280	Natick town	19,838[1]
Boston (*capital*)	724,702[2]	Needham town	16,313[1]
Braintree town	23,161[1]	New Bedford	105,488[2]
Brockton	62,628[2]	Newton	87,764
Brookline town	57,589[1]	North Adams	21,493[2]
Cambridge	98,958[2]	Northampton	26,271[2]
Chelsea	36,826[2]	Norwood town	16,636[1]
Chicopee	49,071[2]	Peabody	28,015
Danvers town	15,720[1]	Pittsfield	56,103
Dedham town	18,487[1]	Quincy	84,807
Everett	45,077[2]	Revere	40,866
Fall River	105,195[2]	Salem	40,117[2]
Fitchburg	43,017	Saugus town	17,162[1]
Framingham town	28,086[1]	Somerville	97,032[2]
Gardner	20,305	Southbridge town	17,519[1]
Gloucester	26,232	Springfield	167,637
Greenfield town	17,349[1]	Taunton	41,521
Haverhill	45,436[2]	Wakefield town	19,633[1]
Holyoke	53,213[2]	Waltham	50,895
Lawrence	76,094[2]	Watertown town	37,329[1]
Leominster	25,062	Wellesley town	20,549[1]
Lexington town	17,335[1]	W. Springfield town	20,438[1]
Lowell	93,876[2]	Westfield	22,515
Lynn	99,020[2]	Weymouth town	32,690[1]
Malden	59,497[2]	Winchester town	15,509[1]
Marlborough	17,199	Winthrop town	19,496[1]
Medford	65,393[2]	Woburn	27,321
Melrose	29,853	Worcester	202,612[2]

[1] 1950 census. [2] 1955 state census.

Executive.—Chief state officers in 1959:
Governor: Foster Furcolo (Democrat)
Lieutenant Governor: Robert F. Murphy
Secretary of Commonwealth: Joseph D. Ward
Treasurer and Receiver General: John F. Kennedy
Attorney General: Edward J. McCormack
Auditor: Thomas J. Buckley
Commissioner of Education: Owen B. Kiernan

Constitution and Judiciary.—The present constitution went into effect in 1780 and was rearranged in 1919. The highest tribunal, the Supreme Judicial Court, comprises 7 justices; chief justice in 1959: Raymond Wilkins.

Legislature.—The General Court comprises a 40-member Senate (in 1959, 24 Democrats and 16 Republicans) and a 240-member House of Representatives (145 Democrats and 95 Republicans), which meet annually commencing the first Wednesday in January.

The 1959 session adjourned on September 17 and appropriated $431,743,366, an increase of $21 million over the preceding year. Bond issues to yield $36,400,000 for capital outlays were authorized, overriding the governor's veto of nine items totaling $7,447,500. No new taxes were voted, but the governor's proposal for a withholding system of collecting state income taxes was enacted and provided $40 million for 1959 only. For the second successive time the legislature defeated a limited 3% sales tax recommended by the governor for local tax relief.

The legislature refused to adopt a subsidy plan similar to the one for $900,000 enacted the previous year, to continue passenger service of the New York, New Haven and Hartford Railroad. (See also below, *Principal Events, 1959.*) On recommendation of the governor, however, the legislature set up a Massachusetts Transportation Commission to coordinate transportation facilities throughout the state and especially to study the transportation problem of the Boston metropolitan area. The commission was also authorized to purchase the tracks and rights of way of the Old Colony Railroad for use as a future rapid transit system to the South Shore.

A bill to abolish capital punishment was rejected by the legislature, as was a recommendation by the governor to have a popular referendum on the question of capital punishment.

In a joint legislative constitutional convention the General Court took the first step toward establishing a graduated income tax, but refused a request by the governor for a specially elected constitutional convention.

Other new legislation increased the minimum wage from 90 cents to $1 per hour for general occupations; raised weekly maximum unemployment compensation from $35 to $40; extended the period for such payment from a 26-week maximum to one of 30 weeks; and boosted weekly dependency allowance under workmen's and unemployment compensation from $4 to $6.

Finance.—In the 1958–59 fiscal year, state revenue of $693,209,641 comprised $364,101,211 from state tax sources, $138,392,720 from the federal government, and $190,715,710 from other sources. Tax revenue consisted of $109,009,744 from individual income taxes, $43,079,139 from corporate income taxes, $73,011,583 from motor fuel taxes, and $139,000,745 from other sources. Licensing added $36,560,902 to state revenue. Expenditures of $657,422,523 included $70,070,461 for education, $233,251,668 for health, welfare, and corrections, and $186,651,643 for highways, boulevards, and waterways. Long-term indebtedness on June 30, 1959, amounted to $758,077,619.

Banking.—As of June 10, 1959, the state's 105 national banks had $3,866,509,000 in assets, $2,859,886,000 in demand deposits, and $509,892,000 in time deposits.

The 59 trust companies, 4 banking companies, and 186 savings banks (June 30, 1959) had assets of $8,068,767,168 and demand deposits of $7,047,103,085. There were also 175 cooperative banks and 3 savings and loan associations with assets of $1,171,151,700.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $241,936,671 ($309.64 per pupil), and approximate revenue comprised $203,170,000 from local school districts, $38,766,000 from the state, and $2,986,000 from the federal government. Outlays for construction and improvements amounted to $43,997,810. Salaries of teachers averaged $4,955 (high school, $5,065; elementary, $4,895).

MASSACHUSETTS SCHOOL STATISTICS, 1957–58

Type of school	No.[1]	Teachers	Students
Public elementary (1–8)	1,770	20,375	524,389
Public junior high (7–9)	129	4,751	104,152
Public senior high (9–12)	202	8,231	152,802
Junior colleges	3	73	928
Teachers colleges	10	479	7,362
Colleges and universities	...	...	125,951[2]

[1] Data for 118 consolidated schools (grades 1–12) are not included. [2] 1958–59 figure which also includes enrollment in the 3 junior colleges and the 10 teachers colleges separately listed.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $148,844,709, including $96,505,442 for the aged, $25,850,176 for dependent children, and $13,487,400 for the permanently and totally disabled. A monthly average of 153,051 persons received public assistance.

Labor Force.—Nonagricultural employment on July 1, 1959, was up to 1,827,700 from 1,775,800 a year earlier and above the 1,794,800 average for the 12 intervening months. Major sectors of 1959 nonfarm employment were manufacturing, accounting for 36.7% of the total; trade, 20.2%; and service industries and mining, 14.3%. Estimated unemployment on July 15, 1959, had dropped sharply to 116,500 from 168,000 on the previous July 15.

Manufacturing.—The state's 9,048 manufacturing plants in 1957 employed an average of 520,716 persons who received $1,962,753,359 in wages. Value added by manufacture totaled $5,026,952,983, and outlays for new plant and equipment amounted to $243,951,000. Production workers averaged $81.41 for an average workweek of 40.3 hours in August 1959.

LEADING MASSACHUSETTS MANUFACTURES, 1957

Industry	Persons employed	Gross wages	Value of product
Electrical machinery	51,668	$202,164,508	$1,004,873,219
Foundry & machine shop products	25,341	110,987,794	431,067,949
Boots & shoes (nonrubber)	37,484	110,300,539	374,422,546
Women's clothing	25,300	65,172,208	306,685,731
Rubber goods	12,360	55,869,857	281,851,520
Printing & publishing	16,330	74,247,176	281,071,566
Paper & wood pulp	10,248	48,540,308	237,197,027
Chemicals (unclassified)	5,031	24,851,617	226,992,266
Fabricated plastic products	10,311	34,245,400	171,596,936
Leather (finished)	6,881	28,654,607	163,173,918
Paper boxes	7,820	28,659,167	160,781,749

(Source: Massachusetts Department of Labor and Industries, Division of Statistics.)

Mining.—In 1958 Massachusetts ranked 41st among the states in the value of its mineral output, with 0.14% of the national total. Although output value dropped in 1958 to below that of 1957, it was only 5% below the 1956 record.

Fisheries.—Landings at Massachusetts ports in 1958 totaled 516,386,858 pounds valued at $37,158,155, a decline of 5% in quantity but an increase of 9% in value over 1957 totals. Principal species were haddock (101,329,421 pounds valued at $11,388,457) and scallops (15,946,815; $7,716,458).

MASSACHUSETTS MINERAL PRODUCTION, 1958

Mineral	Quantity	Value
Clay	84,999	$ 111,000
Coke	353,752	...[1]
Lime (open market)	139,062	2,121,000
Peat	1,014	...[2]
Sand and gravel	10,619,801	10,035,000
Stone	4,649,067	12,354,000
Other minerals	...	9,000
Total	...	$23,887,000[3]

[1] Values for processed materials are not included in the total. [2] Value included in "Other minerals." [3] Total adjusted to avoid duplication of value of limestone used for lime. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $115,490,000 from $122,239,000 in the corresponding period of 1958. For the full year 1958, income comprised $111,529,000 from livestock and livestock products, $57,928,000 from crops, and $1,680,000 from government payments. Principal income sources in 1958 were dairy products, $46,092,000, and eggs, $33,638,000.

MASSACHUSETTS CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	2,512	2,400	2,700
Corn (1,000 bu.)	1,572	1,620	1,728
Cranberries (bbl.)	558,100	598,000	575,000
Hay (1,000 tons)	461	419	402
Potatoes (1,000 cwt.)	35,390*	37,250	34,606
Tobacco (1,000 lb.)	10,611	3,875	5,505

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 18,000 farms in 1958. Total acreage (1954) was 1,439,000, including 331,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 156,000 cattle and 4,160,000 chickens (excluding commercial broilers). Family and hired workers engaged in farming numbered 44,039 during the week of Sept. 26–Oct. 2, 1954.

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $155,912,174, and 262 miles of new construction were completed in 1958.

Highways and roads in 1959 totaled 25,694 miles, including 2,402 miles of highways and 23,292 miles of local roads; in all, 20,104 miles were surfaced. Registered *motor vehicles* numbered 1,678,233 on July 31, 1959, including 1,488,667 passenger cars. There were (1958) 9 *railroads* operating 1,682.67 line miles and (1959) 13 regularly scheduled *airlines* and 122 *airports and airfields* (51 commercial and municipal, 6 military, 58 restricted, and 7 seaplane landing areas).

Communications media (1959) included 59 AM and 25 FM *radio stations;* 4 VHF and 2 UHF *television stations;* (1958) 57 daily *newspapers* and 200 other newspapers; and (Jan. 1, 1959) 616,400 business and 1,570,400 residential *telephones.*

Principal Events, 1959.—Transportation problems continued to cause concern during the year. Acting on a proposal by Gov. Foster Furcolo in his second inaugural address on January 8, the legislature sought a solution through establishing the Massachusetts Transportation Commission (see also above, *Legislature*). Transportation difficulties were aggravated in the Boston metropolitan area on June 30 when the Old Colony Division of the New York, New Haven and Hartford Railroad ended operations. The termination of this service between Boston and South Shore communities affected some 10,000 commuters. Buses and private automobiles absorbed the displaced passengers, and completion of an expressway from downtown Boston to the South Shore eased the transition. Another cutback in railroad operations was the

cancellation of summer service between New York City and Cape Cod, announced on June 11, the day before the season's runs were to begin.

Business conditions were generally good in much of the state during the year. The electronics industry continued to flourish, and the cotton textile market experienced an upswing. Commercial and industrial construction along Route 128 near Boston continued at a brisk pace. Attracted by the wealth of academic personnel in the nearby colleges and universities, more and more firms were establishing centers for scientific research and production along the 63-mile road which has come to be known as "Space Highway." By mid-1959 more than 225 companies employing 28,000 persons had moved to the highway, and the value of new construction amounted to $137 million. On May 13–14 a $23 million research center of the Avco Corporation was dedicated at Wilmington, a Boston suburb.

The state's economy was further stimulated by the excellent weather which prevailed during the summer months. Businesses dependent on tourists generally reported successful seasons.

Some areas of the state continued to face serious unemployment. Fall River, Lawrence, Lowell, and New Bedford were included in the U.S. Department of Labor's September 19 list of major industrial areas with "chronic labor surpluses."

The cranberry industry in southeastern Massachusetts and Cape Cod, where half the nation's crop is produced, suffered a serious blow in November when the federal government reported that it had found on berries traces of a weedkiller (aminotriazole) known to cause cancer in rats. Although the announcement concerned cranberries grown in Oregon and Washington, the resulting publicity caused considerable loss to Massachusetts producers.

(See also BOSTON.)

Legislature and Principal Events by:
DENNIS A. DOOLEY,
Massachusetts State Librarian.

MATHEMATICS. Activity in all fields of mathematics continued at a high level throughout 1959. Research produced solutions to important unsolved problems, significant progress was made in the revision of high school and college mathematics courses, and a wide range of subjects in pure and applied mathematics was studied in regular meetings and in special symposia and research institutes.

At a meeting of the American Mathematical Society in New York City, R. C. Bose, E. T. Parker, and S. S. Shrikhande announced on April 24 that they had disproved a conjecture concerning Latin squares made by Leonhard Euler in 1782. This result will have applications to the design of controlled experiments in biology, medicine, agriculture, and industry. On April 23, at the same meeting, John G. Thompson presented a solution to a problem in group theory known as Frobenius' conjecture, which was more than 50 years old. P. S. Novikov in the USSR has proved that one of Burnside's conjectures in group theory is false.

The School Mathematics Study Group (SMSG), under the direction of E. G. Begle, played a dominant role in 1959 in revising school courses in mathematics. The Commission on Mathematics published its recommendations in two volumes in the spring of 1959. SMSG held major writing sessions at Ann Arbor, Mich., and Boulder, Colo., for the preparation of sample textbooks for new courses; both writing groups comprised school mathematics teachers and college and university mathematicians.

The Ann Arbor group prepared sample textbooks for grades 7 and 8, and the Boulder group wrote sample textbooks for grades 9 through 12. These sample textbooks are being tried during 1959–60 in about 40 experimental centers located throughout the United States. The new courses emphasize not only skills but also a deeper understanding of the principles involved. In some cases the new courses provide new and modern treatments for old and familiar topics (for example, logarithms and exponents); in other cases, the new courses introduce subjects never before studied in high school. The 11th grade book contains chapters on complex numbers, vectors, and mathematical structures; the 12th grade book contains a semester's study of linear algebra.

Continued change lies ahead for the colleges; important new topics (for example, probability and statistical inference) which are being added in revised college mathematics courses are already being studied in the high schools.

At its meeting in New York City on April 23–25, 1959, the American Mathematical Society (AMS), with financial assistance from the Office of Ordnance Research, sponsored a symposium on nuclear reactor theory; also, with financial aid from Project Focus of the Institute for Defense Analyses, it sponsored a symposium on finite groups. The AMS sponsored a symposium on lattice theory at a meeting in Monterey, Calif., April 16–18, and an institute on number theory in Boulder, Colo., in the summer of 1959. At a meeting in Philadelphia, January 20–22, the society awarded its Bôcher Prize for outstanding contributions to mathematical analysis to Louis Nirenberg of the Institute of Mathematical Sciences at New York University.

A symposium on differential equations was held in Mexico City during the week of Sept. 7, 1959; it was sponsored by the National Science Foundation, the Office of Naval Research, the National University of Mexico, and the Research Institute of Advanced Science. The summer seminar in mathematics of the Canadian Mathematical Congress was held in Fredericton, New Brunswick, from August 17 to September 11; the program contained lectures on both the research and instructional levels.

The National Science Foundation supported about 80 summer institutes for teachers of mathematics in 1959. Both undergraduate and graduate enrollments in mathematics continued to increase; however, the shortage of mathematics instructors, classrooms, and offices also continues to increase. In a period of rapid growth and mounting needs, mathematics still receives relatively little support, although the Alfred P. Sloan Foundation has made grants to the California Institute of Technology for a mathematics and physics building, and to Dartmouth College for a mathematics building.

G. BALEY PRICE,
Chairman, Department of Mathematics,
University of Kansas.

MAURITANIA. The Islamic Republic of Mauritania is an autonomous republic of the French Community (q.v.), situated on the northwest coast of Africa. Estimated area, 419,229 square miles; pop. (est. 1958), 640,000, including (in 1956) 1,627 nonindigenous persons, mainly French. The national language is Arabic; the official language is French. The majority of the population are nomadic Berbers. There are few towns and none has more than a few thousand inhabitants. Nouakchott, near the coast, is the new capi-

tal; Kaédi (est. pop., 8,500) and Atar (4,200) are inland towns.

Government.—Formerly a French overseas territory included within the federation of French West Africa (q.v.), Mauritania chose the status of a member state of the French Community on Nov. 28, 1958. As an autonomous republic, Mauritania has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Mauritania adopted its constitution on March 22, 1959. The National Assembly consists of 40 members elected for a five-year term by universal suffrage. The premier is elected by the assembly. Mocktar Ould Daddah, leader of the Mauritanian Regroupment Party, was unanimously re-elected premier on June 24, 1959.

Education and Religion.—In 1958 there were 97 schools with a total of 6,784 pupils (7.2% of the school-age population). Expenditure on education approximated 230 million francs CFA, or about 15% of the budget. The great majority of the population are Moslems. Islam is the official religion, but freedom of worship is guaranteed.

Finance.—The ordinary budget for 1958 totaled 1,491 million francs CFA; the extraordinary budget, 136 million (the franc CFA equals 2 metropolitan francs). Funds granted by France under the Economic and Social Investment Development Fund (FIDES) were equivalent to $15.1 million in the period 1947–57.

Transportation.—Mauritania has no public railroads. Inland transport is mainly by pack caravan. Roads and trails total 2,296 miles (1956), including 862 miles of highways. Port-Étienne (pop., 1,200), on the northern coast, is hardly more than a fishing station.

Production.—Mauritania is largely desert in the interior. Cultivation is mainly along the Senegal River in the southwest. The chief occupation is livestock raising, and there are large herds of sheep and goats, cattle, and camels. Cereals include millet and maize. Other products are dates, gum arabic, salt, and fish. A large deposit of copper ore at Akjoujt is worked only on a small scale as yet, and a rich vein of high-grade iron ore was recently discovered at Fort-Gouraud. Chief exports are cattle, gum arabic, and salt. Foreign trade passes mainly through Dakar, in Senegal (q.v.), and separate trade statistics for Mauritania are not available.

Principal Events, 1959.—In the elections of May 17, 1959, the Mauritanian Regroupment Party, unopposed, won all 40 seats in the National Assembly. The party opposes union with Morocco (advocated by some elements in Mauritania), as well as federation with other African republics. Mocktar Ould Daddah, premier during Mauritania's transition from a semiautonomous territory to an autonomous republic, was re-elected premier by the assembly on June 24. French President Charles de Gaulle visited Mauritania on December 10, during his tour of the autonomous African republics of the French Community.

MAURITIUS. Ceded to Great Britain in 1814, this densely populated colony, lying 500 miles east of Madagascar in the southern Indian Ocean, comprises the island of Mauritius (area, 720 square miles) and several scattered dependencies: Rodrigues (40 square miles; pop. est., 17,018 in 1958); Diego Garcia (11 square miles; pop., 624 in 1958); the Salomon Islands (2 square miles), and other islands aggregating 45 square miles. On Dec. 31, 1958, the population numbered 632,731 (Indo-Mauritians, 414,902). Port Louis (pop., 104,016, including suburbs) is the capital and chief port.

A governor (Sir Robert Scott, appointed Feb. 18, 1954) is assisted by a 12-member Executive Council and a 55-member Legislative Council (40 elected). On March 9, 1959, a general election gave the Labour Party 23 seats, and the Moslem Committee of Action and other parties, 17.

Surplus on current accounts for 1957–58 was Rs.9,990,864 (1 Mauritius rupee = U.S.$0.21). Estimated current revenue for 1958–59 was Rs.135,777,720; recurrent expenditure, Rs.125,766,030; extraordinary and capital expenditure, Rs.68,048,144. A 5-year development plan costing £15,750,000 was inaugurated in 1957.

The government conducted 107 primary, 3 secondary, 1 teacher-training, and 1 technical and vocational schools, and aided 76 primary and 8 secondary schools (aggregating 131,588 pupils) in 1958. There were also 291 unaided schools.

Sugarcane, the principal crop, yielded 526,000 metric tons from 197,400 acres in 1958 (562,000 metric tons from 190,500 acres in 1957); production in 1959 was estimated at 580,000 metric tons. Other acreages in 1958 included tea, 3,600 (crop, 873 metric tons); aloe fiber, 14,000; tobacco, 1,000; and corn, 920. Rum, soap and matches are manufactured. Major exports in 1958 were sugar (Rs.277,115,738), molasses (Rs.4,875,066), tea (Rs.2,347,021), and alcohol (Rs.12,881). Railways aggregate 82 miles, and highways, 740 miles. In 1958 there were 12,099 motor vehicles. Steamships and Air France, Qantas Empire Airways, and South African Airways provide external communications.

MEAT INDUSTRY. Approximately 24 million cattle and 8 million calves went into the production of meat in the United States in 1959. This represented a drop of about 3% in the number of cattle and 18% in the number of calves marketed for the production of meat. The number of sheep and lambs going into the meat supply was estimated at 15.5 million, about 7% more than in 1958. The number of hogs that went into pork production was estimated at 88 million, 14% more than in the preceding year.

The decline in the marketing of cattle in 1959 was the result of farmers' and ranchers' keeping more cows and calves to build up the size of their herds. An increase in cattle numbers was expected to continue through 1960, while a large increase in the number of cattle going into the meat supply is not expected until 1961 or later. Pig births on Midwestern farms during the fall of 1959 were estimated to be about 2% higher than in the corresponding 1958 period, indicating a further increase in pork supplies in 1960.

In 1959, United States production of all meats, exclusive of lard, was estimated at 27.4 billion pounds, up about 1.7 billion pounds over 1958. Per capita consumption, estimated at 158 pounds, was up 4% over 1958.

U.S. MEAT PRODUCTION AND CONSUMPTION, 1957–59

Item	1959 prelim.*	1958 actual	1957 actual
Production:	(billion pounds)		
Beef	13.6	13.3	14.2
Veal	1.0	1.2	1.5
Lamb and mutton	.8	.7	.7
Pork	12.0	10.5	10.5
Total	27.4	25.7	26.9
Per capita consumption:	(pounds)		
Beef	80.5	80.5	84.6
Veal	5.5	6.7	8.8
Lamb and mutton	4.4	4.1	4.2
Pork	67.7	60.7	61.5
Total	158.1	152.0	159.1

* Estimates by American Meat Institute.

Production of sausage under federal inspection in 1959 was estimated at 1.9 billion pounds, or 4% more than in 1958. Canned meat production was estimated to be about equal to the 1.7 billion pounds produced in 1958.

HERBERT B. BAIN,
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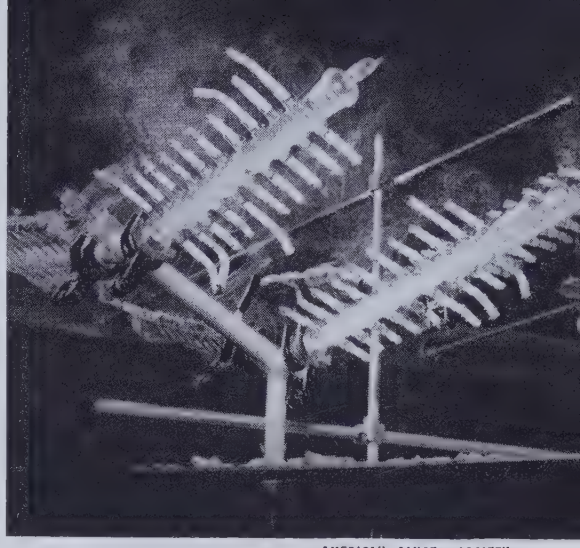
MEDICINE. The number of hospital admissions in the United States continued to increase during

1958 (the latest period for which statistics are available). The total was 23,697,000 patients, compared with 22,993,000 in 1957. Hospital operating expenses were reported to be $7,133,493,000; the greater part ($4,660,191,000) was allocated to salaries and wages. (See also HOSPITALS.) Special plans of health and hospital insurance for persons over 65 received much attention during 1959, and it was reported that more than 40% of persons in this age group had such protection at the end of 1958, with a steady increase in coverage anticipated. (See also INSURANCE—*Health Insurance.*) Other measures, such as federal legislation to provide financial assistance in the construction of nursing homes, also were introduced to improve medical care for the elderly. (See also NURSING.)

The danger of a shortage of physicians in coming years received further attention. Report of a study by the Surgeon General's Group on Medical Education indicated the need for a 50% increase in medical graduates by 1975 in order to maintain the present physician-to-population ratio 1 to 740. It was felt that 20 to 24 new medical schools would be required, with overall expenditure of perhaps a billion dollars, half of which might come from federal funds and half from state and private sources. New physicians licensed in the United States during 1958 numbered 7,809, an increase of 104 over the previous year. Included were 2,567 graduates of foreign medical schools. United States medical schools graduated 6,895 physicians in 1959. Deaths among physicians were estimated at 3,700 during 1958, and others retired because of age. A stimulus for medical research was furnished by a 36% increase in appropriations for the National Institutes of Health to $430,300,000, part of $830,661,800 allocated to the U.S. Public Health Service. (See also PUBLIC HEALTH.)

The Nobel Prize in medicine and physiology for 1959 again was shared by American scientists engaged in basic research. Two biochemists, Dr. Arthur Kornberg of Stanford University and Dr. Severo Ochoa of New York University were honored for work on the synthesis of nucleic acids, basic life substances of fundamental importance in the understanding of heredity, viruses, cancer, and other medical problems. (See separate biographical articles on each of the 1959 Nobel Prize winners.) The prize for 1958 was awarded to Drs. George W. Beadle, Edward C. Tatum and Joshua Lederberg for their work in genetics. Deoxyribonucleic acid (DNA) is believed to be the vital constituent of genes; thus the areas of research represented by the two Nobel awards are closely related and are concerned with the fascinating, broad field of biochemical genetics. The principle of "transduction" was demonstrated by the 1958 laureates, whereby genetic material, believed to be DNA, may be carried from one strain of bacterial cells to another by viruses, taking with it inheritable characteristics. With the prospect of controlled synthesis of DNA, limitless areas appear to be open for investigation in biochemical genetics and related medical fields. (See also BIOCHEMISTRY; GENETICS.)

Antibiotics.—The chief problems in connection with the widespread use of antibiotics continue to be the appearance of resistant strains of bacteria and undesirable complications from the use of the drugs. In some cases these are interrelated. For instance, resistant staphylococci may not appear until the patient has been treated for another infection with an antibiotic. Then, as other organisms are suppressed, resistant staphylococci may emerge and cause a more dangerous disease than the one for which treatment was administered. A severe form of staphylococcic infection of the intestinal tract is one of the most feared of these secondary infections.



AMERICAN CANCER SOCIETY

This laboratory device automatically puffs on cigarettes to simulate human smoking. Tars which are collected from the smoke are then painted on the backs of mice to determine the possible relationship between smoking and lung cancer.

The remarkable efficacy of a single injection of penicillin in the treatment of gonorrhea has been one of the greatest triumphs of that drug over disease. However, resistant strains of gonococci are being encountered, thus necessitating other and more complicated methods of management in some cases. Maintaining contact with patients with such infections long enough to insure complete cure often is a major problem. Sensitization to antibiotics also continues as a frequent problem in the use of these medications; hence, authorities repeatedly emphasize that antibiotics should be used only with discretion.

Success in the creation of new antibiotics has been most encouraging. Striking progress has been made in the modification and improvement of natural penicillin. The isolation in quantity of 6-aminopenicilamic acid, the basic component of the antibiotic, has been reported. This achievement has permitted the preparation, by synthesis or by combined fermentation and synthesis, of a number of modified penicillins. Many others may be anticipated. There is reasonable expectation that it will be possible to produce compounds which will be active against types of bacteria (such as many gram-negative organisms) not controlled by natural penicillin.

Relatively "nonallergic" types of penicillin may be possible. Penicillin which is active not only against bacteria but also against the enzyme penicillinase has been predicted. Some resistant bacteria manufacture this enzyme to destroy the antibiotic, and thus protect themselves from its bacteriocidal effects. One compound of the new series of modified penicillins has been introduced under the name of Syncillin. It is administered by mouth, rather than by injection, because it is so well absorbed from the intestinal tract.

New and more potent modifications of the broad-spectrum tetracycline antibiotics also have been introduced. One of these, N-(pyrrolidinomethyl) tetracycline (Syntetrin), is much more soluble than the parent substance, hence particularly suited to administration by injection. Another, demethylchlortetracycline (Declomycin), appears to be more stable in the body than its

parent substance, and therefore produces more persistent therapeutic blood levels after oral administration. (See also CHEMOTHERAPY.)

Atomic Energy.—The cessation, at least temporarily, of nuclear weapons testing during 1959 brought some relief from the anxiety concerning excessive exposure to radioactive fall-out. However, in spite of prolonged negotiations aimed at a permanent agreement to ban such tests, apparently little progress had been made by the end of the year. (See DISARMAMENT.)

The importance of protecting the population was emphasized in the United States by the creation of a cabinet-level Federal Radiation Council. It is anticipated that several agencies responsible to the council will monitor fall-out and accumulation of such substances as strontium-90 in foodstuffs.

An experimental method was described which might be used commercially to remove strontium-90 from milk, if the need should arise. The method depends upon exposure of the milk to a calcium-based exchange resin, resulting in removal of strontium to the resin, in exchange for calcium. Earlier attempts to remove strontium had resulted in loss of calcium as well, because the two elements are so closely related chemically.

Some measurements seemed to indicate that the rate of fall-out of radioactive material from hydrogen bombs is considerably more rapid than anticipated. If this is confirmed by further studies, it will be necessary to re-evaluate the rapidity with which atomic radiation may be expected to accumulate, and its expected biologic effects. It is apparent from all of the reports that mankind will be assuming a definite risk for the future welfare of the race if some means is not found for preventing the continued dissemination of artificial radioactive material in the earth's atmosphere and soil.

One of the most dangerous effects of exposure to excessive irradiation is the destruction of growing blood cells and platelets in the bone marrow. The use of transfusions of bone marrow cells in patients exposed to presumably fatal doses of irradiation has been described. In one group, bone marrow was removed from patients suffering from malignant tumors, who were to be treated with unusually heavy doses of radiation therapy. The marrow was preserved by freezing at very low temperature, and then reinfused into the individual from whom it was obtained, after completion of irradiation. There was evidence that the cells then began to grow and helped prevent the severe depletion of blood cells which would have been anticipated. It has been proposed that individuals working where exposure to irradiation may occur through accident should have some of their bone marrow preserved by freezing, against such an emergency. Marrow obtained from carefully selected donors was used to treat a group of European scientists who were accidentally exposed to huge doses of radiation. (See also RADIATION.)

Cancer.—Probably the most widespread, if not the most concentrated, scientific effort ever undertaken is being directed toward the study of malignant tumors. Many aspects of the overall problem are under investigation, ranging all the way from fundamental studies of the basic conditions of malignant cellular growth to practical methods of treating patients with cancer. Although much progress has been made, malignant tumors are second only to diseases of the heart and circulation in causing death. Deaths from lung cancer have increased at an alarming rate, and leukemia also has shown a sharp increase. A statement from the U.S. Public Health Service in 1959 again connected the increase in lung cancer with cigarette smoking. It is encouraging, however, that because of earlier diagnosis and better treatment, more patients with cancer are now being saved than ever before.

The experimental production of various malignant tumors in animals by viruses continued to receive much attention. Tumors also have been produced in animals by cell-free filtrates from human tumor tissue. Such experiments suggest the possibility that virus was obtained from human tumor. However, this has not been demonstrated with certainty, and tumor nucleic acids may be the transmitting factor. The "cause of cancer" remains a complex secret of nature, hidden in the mysteries of the fundamental processes and control of cell life and growth, probably dominated by the nucleic acids of genes. It is believed by many that viruses, with their own nucleic acids, take over the control of cellular activity in malignant tumors and direct the abnormal proliferation of the tissue. Such a concept emphasizes the close relationship between viruses, genes, and nucleic acids.

New methods of treatment are being sought constantly. Some years ago it was determined that tumors in animals were more sensitive to X-ray therapy when the animals were in an atmosphere of oxygen under increased pressure. The method was extended to human beings and encouraging results were reported from England. A specially designed unit for maintaining patients in oxygen under pressures of 3 to 4 atmospheres, while treatment with high-voltage irradiation is being administered, was scheduled to go into operation in the United States late in 1959.

Healthy individuals apparently possess immune reactions which prevent experimentally transplanted cancer cells from growing in their bodies. Protection of mice against virus-induced leukemia by pretreatment with a vaccine made from the causative virus also has been demonstrated. New attempts have been made to prepare immune serum for the treatment of malignant tumor in man by the method commonly used for the preparation of immune sera and antitoxins. Suspensions of tumor tissue were injected into horses to stimulate the production of antitumor antibodies. Serum from the horses then was used to treat the patients from whom the tumor tissue was obtained. Some beneficial results were reported.

Impetus and better organization were afforded the extensive search for anticancer drugs by the establishment of the Cancer Chemotherapy National Service Center, supported by federal funds. The center will coordinate the screening of innumerable chemical compounds for antitumor activity. Although modern attempts at chemotherapy of tumors, using derivatives of war gases, did not get under way until after World War II, literally hundreds of thousands of compounds have been examined since that time. Only a few have been found useful clinically, but some have been of considerable value. Unfortunately, all produce toxic or other undesirable effects on normal tissues which limit their use.

In the attempt to concentrate the cytotoxic effects of such chemicals in the tumor under treatment, various types of perfusion techniques have been used for fairly well localized tumors. The attempt is made to isolate the circulation to the involved area, so far as possible. A "heart-lung" machine then is used to pump blood containing a high concentration of drug through the tumor area, while limiting its access to the general body circulation. Even tumors of the brain have been treated with some success by this method. One of its more encouraging results has been in the treat-

ment of malignant melanoma, a tumor usually highly resistant to all forms of therapy. (See also CANCER.)

Heart and Circulation.—New and improved technical methods have been of great assistance in the diagnosis and treatment of heart and circulatory disorders. Machines for maintaining circulation and lowering body temperature have made possible hitherto unheard-of operations on and inside the heart. Improved techniques of heart catheterization and special X-ray methods have been of great value in diagnosis. An electrocardiographic system has been proposed which records much more elaborate data concerning the electrical activity of the heart. It is able also to scan the summation of the data while recording, and make comparison electronically with information stored in the machine from other cases in which diagnosis was known.

A device has been produced in England for automatically measuring and recording blood pressure over long periods of time. The measurements are made from a small cuff in a metal cylinder which is placed on the patient's finger. The system may be set to sound an alarm if blood pressure falls below or rises above predetermined levels. (See also ELECTRONICS.)

An effective artificial pacemaker for the heart has been devised by implanting a fine wire in the wall of the left ventricle and another electrode on the overlying chest wall. Rhythmic small electric currents cause the heart to beat under control of the mechanism during periods, especially after heart surgery, when "heart block" exists, or when there is failure of the intrinsic pacemaker of the heart. Similar devices are used to stimulate the heart through the chest wall in acute cardiac arrest, such as may follow accidental electric shock.

Evidence has continued to accumulate which indicates that intake of too much animal or artificially saturated fat in the diet raises blood cholesterol levels and increases susceptibility to coronary disease, as well as other forms of atherosclerosis. The use of vegetable oils instead of other forms of fat now is widely recommended, because of their higher content of unsaturated fats. Margarines prepared largely from corn oil and other unsaturated fats have appeared on the market. Preparations of unsaturated fatty acids and vitamins are offered for medicinal use. A new experimental drug, known as MER-29, has been tested for its ability to lower blood cholesterol levels. It is believed to interfere with synthesis of cholesterol in the body. (See also NUTRITION.)

A number of other new drugs have appeared for the treatment of cardiovascular disorders. A new antihypertensive agent, bretylium, was reported from England. Hydrochlorothiazide, a diuretic related to chlorothiazide, was found useful as an adjunct in the treatment of hypertension, as is the older drug. Further support was given to the value of streptokinase in dissolving clots in blood vessels. Considerable symptomatic relief from anginal attacks was reported by the use of iproniazid and related compounds, drugs more commonly used as "psychic energizers" in the treatment of depression. (See also HEART DISEASE.)

Hormones.—The synthesis of another complex hormone of the pituitary, the "master gland," was reported in 1959. The compound is a polypeptide, containing 13 amino acids, and has a molecular weight of about 2,000. It is said to be the largest compound of this type yet synthesized, but differs slightly from the natural hormone. The hormone is known as a-MSH (melanocyte stimulating hormone), the substance which controls pigment-producing cells in the skin. The synthesis was a by-product of a program aimed at the eventual synthesis of ACTH (adrenocorticotropic hormone). It had been learned that the 13 amino acids linked in a-MSH were the same as the first 13 of 39 amino acids in the larger ACTH molecule.

Pituitary growth hormone obtained in very limited quantities from human glands or those of monkeys is active when administered to pituitary dwarfs. However, hormone obtained from cattle (the chief source of supply of such glandular products) is not active in man, because of difference in chemical structure. Progress was made toward splitting up the larger beef hormone molecule, to obtain a compound more closely related to the human hormone, and thus useful in the treatment of growth disturbances in man.

Many undesirable effects may result from excessive or prolonged administration of adrenal cortex hormones of the cortisone type. Such medications may be needed in the treatment of children with severe asthma. However, it was reported that dosage above a certain critical level will result in retardation of growth during the period of treatment. (See also ENDOCRINOLOGY.)

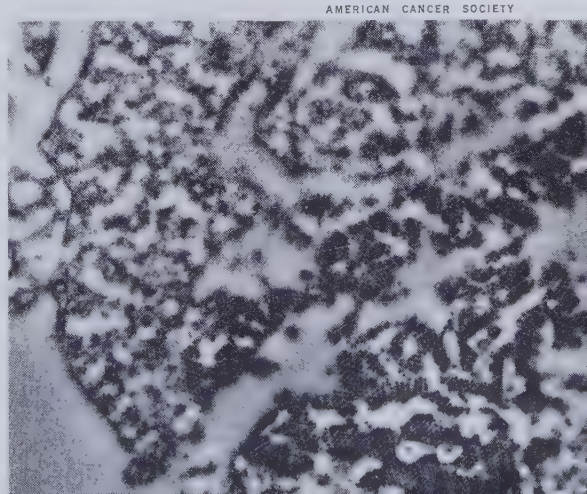
Infectious Diseases.—There was a significant increase in the prevalence of poliomyelitis in the United States during 1959. The number of cases had remained about constant in 1957 and 1958, after the use of polio vaccine became fairly widespread. However, there was an increase in 1959 to 8,278 cases, from 5,739 in 1958 (figures are through the 48th week of the calendar years). Furthermore, paralytic cases increased from 2,931 in 1958 to 5,430 in 1959.

The Public Health Service pointed out that this situation was due to inadequate use of available vaccine, especially in young children and adults, and in crowded, low-income areas. It was estimated that 65% of the paralytic cases in 1959 were in unvaccinated persons, and that only 2.5% were among individuals who had received the recommended four doses. During the scattered outbreaks of the disease in the summer months there was a temporary shortage of vaccine due to heavy demand. However, by December it was reported that millions of doses were lying unused in warehouses.

Extensive experience with several types of attenuated live polio virus vaccine has accumulated, especially in other countries where larger groups of unvaccinated people are available. Reports have been favorable, but this type of vaccine (which is

Polio virus crystals (tiny black dots) inside the human cell have been photographed for the first time by scientists of the New York State Health Department, who found that the viruses apparently are developed not in the nucleus but in the surrounding cytoplasm. The work also may help determine whether some virus types can cause cancer.

AMERICAN CANCER SOCIETY



given by mouth) has not been licensed for use in the United States, pending further study. One important question to be answered concerns the possibility that attenuated virus might regain virulence as it is transmitted from individual to individual. Preliminary reports indicate that such change has not been observed.

True to expectations, additional viruses have been found associated with respiratory infections. So-called Eaton viruses were found in cases of atypical pneumonia, long suspected of being a viral disease, as well as other illnesses. Hemagglutination or para-influenza viruses, first isolated in 1958, were found to be a frequent cause of respiratory infection in children and perhaps of coldlike symptoms in adults. Another group of respiratory and intestinal tract viruses were given the name "reoviruses." Attempts to prepare a vaccine to protect against respiratory infections are complicated by the multiplicity of agents involved.

An epidemic of eastern equine encephalitis, a viral infection, occurred in southern New Jersey in the late summer and fall of 1959, with a total of 21 deaths recorded. By early October, the trial of an experimental vaccine against the disease was reported.

The speedy recognition and identification of specific viruses, bacteria, and other infectious agents has been aided by refinement of the fluorescent antibody technique. It was observed some years ago that antibodies could be treated with fluorescent dye, thus rendering them readily detectable under the microscope when illuminated with ultraviolet light. Immune serum containing antibodies against the specific agent in question is prepared. When added to material such as secretions or tissues containing the specific infectious agent, antibodies immediately combine with the organisms. With fluorescent antibodies, the characteristic reaction may be recognized under the microscope. The technique has many possible applications and may permit presumptive diagnosis in some infections days or weeks earlier than would be possible with conventional methods.

An increase of approximately 50% in the incidence of infectious (viral) hepatitis was reported for the first half of 1959. There also was a 20% increase in diphtheria, a disease subject to complete control by preventive immunization of children. (See also PEDIATRICS; PUBLIC HEALTH; RESPIRATORY DISEASES.)

Nervous System.—Various chemical abnormalities in the blood and urine have been reported in recent years in patients with mental disorders, particularly schizophrenia. Now it has been determined that at least some of these may be more apparent than real, and may be due to variations in dietary pattern of the ill persons.

Further reports have appeared concerning the use of an extract of the pineal gland for the treatment of schizophrenia and other mental illnesses. A protein-free extract of beef pineal glands has been prepared and is said to produce both biochemical and behavioral changes in mental patients, but to be without effect on normal or neurotic individuals. The nature and mode of action of the active material are not known. The significance of these reports remains to be determined.

Considerable attention has been directed to the treatment of depressed states with "mood-elevating" or "psychic-energizer" drugs. Several new compounds of this type have been introduced and are reported to give good results in properly selected patients. The flood of new "tranquilizers" has continued, with the introduction of some compounds of much greater potency than the earlier drugs of this type. Most of these compounds are phenothiazine derivatives. (See also NERVOUS SYSTEM; PSYCHIATRY AND MENTAL HEALTH.)

(See also the Index entries on *Medicine* and specific diseases and drugs.)

JAMES PAISLEY HENDRIX,
Associate Professor of Medicine,
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MELLON INSTITUTE. The independent research program (fundamental scientific investigations) of Mellon Institute (4400 Fifth Avenue, Pittsburgh 13, Pa.) gained strength in 1959 through growth of staff and from substantial contributions to knowledge. In applied science research, sponsors are nurturing long-range investigations, with growing emphasis on creative research in areas of significance. A plan has been developed for industrial affiliation with the institute's fundamental research. That research has attracted increasing support from government agencies. Construction of two new buildings has been completed, and the laboratories have been occupied.

Independent Researches.—Properties of certain enzymes (esterases) have been studied. Under research are the mechanism of enzymatic hydroxylation and modified fibrous proteins. Studies in the inorganic field have included the coordination chemistry and unusual oxidation states of transition metals. The chemistry of osmium has had main attention. Research on natural and synthetic macromolecular substances has continued. Stress-temperature measurements have been made on fibers prepared from muscle. Several papers have been published on mechanical breakdown of fibers. Other activities relate to synthesis of molecules of known structure and correlation of physical properties with chain architecture. Thermodynamics of dilute polymer solutions is under investigation.

Other projects are concerned with crystalline imperfections of metals, phase transformations in metals and alloys, and lattice spacings of intermediate alloy phases. A study with medical specialists, on corrosion of metals in living tissues, has yielded information to furnish statistically important differences in corrosion resistance among metals implanted in flesh. In research on corrosion implants in bone, levels of trace elements in normal rabbit bone have been established.

Investigations are active in structural organic chemistry. A nuclear magnetic resonance method has demonstrated that there exists in cyclic sulfite esters stereoisomerism of a type previously only suspected. Nuclear magnetic resonance spectroscopy is a new, powerful technique aiding in the solution of many organic analytical problems. Under way are high-resolution infrared absorption measurements at temperatures as low as 4.2°K. on the photolysis products of ammonia and other compounds. Another project deals with the infrared and Raman spectra of inorganic molecules and ions. Studies in radiation include decomposition of hydrocarbons, kinetics of photochemically produced free radicals, and radiation-induced cross-linking of polymers in solution.

Applied Researches.—Investigations of the physical state of new alloys and high-temperature materials are important aspects of long-range research. There is a study of kinetics and thermodynamics of reactions between gases, metals, and slags. A project is evaluating ferrous alloys for high strength at elevated temperatures. From another undertaking, a new ultrahigh-strength steel for missiles has been developed.

Researches of concern to the public have given valuable results. This fact is brought out in accomplishments in air-pollution control, studies of food additives, researches in occupational health,

researches into the nature of the synergism that exists between silicosis and tuberculosis, and the program on water-pollution abatement. The influences of nonphenolic compounds on flavor of drinking water have been studied, and methods for separating suspended solids from waste water constitute another project.

A ceramic program embraces viscosity and surface tension characteristics of porcelain enamel. Structural clay products studies pertain to heat distribution in kilns and physical and chemical processes that occur in clays during firing. Computer components research encompasses techniques associated with fabrication of miniature, essentially two-dimensional printed circuitry. Sectors of this work have been successfully concluded.

Applications for proteins and starches derived from corn have been found as paper and textile coatings. In foods, emphasis has been directed toward new processing methods, and identification and preservation of natural flavors. Another fellowship has devised a mixture of synthetic fibers with outstanding characteristics applicable to life jackets. Exceptionally good permanent softeners for attaching resins to cotton have been discovered.

Among other research projects, dibasic acid and orthosilicate esters have been upgraded as lubricants. A better understanding of constituents has come from a study of emulsion paints. Research on polyethers has benefited the polyurethane foam industry, and researches in petroleum have been concerned with chemistry of petroleum genesis, combustion chemistry, and catalysis.

W. A. Hamor,
Senior Director of Research, Mellon Institute.

MELONS. See Vegetables.

MENTAL HEALTH. See Psychiatry and Mental Health and the Index entry, *Mental Health.*

MERCHANT MARINE, U.S. There were 937 vessels of 1,000 gross tons and over in the active oceangoing United States merchant fleet on Sept. 1, 1959, or eight more than were in the active fleet on Sept. 1, 1958. The total United States merchant fleet, active and inactive, consisted of 3,097 vessels, or 29 less than the total of a year earlier. The decrease was accounted for by a drop of 43 ships in the government-owned fleet, due for the most part to the scrapping of old Liberty ships from the National Defense Reserve Fleet. This fleet numbered 2,039 vessels on Sept. 1, 1959, as compared with 2,088 on Sept. 1, 1958. About 900 of the ships in the fleet had been selected for retention as a nucleus for emergency use; the remainder are to be scrapped over a 10-year period.

The total privately owned merchant fleet increased by 14 ships; 24 ships were returned from foreign to United States registration, and 22 new ships were delivered into service, while 6 ships were transferred to foreign flags, 19 were traded in to the government, and 7 were lost, scrapped, or otherwise disposed of.

Large oceangoing ships under construction or conversion in United States shipyards on Sept. 1, 1959, numbered 74 vessels with a total weight of 1,803,746 deadweight tons and an estimated value of $785 million. Of these, 68 were new ships, including 1 combination passenger and cargo vessel, 37 freighters, 28 tankers, and two special types. The total number was a decrease from the 99 ships being built or converted on Sept. 1, 1958, which totaled 3,056,079 deadweight tons and were valued at over $1 billion.

During the year ending Sept. 1, 1959, 50 ships were completed, of which 3 were passenger-cargo ships, 4 were Great Lakes bulk carriers, 27 were tankers, and 16 were conversions. Of those delivered, 10 tankers were for foreign-flag operators. Orders were placed during the year for 30 ships, including 20 new freighters, 1 tanker, 1 barge, 1 ferry, and 7 conversions; and 5 tanker orders were cancelled.

The world's first nuclear-powered merchant ship, the N.S. (Nuclear Ship) *Savannah*, was launched on July 21, 1959, and was scheduled to be delivered in 1960. (See also Atomic Energy.)

The long-range replacement program agreed to by United States shipping companies receiving government help was well under way. Of the 293 vessels to be built by 14 companies in the next 15 to 20 years at a total estimated cost of about $4.6 billion, 4 ships had been delivered, and 34 were under construction in 1959. As the new long-range replacement ships are built, the superseded vessels are traded in to the government and placed in reserve, thus improving the quality of the reserve.

In addition to the nuclear ship and the conventional types of ships thus far ordered in the replacement programs, research was being carried on by the government in conjunction with several private firms to build new types of ships such as underwater cargo and tanker ships and passenger and cargo-carrying hydrofoils which would skim over the water at high speeds. Also, research was being conducted on advanced navigational and safety devices that would make merchant ships of the future safer and more economical to operate. (See also Shipbuilding.)

The percentage of United States waterborne foreign trade carried by United States flag ships continued to decline during 1959. However, with the opening of the St. Lawrence Seaway (q.v.) in the spring of 1959, two United States companies started to offer service from the Great Lakes, one to the Caribbean and the other to the Mediterranean. Applications from six other companies to provide Great Lakes shipping service with government aid were under study.

Eight previously unsubsidized United States flag operators had applied for government assistance in offering regular shipping services. Under the Merchant Marine Act of 1936, as amended, the government may assist companies to provide service on foreign trade routes which have been determined to be essential to national trade and defense by paying the difference between United States costs of operation and costs of foreign competitors on the same routes. Similarly, the government may pay the difference between domestic and foreign costs of building ships for United States foreign trade in order to provide work for shipyards and shipbuilding workers deemed essential to the nation's security.

MERCHANT FLEETS OF THE WORLD

(Oceangoing steam and motor ships of 1,000 gross tons and over, as of Dec. 31, 1958.)

Country	No. ships	Dwt. tons
World total	16,966	158,047,000
United States:		
Privately owned	1,007	13,429,000
Government owned	2,054	20,223,000
United Kingdom	2,522	24,372,000
Liberia	1,020	17,790,000
Norway	1,288	14,142,000
Japan	870	7,723,000
Panama	546	6,609,000
Italy	718	6,503,000
West Germany	866	5,660,000
Netherlands	580	5,465,000
France	624	5,398,000
Others	4,871	30,733,000

Clarence G. Morse,
Maritime Administrator.

MERCURY. World production of mercury in 1958 totaled 248,000 flasks (of 76 pounds each),

representing an increase for the tenth successive year. A 7% drop in output in Italy, caused by work stoppages at the large mercury-producing mines, was more than compensated for by increases in Mexico, Peru, and the United States.

Production in the United States in 1958 rose by 10% to 38,067 flasks, compared with 34,625 flasks in 1957, according to the U.S. Bureau of Mines. This was the largest output since 1883, except for 1941–43, and constituted 15% of world production in 1958, compared with 14% in 1957. Domestic production in the first nine months of 1959 was 23,490 flasks. The number of mercury mines in 1958 dropped to 101, from 120 in 1957. California continued to be the leading mercury-producing state, with 59% of the total; Nevada ranked second, with 19% of the total; Alaska, third with 9%; Idaho, fourth with 7%; and Oregon, fifth with 6%. Imports of mercury for consumption totaled 30,158 flasks in 1958, compared with 42,005 flasks in 1957. (See MINERAL PRODUCTION for table showing output by major producing countries.)

MERCURY, Project. See NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; SPACE FLIGHT.

METALLURGY. Metal Production.—Although the iron blast furnace has been the standard method of iron production for more than a century, at least 15 direct-reduction processes are now receiving attention in the United States. Direct-reduction processes are particularly attractive for treating concentrate from low-grade ores, where coke is expensive, or where there is not sufficient market for the output of a large, efficient blast furnace. Direct-reduction processes have been in commercial use for some years in other countries; and in the United States, several processes are in the pilot plant and semicommercial stages.

The Republic Steel Corporation, in conjunction with the National Lead Company, has developed a rotary kiln process for reducing iron ores. The R-N process has been used to treat over 120,000 tons of low-grade Clinton ore in a Birmingham, Ala., plant. (The Clinton ore is nonmagnetic and could not be concentrated by usual processes.) The reduced iron is collected by magnetic concentration and briquetted. Over 8,000 tons of R-N sponge iron briquettes have been successfully used in electric steelmaking furnaces.

Republic Steel is also developing a direct-steel process in which a bed of high-purity magnetite concentrate is passed through a reduction furnace on a traveling grate. The hot sintered iron is stripped from the grate and rolled to usable sheet steel in one continuous operation.

Three fluidized bed processes are being developed for reducing iron ore concentrates with hydrogen or with hydrogen and carbon monoxide: the Esso–A. D. Little process, the Nu-iron process of the United States Steel Corporation and the H-iron process of Bethlehem Steel and Hydrocarbon Research. The H-iron process appears to be the nearest to commercial operation; it is being operated at a pilot plant in Trenton, N.J., and in a small plant for the production of iron powder at the Alan Wood Steel Company. Bethlehem Steel in 1959 was constructing a semicommercial H-iron operation at its Los Angeles, Calif., steel plant. H-iron is expected to solve the problem of a reliable supply of raw material for electric furnace steelmaking on the Pacific coast.

Oxygen steelmaking production capacity in the United States has quadrupled in the past year. Early in 1959 an L-D oxygen vessel was started at the Kaiser Steel Corporation's Fontana, Calif., plant. There are now five plants in the United States and Canada using the oxygen steelmaking process. Present annual capacity in the United States is more than 4 million tons, and a capacity of 15 million tons is expected within the next few years. (See also IRON AND STEEL.)

Electron Beam Techniques.—The heat produced by the impact of a high-velocity stream of electrons on metals is being used commercially to melt and refine and to cut and weld metals. Electron beam work is expensive, but refining by vaporization, avoidance of contamination, and the ability to concentrate energy and produce extremely steep temperature gradients justifies its use with refractory metals and for other special operations.

Explosive Forming.—Explosive forming is being used commercially for the forming of metal parts for the missile industry. Metal shapes which cannot be satisfactorily fabricated by conventional means because of large dimensions, high strength of material, or limited quantity requirements can be fabricated by explosive forming with a very low investment in equipment. Relatively slow-burning explosives are used in low-pressure forming. The gases are contained and used to force the workpiece to the configuration of the die. In high-pressure forming an open die is used and the energy from a high explosive is transmitted by an intermediate medium, such as water, to force the workpiece into the die. Low-pressure work is safer but more expensive, as closed dies must be used.

New Alloys.—A new aluminum alloy (designated X-2020) which contains lithium has been developed by the Aluminum Company of America. The alloy was developed for the next generation of civilian aircraft, which will encounter aerodynamic heating. As compared with conventional aluminum alloys, the new alloy is 3% lighter and has 8% greater elastic stiffness. It will maintain good strength up to 400°F., which is 100°F. above the temperature limit of other aluminum alloys.

A new steel containing 9% nickel has been announced by the International Nickel Company of Canada, Ltd. It was developed to provide a moderately priced material for subzero service. It can be heat-treated to produce ferrite and austenite, a very stable, high-carbon metal with high ductility at low temperatures. The 9% nickel steel is also suitable for carburizing. High surface hardness, with minimum distortion, can be obtained by slow cooling from the carburizing operation.

(See also CHEMISTRY; MINING.)

O. CUTLER SHEPARD,
Professor of Metallurgy, Stanford University.

METALS. See CHEMISTRY; METALLURGY; MINERAL PRODUCTION; MINERALOGY; MINING.

METEOROLOGY AND CLIMATOLOGY. The weather patterns of the seasons from autumn 1958 through summer 1959 were as follows:

Autumn 1958.—September through November was slightly warmer than average over the entire area of the 48 contiguous states of the United States. The greatest anomalies (over 4°F.) were noted along the southern California coast. November, in particular, was an abnormally mild month but ended with heavy storms and blizzards in the northern Great Plains. Rainfall was quite deficient in the Prairie states but abundant in southern Texas.

Winter 1958–59.—December through February was colder than average from the Rockies to the Atlantic seaboard. Especially in the Great Lakes region this was an old-fashioned winter with abundant snowfall. December was in many areas of the Northeast the coldest since 1917; February was considerably milder. The Western states had at the same time temperatures of 4° to 6°F. above the average. Precipitation was deficient in the Southwest, in northern Wisconsin, Minnesota, and North Dakota, but Florida and the northern Mountain states had excessive amounts. January floods caused damage in Ohio and Pennsylvania. In other countries, droughts prevailed in Queens-

land, Australia, and in Brazil and Ghana, but heavy January rains caused a disastrous dam break in Spain.

Spring 1959.—March through May was fairly warm and late frosts were rare. The southern California temperature anomaly (of over 4°F. warmer than average) persisted. There were slightly above-average temperatures in all parts of the United States except the Northwest, which was slightly cooler than seasonal. Rainfall was most deficient in the Southwest and the northern Plains, but parts of Nebraska, Iowa, and central Florida had over twice their average amounts. In March, storms of hurricane intensity caused many casualties on Bahrein (in the Persian Gulf) and in the Malagash Republic (Madagascar), and left tens of thousands homeless. April floods ravaged parts of Argentina, Uruguay, and Brazil.

Summer 1959.—June through August was warm over most of the United States. Only the northwest corner and parts of the southern Great Plains had below-average temperatures. The Northeast was particularly hot toward the end of June and in August, when many new heat records were set. Rainfall was very heterogeneous during the season. The Texas-Oklahoma-Arkansas area and the northern Great Basin received over 50 per cent more rainfall than average. Serious deficiencies of precipitation occurred in Montana, the Dakotas, and the central Great Plains. Warm weather and adequate rainfall in the Middle West led to a bumper corn crop. The Pacific region and the Far East were plagued by an unusually large number of typhoons and excessive rainfall. China suffered devastating floods in Kwangtung and Kwangsi provinces. Hong Kong received nearly 30 inches of rain in four days, and thousands were made homeless. Korea and Japan also suffered severely.

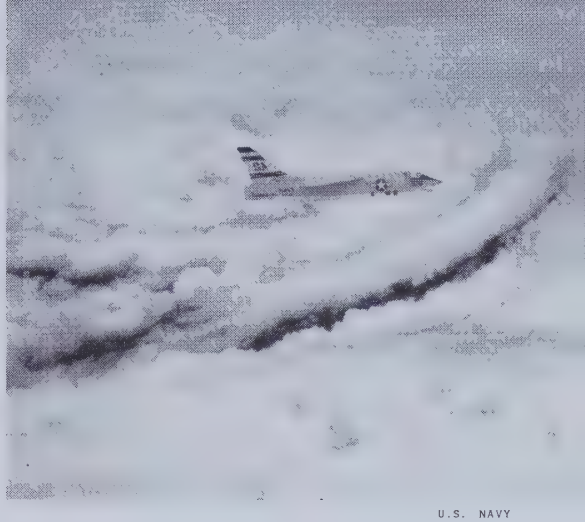
Storms.—Severe storms in the United States in 1958 included 565 reported tornadoes, which caused 66 deaths and $28 million damage. (These figures show a considerable reduction from the preceding year.) Other windstorms resulted in 129 fatalities and property damage exceeding $100 million. The 10 tropical storms of the Atlantic and Caribbean caused only two deaths in the United States but 47 in the Caribbean area. Property damage of $12 million on the mainland was also considered very moderate in comparison with other years. (For a record of severe storms in 1959, see the entry *Accidents and Disasters—Hurricanes, Tornadoes, and Typhoons*—in Part 2 of the CHRONOLOGY at the front of this volume.)

Technological Progress.—New methods of meteorological observations dominated research in this field in 1959. Most exciting were the attempts at observing the earth's atmosphere from above. Several Nike-Cajun rockets obtained cloud-system pictures, which were recovered at sea from ejected capsules containing a homing beacon. The most interesting cloud pictures, obtained from an Atlas missile fired to a height of 700 miles on Aug. 24, 1959, covered the Caribbean and parts of the east coast of North America and showed a frontal system (see illustration on page 471).

Other rockets have been developed to eject parachutes or balloons carrying rawinsondes at heights of 35 to 50 miles. A few successful test flights have been accomplished, but much development work is needed before routine operations can be expected. These rocket sondes are bridging an important gap in atmospheric observations between conventional balloons and satellites.

A balloon altitude record was announced on Feb. 11, 1959, by the U.S. Army Signal Corps. A neoprene balloon, launched at Fort Monmouth, N.J., expanded from 10 feet to 65 feet in diameter as it rose to an altitude of nearly 28 miles. The coldest temperature it recorded was −85°F. at 10 miles; at the top of the flight the temperature had increased to 40°F.

The first weather satellite, also instrumented by the Signal Corps, was successfully launched on Feb. 17, 1959, as Vanguard II (or 1959 Alpha) from Cape Canaveral, Fla. Two photocells aboard were designed to measure the intensity of sunlight reflected from the earth, and to distinguish between large cloud layers with 80 per cent reflection, land areas with 15 per cent, and sea areas with 7 per cent reflection. Unfortunately, the satellite acquired a complex wobbling motion which has made the reduction of data virtually impossible. Explorer VI, launched on Aug. 7, 1959, also carried a cloud cover experiment. Data were transmitted from a crude television scanning device. (See also SPACE FLIGHT.)



U.S. NAVY

Navy Crusader plane flies over the eye of hurricane Gracie, which struck South Carolina on September 29. Eye of the storm is visible directly above plane's tail in photograph.

Hurricane Research.—Numerous soundings taken of hurricanes have shown high temperature excesses in the core at all levels above the surface. This warm core widens with height, increasing from 20 to 30 miles at 15,000 feet to 100 or more miles at 30,000 feet. The greatest temperature excess of about 10°F. is in the mid-troposphere. A study of Pacific typhoons has shown that one of the important breeding grounds is west of a semipermanent low pressure trough in the upper air. This trough, at 40,000 feet, is located at longitude 170°W., and the origin of the tropical storms is upstream at longitudes 125°–145°E.

New systems are being developed to track and measure hurricanes. Among them is the balloon-borne radio beacon dropped by reconnaissance planes into the eye of the storm, where the circular wind system will retain it for a while. In the first successful flight of this device, made during hurricane Helene of 1958, the beacon stayed in the eye and was tracked for nearly two hours before the batteries gave out. It was employed again successfully during hurricane Hannah in October 1959.

Japanese scientists have developed automatic wind-measuring stations for coastal use, which

Driven by the 125-mph. winds of hurricane Gracie (September 29), heavy sea lashes the Charleston, S.C., waterfront.

UPI

transmit hourly data on speed and direction. More elaborate is the U.S. Navy's automatic weather station which has survived mooring tests in water over 12,000 feet deep. One station in the Gulf of Mexico transmitted, while unattended, 6-hourly observations of pressure, wind, and air and water temperatures for over two months.

Polar Weather.—Far from being quiescent in the winter night, much weather activity takes place in the polar regions during the sunless period. Low pressure systems in the Arctic outnumber highs by about 2 to 1. Although anticyclones are fairly frequent over Greenland, which has been pictured as the seat of a glacial anticyclone, they are even more frequent over the Yukon. In Antarctica a low pressure circulation center exists in the higher stratosphere near the Pole of Inaccessibility (latitude 82°S. and longitude 55°E.). Cyclones pass even in winter over the South Pole, accompanied by temperature changes of as much as 37°F. A secular temperature rise of a little over 4°F. has been noted since 1911, when the first observations on the Antarctic continent were made. This compares with an increase of well over 5°F. in the Arctic during the same period. (See also ARCTIC EXPLORATION.)

Atmospheric Admixtures.—Much was learned during the International Geophysical Year (IGY) about radioactive fall-out of materials resulting from nuclear explosions. Dry fall-out is three times as heavy as the wash-out of materials through precipitation. Deposition speeds are close to one inch per second.

Carbon dioxide, which has been suspected as an agent causing recent atmospheric warming, showed very little variability in the Antarctic, on Mauna Loa in Hawaii, and over the oceans. The undisturbed value of this gas in the air appears to be 312 ppm. (parts per million); in Sweden a range of 250 to 400 ppm. was noted. From the dilution of the carbon-14 in the natural carbon dioxide by that gas derived from fossil fuel, which is bare of carbon-14, an 8 per cent increase in total carbon dioxide in the atmosphere has been calculated.

Excellent ozone observations also were obtained during the IGY. At Mauna Loa the range of the gas was from 20 to 100 micrograms per cubic meter of air; the highest concentrations were noted in April, the lowest in October. In the Antarctic the mean concentration was 64 micrograms per cubic meter, but the highest values were noted in midwinter (May–August) and the lowest in February and March just before the disappearance of the sun. In the Canadian Arctic, measurements of total ozone in the atmosphere were made during the arctic night by spectroscopic study of sunlight reflected from the moon. These observations support the view that a marked increase in ozone is coincident with the abrupt end of the arctic winter temperatures in the stratosphere.

Cloud Physics.—Observations show that the liquid water content of precipitating convective clouds exceeds 3 to 4 grams per cubic meter. When the water content drops below 2 grams per cubic meter the clouds are dissipated. The size of cloud droplets is directly related to the number of small condensation nuclei; the more nuclei, the smaller the droplets. The presence of fewer nuclei and larger droplets predisposes to better coalescence and precipitation. The largest droplets are generally found in air of maritime tropical origin; the smallest, in polar continental air.

Snow shows characteristic crystal forms, depending on the temperature, as follows: 32° to 27°F., thin hexagonal plates; 27° to 23°F., needles; 23° to 16°F., hollow prisms; 16° to 10°F., hexagonal plates; 10° to 3°F., dendritic stars. Volcanic eruptions in Japan, especially of Mount Asama, have brought into the air large numbers of freezing nuclei, which are suspected to have caused significantly heavier rainfall downwind during periods of activity. Clay minerals, which are quite active as freezing nuclei once they are activated by a thin layer of ice, are likely to be the most common natural freezing nuclei.

A very important laboratory discovery was made by H. M. Papee of Ottawa, Ontario. He found that ordinary salt, when treated by X-rays, radiofrequency discharges, or corona discharges, shows blue discoloration, a result of colloidal sodium in the outer strata of the crystal lattice. The blue salt will absorb water much more readily than ordinary salt; hence, it constitutes a very active condensation nucleus. It has also been found to act readily as a freezing nucleus. Because salt originating in the ocean is present in many parts of the world, and because electrical discharges are equally common, blue salt may well be a very prevalent natural rain inducer.

Little new knowledge on artificial weather modification has been acquired. University of Arizona scientists have been seeding orographic cumulus clouds with silver iodide for two years. Radar echoes show statistically significant results in changing the small cloud drops to raindrops. The USSR has for the first time officially announced cloud modification experiments. Soviet scientists successfully used dry ice to open up airfields blanketed by fog composed of supercooled droplets. Silver iodide, which is often used as a cloud seeding agent, can also be used as a tracer of air currents in which it is dispersed. Downstream from the generator, tests for freezing nuclei by the conventional counting chamber can trace the air trajectories.

Hail-suppression experiments by Austrian and Swiss scientists using silver iodide, dispensed both by rocket and ground generators, showed no conclusive evidence of interference with hail but apparently caused increases in precipitation upslope from the sprayers. French observations of destructive hailstorms in the Pyrenees indicated that the presence of a jet stream or strong wind aloft is an associated condition. No such coincidence could be found in hailstorms in the United States.

Upper Atmosphere.—Analyses through stereoscopic photographs of drifting luminous clouds produced by vaporized sodium ejected from rockets have yielded wind data up to a height of 125 miles. In the three cases observed up to late 1959, the strongest winds (with speeds from 200 to 400 miles per hour) were noted between 50 and 70 miles up. At the higher levels the wind slowed to 50–90 mph. The wind directions were primarily from southwest to northwest.

Much information on temperatures in the high atmosphere has been accumulated from the earth satellites. At a height of 150 miles, higher values were noted in the daytime than at night, and also in polar than in equatorial regions. It is assumed that these differences are caused by interaction of terrestrial magnetic fields with corpuscular streams from the sun. Anomalies in these streams cause magnetic storms which are believed to have influences on terrestrial weather. Thus, in the winters of 1956–57 and 1957–58, about three days after magnetic disturbances, low-pressure troughs at the 30,000-foot level in the Alaska-Aleutian area developed into particularly large weather disturbances. This type of solar-terrestrial relation prompts a continuing search for other connections.

Ultraviolet radiation and X-rays from the sun were measured at heights of 50–150 miles by rockets fired from the U.S.S. *Defiance* near the Danger Islands in the South Pacific during a solar eclipse on Oct. 12, 1958. In the complete lunar shadow the ultraviolet disappeared but the X-rays persisted, suggesting that the sun has an X-ray halo. Another check rocket, fired after the eclipse, reached its peak altitude while an intense solar flare was in progress. The X-ray flux at that time became strongly enhanced. Absorption of these solar rays in the outermost layers of the atmosphere is at least partly responsible for the high temperature inferred from data sent back by satellite Explorer IV. The satellite recorded these height-temperature relationships: 100 miles, 700°F.; 150 miles,

1,100°F.; 200 miles, 1,500°F.; 250 miles, 1,800°F.; 300 miles, 2,100°F.; 350 miles, 2,400°F.

Climatic Change.—Of great importance to the theory of climatic changes is the claim of researchers at the Lowell Observatory in Flagstaff, Ariz., that the solar constant, or total radiation emission of the sun as received at the outer layers of the earth's atmosphere, is increasing. This was deduced from observations of the reflected sunlight of the planets Uranus and Neptune. From 1952 to mid-1958, this increase was estimated to be 2 per cent of the total solar radiation.

The high temperature anomalies of the Pacific Ocean surface off the west coast of the United States pose a new puzzle. Changes in the atmospheric circulation have caused increased advection of warm water from the south, which has reduced the usual upwelling of cold bottom water. The high water temperatures have caused the warming of the air masses, and there is a tendency for reduced cloudiness and hence an increase in solar radiation. Some meteorologists believe that this may lead to a perpetuation of the anomaly.

Radar Meteorology.—Radar has added immensely to the weather forecaster's instrumental arsenal. A radar reflective balloon for upper wind measurements has been developed which replaces the balloons with attached reflectors by having an inside coating of small aluminum dipoles. This reduces the drag and only slightly increases the height of the balloon. As the balloon expands upon rising, the reflective target area grows with it, improving the accuracy of observations.

Severe storms are characterized by bright radar echoes. The center of greatest radar reflectivity is usually seated between 15,000 and 20,000 feet, but the most severe storms show echoes at heights greater than 45,000 feet. In tornado situations, a wavy pattern is sometimes observed to form in the radar echoes caused by an approaching squall line. Tornadoes are most frequently observed just east of the apex of the wave or in the squall line to the southwest of it. Some tornado cyclones have been noted to extend to at least 30,000 feet high and may even go to 36,000 feet.

When radar echoes extend above 30,000 feet, the probability of hail occurrence increases rapidly with echo height. In New England over one third of the storms observed with echoes over 45,000 feet high carried hail. Lightning and hail also seem to be closely correlated. When lightning has shown a frequency of less than 10 strokes per hour, no hail has been reported. Hail nearly always occurs, however, in storms with lightning strokes numbering more than 100 per hour. Not all weather radar echoes result from clouds or precipitation. Cloudless cold fronts also give reflections, caused by changes in the index of refraction due to mixing of air masses of different temperature and moisture content in the frontal zone.

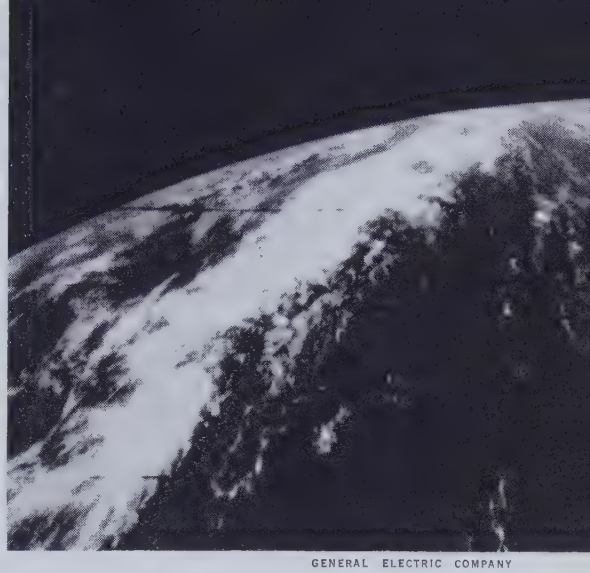
Aircraft accidents show that the danger from thunderstorms is still underrated. Measurements have shown updrafts of 220 feet per second and downdrafts of 140 feet per second in thunderstorms. Pilot reports indicate elevation changes of as much as 6,000 feet in 30 seconds, accompanied by severe turbulence.

Organizations.—In April 1959 the third World Meteorological Organization Congress met in Geneva, Switzerland. This specialized agency of the United Nations now has 103 member states and territories with weather services (Iran was admitted as the 103d member in October 1959). Coordination of the exchange of weather information has been greatly advanced by this cooperative effort. The World Meteorological Organization prize for scientific research was awarded in 1959 to Dr. Jacob Bjerknes, of the University of California at Los Angeles.

In the United States, 12 universities, stimulated by a report of the National Academy of Sciences—National Research Council, have formed the University Committee on Atmospheric Research. The purpose is to establish a joint institute which will provide the large facilities needed for advanced research in this field. Congress has appropriated funds for the National Science Foundation to conduct a survey of the feasibility of such an institute.

(See also ATMOSPHERE RESEARCH; INTERNATIONAL GEOPHYSICAL YEAR.)

H. E. LANDSBERG,
Director, Office of Climatology, United States Weather Bureau.



GENERAL ELECTRIC COMPANY

Photograph taken from an altitude of 250 miles during flight of Atlas missile fired on August 24 shows a large weather front forming off the Atlantic coast of the United States.

METHODIST CHURCH. Special stress was placed on evangelism and higher education during 1959. Reversing the usual process, a team of ten preacher-evangelists from lands to which American Methodists have been sending missionaries toured United States churches on a preaching mission in October and November. Similarly, American Methodist ministers and laymen made evangelistic visits to Malaya, the Philippines, Japan, and Central America. In the United States in October, 400 Methodist ministers from 40 states assisted the pastors of Southern California in a week's campaign of visitation evangelism.

Continuing for the 14th year an international postwar scholarship project, the church, during the 1959–60 college year, supported 110 students from overseas in 34 colleges and hospitals in the United States. Seventeen other scholarship students were studying in universities in other countries. In Anchorage, Alaska, the cornerstone of the Alaska Methodist University was laid on July 12. The college will open to 450 students in September 1960.

An indication that the shortage of ministers may be slackening is suggested by the record number of students graduated in 1959 from the 10 Methodist theological seminaries. Degrees were granted to 680, an increase of 86 over the previous year; enrollment was up 10%. Two new graduate schools of theology will help meet the need for additional clergy—the National Methodist Theological Seminary in Kansas City, Mo., which opened in September 1959, and the Methodist Theological Seminary in Worthington, Ohio, which is to open in September 1960. The cornerstone was laid on June 15 for a $5 million plant for the Southern California School of Theology in Claremont.

Methodists held three nationwide meetings during the year. One, the National Town and Country Conference, met in Wichita, Kansas, July 21–24. Here, reports were made on the religious beliefs of Methodist laymen and ministers. Also studied were plans for group ministries, whereby several pastors are giving the benefit of their special talents, not to one congregation, but to a group of associated congregations.

A National Convocation of Methodist Youth met at Purdue University, August 24–28, with 6,000 attending. Such questions as world peace, race relations, and the attainment of worship values through drama and jazz were discussed.

An innovation, a Conference on Human Relations, brought 1,000 to the campus of Southern Methodist University, September 1–4. Delegates explored what Christians can do toward bettering race relations in such tension areas as the church, education, housing, and employment.

A new monthly magazine, *Music Ministry*, began publication in Nashville, Tenn., in October, with the Rev. V. Earl Copes as editor. The periodical is part of the general movement for the improvement of church music sponsored by the Na-

tional Fellowship of Methodist Musicians. Also in October, *The New Christian Advocate*, an official monthly for the clergy, became a biweekly. Its format was altered from pocket to newsweekly size, and its title was changed to *Christian Advocate*.

A motion picture to help solve the problem of interfaith marriage was released on September 1. The film was produced by the Family Life Department and the Methodist film production agency, TRAFCO.

It was announced in October 1959 that the membership of The Methodist Church in the United States had reached 9,798,508, including 27,750 ministers but not including 1,536,419 preparatory members. The number of congregations totaled 39,236.

The Council of Bishops elected Bishop Marvin A. Franklin of Jackson, Miss., as president. He is to be succeeded on April 21, 1960, by Bishop Gerald Kennedy of Los Angeles. Bishop Roy H. Short of Nashville, Tenn., is secretary.

RALPH STOODY,
General Secretary and Director, Commission on Public Relations and Methodist Information of The Methodist Church.

METROPOLITAN AND REGIONAL PLANNING. See CITY PLANNING; HOUSING.

MEXICO. As the third largest republic of Latin America, Mexico has an area of 760,335 square miles. A southern neighbor of the United States, Mexico is flanked by the Pacific Ocean (west and south) and the Gulf of Mexico (southeast); it borders Guatemala and British Honduras to the southeast.

Population.—With a growth rate since 1950 of almost 3% per year, Mexico's population (est. June 1959, 33,304,253) was expected to exceed 60 million by 1980. Although 55.7% of the population in 1956 consisted of rural dwellers, cities were growing more rapidly than rural areas. The nation's capital, Mexico City, located in the Federal District, had 4,924,500 persons in 1959; the next largest cities (with 1959 pop. est.) are Guadalajara (560,000), Monterrey (471,124), Puebla (325,940), and Mérida (231,881). Approximately 60% of the population is mestizo; 30% is Indian; and 10%, white. Spanish, the official language, is spoken by 88.8% of the population; 7.6% also speak one of the 50 Indian dialects, while 3.6% speak pure Indian languages.

Government.—The central government exercises extraordinary authority, although the 1917 constitution provides for a federal republic (which presently has 29 states, 2 national territories, and a Federal District). The president (Adolfo López Mateos), elected to a 6-year term beginning Dec. 1, 1958, wields wide legislative and executive powers; he cannot be re-elected. A bicameral legislature (including a Senate with 60 members and a Chamber of Deputies with 162) is composed almost entirely of members of the Partido Revolucionario Institucional (PRI), whose policies are formed by a party council. The president appoints the Supreme Court of 21 members for life tenure.

Education and Religion.—Jaime Torres Bodet, who became minister of education in December 1958, was confronted with a population of which an estimated one half to one third was illiterate. Mexico had fallen short of its constitutional guarantee of 6 years of free, compulsory education. The 1959 appropriation totaled 1,428.8 million pesos (12.49 pesos = U.S.$1), or 15% of the budget. About 40% of the 7.6 million school-age children could not attend schools because of lack of facilities. In 1959, 193,771 students attended 693 secondary and vocational schools and 30,011 attended 79 secondary and normal schools. In addition to the National University of Mexico and the National Polytechnic Institute, each with an average enrollment of 23,000 students, there are 16 state universities.

Finance.—The 1959 budget (as amended) of 9,643.8 million pesos reflected a 14.7% increase over the previous year, and 45% of this amount (4,213 million pesos) was allotted to economic development. Income taxes were expected to provide 30% of the 1959 revenues (5% less than in 1958); customs duties, 25%; and corporation taxes, 22%. A budget deficit of 71 million pesos was incurred in 1958, principally as the result of government salary increases. The public debt for September 1959 totaled 11.8 billion pesos, of which the foreign debt accounted for 5.225 billion pesos and the internal debt, 6.585 billion pesos.

Transportation and Communications.—Federal expenditures for highway construction and maintenance totaled 780 million pesos in 1959, while 118.5 million pesos were spent on railway construction and modernization. Mexico has invested 14.8 billion pesos on road construction since the beginning of the program in 1925, 46% of which was derived from gasoline taxes. In 1959 there were 17,140 miles of paved roads and 10,666 miles of surfaced roads. Two major and 20 secondary domestic air carriers service an airway system which extends from Mexico City to 50 important Mexican towns and to the United States. Since 1940 the number of Mexican air passengers has increased from 87,000 to over 2 million a year. There were 482,000 telephones in Mexico in 1959, half of which were located in the Federal District. Radio sets were estimated at 3 million in 1959, while broadcasting stations numbered 270; television sets totaled 450,000, serviced by 15 transmitters which were located in the principal cities.

General Economic Conditions.—Mexico's gross national product in 1958 rose to an estimated value of 67,470 million pesos (at 1950 prices), 4.6% above the previous year but considerably below the growth rate of 1954–56. The increase was attributed chiefly to the substantial expansion of agricultural production, while other sectors of the economy increased at a slower rate. Nominal gains were registered in railroad loadings and oil production, and new construction fell 37% during the first half of 1959 as compared with the same period in 1958. The cost of living index (1953 = 100) rose 15 points in 1958 to 150, but was stabilized at 154 by August 1959.

Agriculture and Food Production.—Agricultural production expanded 10% in 1958 (exceeding the former peak level reached in 1955 by 6%) and increased an additional 8% in 1959. Corn harvests were estimated at 5 million tons in 1958–59, and imports were suspended. Cotton production in 1959 was estimated at 2,345,000 bales of 500 pounds each, and an agreement with the United States was necessary to assure orderly marketing. Sugar production in 1959 totaled 1.27 million tons; coffee production amounted to 1.65 million bags; wheat tonnage of 1.3 million tons more than supplied the country's needs; and henequen production of 120,000 tons equaled the 1958 total. Beans, pineapples, bananas, and melons were other significant crops. The increased production in both 1958 and 1959 reflected the government's increasing attention to credit services at the expense of other forms of investment, such as the construction of new irrigation works.

Industry.—Industrial production, which had increased 5.8% in 1958, rose another 7.3% with the year ending September 1959. The chemical industry had become the fourth largest in Mexico; in 1958, the production of sulfuric acid increased 7%; caustic soda, 15%; and synthetic fibers, 14%. Pig iron production (1955 = 100) reached 152.7 in 1958, an increase of 17%, while crude steel production (1,112,434 tons in 1958, 6% above 1957) was expected to reach 1.5 million tons in 1960. While the cotton textile industry maintained its 1957 production figures, there were fairly substantial increases in the output of canned foods, tires, and refined sugar in 1958. Cement production increased by 10.9% in 1958, reaching 3.36 million tons. Three expansion projects increased cement production by a further 465,000 tons as of June 1959.

Mining.—Production of minerals in 1958 contributed 3% of the national product and 14% of the total value of exports. Despite the fall in prices and contraction in external demand, the 1958 mining output approximated that of 1957. Production of major minerals in 1958 (with 1957 figures in parentheses), in metric tons, was as follows: copper, 64,964 (60,600); lead, 194,110 (213,600); zinc, 224,102 (243,600); silver, 1,484 (1,340); and gold, 10.8 (10.8).

Petroleros Mexicanos (Pemex) produces and

markets all Mexican petroleum. Nearly 90% of the nation's energy is provided by this source, as hydroelectric power is limited and coal is scarce. By September 1959, monthly production of crude oil was averaging 1,191,370 metric tons, 9.2% above 1958. There were 379 wells drilled and 4 new fields opened in 1958. The completion of an absorption plant in the Tabasco oilfields, and the construction of gas pipelines from production to consumer centers curtailed the need for petroleum imports, which dropped from $91 million in 1957 to $47 million for the first nine months of 1958.

Foreign Trade.—Maintaining its 1957 level, exports totaled $708 million and imports $1,128 million in 1958. The unfavorable trade balance was offset in part by net tourist receipts of $318 million (12% below 1957). Mexican rural workers in the United States helped restore the trade balance by sending $31.6 million to their families in 1958. Partial restoration of a balanced trade was evidenced during the first half of 1959 with a 12% increase in exports ($407), 20% decrease in imports ($486), and 12% increase in tourist receipts ($233.4). Gold and foreign exchange reserves, which fell to $368 million in December 1958 (19% below December 1957), rose again to $411.4 million in September 1959.

Leading exports by value in 1958 were cotton (26%), coffee (11%), minerals (14.5%), and cattle and meat (7%). Imports were led by machinery (24.1%) and industrial raw materials (15.9%). The United States continued to predominate in Mexican trade during 1958, absorbing almost 62% of Mexican exports and providing 77% of the imports.

Principal Events, 1959.—President López Mateos worked to win the hearts and minds of his people in his first year of office. The maldistribution of wealth belied the revolutionary expectations of the masses; the cost of living had risen by 40% and wages by 20% in three years. Natural disasters compounded the problem. An earthquake killed at least 16 people, injured 60, and caused extensive property damage in the state of Vera Cruz on August 26. The Santiago River overflowed its banks in August in its worst flood since 1943. And the port of Manzanillo on the Pacific coast was struck by a hurricane on October 27 which developed into a catastrophe, as at least 1,452 lives were lost from flooding and mud slides which followed the storm in the states of Colima and Jalisco.

As with his predecessors, López Mateos selected a particular part of the country—Yucatan—for special development during his administration. The laboring class of Mexico City was favored by a program on July 8 which marketed frozen fish for 12 cents a pound, as compared with the fixed monopoly price of 70 cents. The Department of Agrarian Affairs and Colonization was preparing in August to relocate 6,000 families of miners on 25 to 50 acre plots in Chiapas and Tabasco. Land-hungry peasants in Sonora, who were evicted by federal troops in January, were promised land elsewhere.

To forestall further inflation the government denied increased wage benefits to striking labor unions. A government ultimatum halted the strike of 500 airline pilots, January 23–28, when a 29% pay increase above their average monthly salary of $1,360 was demanded. A union strike against the government railroads on February 25–26 collapsed, but most of the companies agreed to 16⅔% wage increases. When similar increases were demanded by 14,000 striking workers of other railways on March 25, supported by one-hour sympathy strikes of 60,000 additional workers, the secretary general of the Railway Workers Union, Demetrio Vallejo, and a reported 500 unionists were arrested on March 28 and held incommunicado in a military prison.

Communists were implicated in the railway strike. A second secretary and military attaché of the Soviet embassy in Mexico City were charged with conspiracy in the case and ordered on March 31 to leave the country. The police and secret service raided the Communist Party headquarters on April 5, and Dionisio Encina Rodriguez, secretary general of the party for 19 years, was arrested on September 2 for subversive acts which involved him in the strike.

Increasing pressure from local and state members of the PRI prompted the Central Executive Committee to permit primary elections in which gubernatorial nominees could gain party endorsement from rank and file membership. In San Luis Potosi, a statewide strike in December 1958 against the governor (a puppet of Col. Gonzalo N. Santos, who for 18 years had held absolute power in the state), resulted in the demise of the Santos political machine. Dissatisfaction with state party officials who had been arbitrarily selected by the central committee was also evidenced in the large protest vote in Lower California in August.

The new administration did not succumb to increasing nationalistic sentiments. Spontaneous press demands during the summer supported the return of United States sulfur interests to Mexican ownership; the subsecretary of the Ministry of National Patrimony proposed that 88% of the foreign-owned mines be Mexicanized; the Mexican National Chamber of Commerce resolved on September 12 to study the possibility of tightening laws governing foreign investment.

The PRI seized advantage of the president's decision (January 23) to break diplomatic relations with Guatemala by staging a 450,000-person demonstration in front of the Presidential Palace on February 1. Two Guatemalan planes had strafed Mexican shrimp boats in the Pacific on Dec. 31, 1958, killing 3 crew members and wounding 14, and the Guatemalan president had rejected Mexico's proposal for arbitration. Diplomatic relations finally were resumed on September 15.

Mexican relations with the United States were maintained on a cordial level. The late Secretary of State John Foster Dulles headed the United States delegation to the president's inauguration on Dec. 1, 1958. President Eisenhower met informally with López Mateos in Acapulco on February 19–20, and the president's brother, Milton Eisenhower, arrived in Mexico on August 12 for two weeks of general discussions. During López Mateos' return visit to the United States on October 9–15 and 18 (he visited Canada during the interval), economic policies relating to the marketing of zinc, lead, and cotton were discussed.

Anastas I. Mikoyan, first deputy premier of the Soviet Union, arrived in Mexico City for a 10-day visit on November 18. He opened the Soviet Trade Exhibition in the capital on November 21, and also conferred with López Mateos. The presence of the Soviet official at the large trade show (which closed on December 15) was regarded as pointing up Moscow's effort to increase commercial dealings with Mexico.

(See also INTER-AMERICAN AFFAIRS.)

MARTIN B. TRAVIS,
Associate Professor of Political Science,
Stanford University.

MEYER, Eugene (83), American financier, government official, and newspaper publisher: b. Los

Angeles, Calif., Oct. 31, 1875; d. Washington, D.C., July 17, 1959. Eugene Meyer achieved remarkable success in three different fields. He made a fortune as a banker and broker by the age of 41; he served in important government posts under seven presidents from Woodrow Wilson to Dwight D. Eisenhower; and he was editor, publisher, and chairman of the board of one of the country's most influential daily newspapers.

Young Meyer, after attending the University of California and Yale University (B.A., 1895) and two years of banking and language study in Europe, joined the New York City firm of Lazard Frères, in which his father was a partner. In 1901 he set out on his own, opening Eugene Meyer, Jr., and Co., specializing in railroad, copper, oil, and automobile securities. By 1917, this venture had earned him a fortune and a reputation.

In that year he was appointed adviser on nonferrous metals to the federal government and was named to the Council of National Defense. He subsequently dissolved his business to give full time to such federal posts as managing director of the War Finance Corporation under Presidents Wilson, Harding, and Coolidge; member of the Federal Farm Loan Board (1927–29); first governor of the Federal Reserve Board (September 1930–May 1933); first chairman of the Reconstruction Finance Corporation (February–July 1932); and first president of the International Bank for Reconstruction and Development (June–December 1946).

In June 1933 Meyer opened the third phase of his career by buying the bankrupt Washington *Post*. He was that newspaper's publisher from 1933 to 1940, editor and publisher from 1940 to 1946, and, after 1947, chairman of its board. The newspaper's circulation had quadrupled by 1954, when Meyer bought Col. Robert R. McCormick's Washington *Times-Herald* and merged it with the *Post*. The combined *Post and Times-Herald* circulation in 1959 was well over 390,000, making it the largest daily newspaper in the nation's capital. In 1955 Mr. and Mrs. Meyer turned over to staff members half a million dollars' worth of the newspaper's stock.

MICA. World production of mica in 1958, for the fourth successive year, remained at the high level of about 320 million pounds, according to the U.S. Bureau of Mines. India leads in output of block and splittings, and the United States in scrap output. Domestic mica sold or used in 1958 increased about 1% in quantity and 6% in value, compared with 1957. In 1958, United States output of sheet mica was 660,000 pounds, compared with 690,000 pounds in 1957; output of scrap mica was 186,694,000 pounds, compared with 184,876,000 in 1957. The quantity of mica imports for consumption declined in 1958 about 14%, and total exports of mica and mica products declined 11%. Nevertheless, exports of unmanufactured mica exceeded 1 million pounds for the first time. General imports increased 7% over 1957. Brazil, for the third successive year, supplied the largest quantity of better block mica. (See also MINERAL PRODUCTION for table showing output of major producing countries.)

MICHIGAN. North Central state, United States; admitted to the Union, Jan. 26, 1837. The "Wolverine State" ranks 23d in area and 7th in population among the 50 states.

Area and Population.—Area: 58,216 square miles (land, 57,022; inland water, 1,194), divided into 83 counties. Population: (1950) 6,371,766; (est., July 1, 1958) 7,830,000. Urban places with populations above 15,000 (as estimated by the State Department of Health for July 1, 1957) are:

Adrian	23,950	Kalamazoo	75,020
Allen Park	40,010	Lansing (*capital*)	111,850
Alpena	15,260	Lincoln Park	54,080
Ann Arbor	54,460	Livonia	48,910
Battle Creek	54,800	Marquette	18,700
Bay City	60,380	Midland	27,920
Benton Harbor	25,460	Monroe	28,020
Berkley	22,950	Mount Clemens	25,550
Birmingham	26,200	Muskegon	57,400
Dearborn	129,700	Muskegon Heights	23,050
Detroit	1,875,000*	Niles	18,160
East Detroit	43,030	Oak Park	32,280
East Lansing	25,100	Owosso	19,910
Ecorse	18,500	Pontiac	83,630
Ferndale	33,650	Port Huron	38,530
Flint	215,550	River Rouge	21,330
Garden City	25,240	Roseville	41,760
Grand Rapids	212,270	Royal Oak	71,450
Grosse Point Park	15,910	Saginaw	109,510
Grosse Point Woods	17,440	St. Clair Shores	62,360
Hamtramck	39,500	Sault Ste. Marie	19,680
Hazel Park	26,640	Traverse City	19,270
Highland Park	45,500	Wayne	20,040
Holland	19,480	Wyandotte	49,540
Inkster	30,440	Ypsilanti	22,850
Jackson	61,320		

* 1959 estimate.

Executive.—Chief state officers in 1959:
Governor: G. Mennen Williams (Democrat)
Lieutenant Governor: John B. Swainson
Secretary of State: James M. Hare
Treasurer: Sanford A. Brown
Attorney General: Paul L. Adams
Auditor General: Frank S. Szymanski
Supt. of Public Instruction: Lynn M. Bartlett

Constitution and Judiciary.—The present constitution went into effect in 1909. The Supreme Court comprises eight justices; chief justice in 1959 was John R. Dethmers.

Legislature.—The Michigan Legislature comprises a 34-member Senate (in 1959, 22 Republicans and 12 Democrats) and a 110-member House of Representatives (55 Republicans and 55 Democrats), which meet annually commencing the second Wednesday in January.

The 1959 legislature was primarily concerned with solving the state's financial crisis (see below, *Principal Events, 1959*) in a year-long session which began on January 14.

Nonfiscal legislation included measures that amended the election laws; effected minor changes in governmental organization; granted university status to Central Michigan College; permitted school districts operating programs from kindergarten through grade 12 within a county or contiguous counties to create community colleges; and permitted the use of General Fund monies for school aid.

Three amendments approved by the voters on April 6 provided for succession in state government in emergencies; authorized establishment of a board of governors for Wayne State University; and changed the name of the governing body of Michigan State University to Trustees of Michigan State University.

Finance.—In the 1958–59 fiscal year, state revenue of $1,017,281,104 comprised $782,055,598 from state tax sources, $133,075,120 from the federal government, and $102,150,386 from other sources. Tax revenue consisted of $300,761,184 from a 3% general sales tax, $52,559,745 from corporate income taxes, $138,611,543 from motor fuel taxes, and $290,123,126 from other sources. Expenditures of $1,090,948,294 comprised $405,796,595 for education, $292,192,785 for health, welfare, safety, defense, and adult correction, $240,925,317 for highways, and $152,033,597 for other purposes. State long-term indebtedness on June 30, 1959, amounted to $177,607,000.

Banking.—As of June 10, 1959, the state's 75 national banks had $4,363,644,000 in assets, $2,353,999,000 in demand deposits, and $1,505,587,000 in time deposits. The 313 state banks had assets of $4,635,629,486, demand deposits of $1,518,063,804, and time deposits of $2,217,980,694.

Education.—School attendance is compulsory between the ages of 6 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $502,084,289 ($330.72 per pupil), of which $238,693,072 was derived from local school districts. Outlays for construction and improvements

MICHIGAN SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k–6)	...*	35,258	1,017,776
Public junior & senior high	2,308	22,996	556,830
Private and parochial elementary and secondary	...	1,740	281,967
Junior colleges	16	682	22,945
Colleges and universities	32	6,024	109,717
Other higher institutions	13	474	11,002

* Included in junior and senior high total.

amounted to $176,777,949, and teachers' salaries averaged $5,340.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $148,692,316.39, including $50,697,166 for the aged, $40,745,669 for dependent children, and $52,004,855.39 for general relief. A monthly average of 321,816 persons received assistance.

Labor Force.—The state's labor force totaled 2,901,900 in September 1959, including 161,000 agricultural workers. Nonagricultural employment was 2,510,900, compared with 2,417,400 a year earlier and an average of 2,420,000 in 1958. Of nonfarm employees in 1959, 39% were employed in manufacturing, 16.7% in trade, and 12.5% in government. Unemployment was down to 205,000 in September 1959 from 422,000 in the previous September, but it had been as high as 340,000 in March 1959, and the Employment Security Commission, which anticipated a hard core of unemployment for an indefinite period, predicted an average of 275,000 unemployed for 1959. The state's Upper Peninsula felt the severest decline in job opportunities and asked both private and government aid in solving its economic problems. Because of heavy unemployment, the state paid $326,428,009 in unemployment compensation in 1958, seriously depleting the Unemployment Compensation Fund.

Manufacturing.—The 1,071,246 persons employed in manufacturing in 1957 received $5,838,997,000 in wages. Value added by manufacture totaled $10,375,378,000, and outlays for new plant and equipment amounted to $694,705,000. Production workers averaged $108.15 for an average workweek of 40.4 hours in August 1959.

MAJOR MICHIGAN MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Transportation equipment	368,432	$2,001,388	$4,079,554
Nonelectrical machinery	165,217	983,506	1,588,819
Fabricated metal products	102,296	531,960	878,318
Primary metal industries	81,777	472,586	809,500
Food and kindred products	58,951	281,618	642,633
Chemicals and products	40,614	235,851	621,250
Pulp, paper, and products	32,044	167,224	300,358
Printing and publishing	30,735	164,455	276,947
Electrical machinery	23,103	114,683	211,557
Stone, clay, glass products	17,072	87,567	188,148

*For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Michigan was 15th among the states in the value of its mineral output, with 2.08% of the national total. The state ranked first in output of bromine, peat, and salt (19% of the national total); second in gypsum, crude iron ore, and sand and gravel; fourth in cement; and fifth in copper (6% of domestic output).

MICHIGAN MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	20,912,000	$ 70,432,000
Clays	1,663,000	1,813,000
Coke	2,526,202	43,527,893[1]
Copper	58,005	30,511,000
Gypsum	1,331,000	4,824,000
Iron ore, usable (long tons)	8,111,000	69,845,000
Natural gas (1,000 cu. ft.)[2]	14,243,000	2,649,000
Peat	107,342	1,684,000
Petroleum (bbl.)[2]	9,307,000	27,363,000
Salt, common	4,267,000	33,018,000
Sand and gravel	39,871,000	34,616,000
Stone	27,188,000	26,846,000
Other minerals	...	45,558,000
Total	...	$343,483,000[3]

[1] Value for processed materials is not included in total. [2] Preliminary. [3] Total adjusted to eliminate duplication of value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income in the first nine months of 1959 was down slightly to $525,920,000 from $531,722,000 for the corresponding period of 1958. For the full year 1958, income comprised $407,918,000 from livestock and livestock products, $306,200,000 from crops and $25,592,000 from government payments. Principal income sources in 1958 were dairy products, $192,745,000; cattle, $96,365,000, and wheat, $62,446,000.

MICHIGAN CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	8,616	12,200	12,000
Beans, dry edible (1,000 bags)	4,105	5,226	5,974
Cherries (tons)	80,060	63,000	99,500
Corn (1,000 bu.)	81,781	106,344	125,571
Grapes (tons)	37,650	50,500	57,000
Hay (1,000 tons)	3,528	3,176	3,801
Maple sirup (1,000 gal.)	85	86	51
Oats (1,000 bu.)	47,625	53,856	38,540
Peaches (1,000 bu.)	2,912	3,200	3,100
Potatoes (1,000 cwt.)	7,435*	8,745	7,722
Soybeans (1,000 bu.)	2,668	6,095	5,400
Strawberries (1,000 lb.)	32,585*	41,040	30,600
Sugar beets (1,000 short tons)	718	1,112	1,294
Wheat (1,000 bu.)	32,935	41,800	35,123

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 136,000 farms in 1958. Total acreage (1954) was 16,467,000, including 7,659,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,829,000 cattle, 719,000 hogs, and 9,683,000 chickens (excluding commercial broilers). Family and hired workers engaged in farming numbered 196,000 during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds distributed for highways in the 1958–59 fiscal year totaled $203,766,664.40, including $28,148,755.09 for maintenance.

Highways and roads on Jan. 1, 1959, totaled 109,714 miles (88,492 miles surfaced). Registered *motor vehicles* in 1958 totaled 3,495,171, including 2,704,202 passenger cars. There were (1959) 32 *railroads* operating 5,672 line miles; 13 regularly scheduled *airlines;* and 224 *airports and airfields* (89 commercial and municipal, 6 military, 56 private, and 73 other).

Communications media included (1958) 73 AM and 29 FM *radio stations;* (1959) 13 VHF and 2 UHF *television stations;* 56 daily *newspapers* (circulation, 2,390,613) and 302 other newspapers; and (January 1) 778,800 business and 2,282,000 residential *telephones.*

Principal Events, 1959.—Gov. G. Mennen Williams' 11th year in office opened on a distressing state financial situation. The depression in automobile manufacturing during the first three quarters of 1958 had decreased state revenues and increased welfare costs. State spending had nearly doubled in the past decade. During the fiscal year ending June 30, 1959, expenditures from the Gen-

Steel shortage due to the 1959 strike forced some automobile companies to halt production. Here, Cadillac's Detroit assembly plant stands idle after shutdown on October 30.

WIDE WORLD

cral Fund exceeded income by $29 million. The state constitution earmarks the distribution of nearly two thirds of the income, limits the sales tax to 3%, and prohibits borrowing in excess of $250,000. The only sources of ready cash to meet state obligations were Veterans Trust Fund securities worth more than $45 million.

The governor and fellow-Democrats proposed a graduated personal income tax together with levies on profits of corporations and financial institutions, intended to yield over $100 million annually. The Republicans preferred a 1% increase in the sales tax to bring in approximately the same amount. In the House of Representatives, evenly split between the two parties, neither side could get the majority needed for a tax bill, and in the Senate the Republican majority killed attempts at compromise. By March the state was $15 million in arrears to the state universities, which had borrowed on their own credit, and more than $35 million behind in support to public schools. The governor appealed to large corporations to pay taxes in advance and received some $35 million from this source to support the state until the middle of April. In May, paychecks of some 26,000 state employees were held up for several days because of a lack of funds, and other payments were much in arrears.

Through the summer, the possibility of any income tax legislation faded and was abandoned. In September the governor signed a bill authorizing a 1% use tax, separate in theory from the existing sales tax, to provide for a record budget adopted by the legislature. This tax was immediately challenged in a suit in the Michigan Supreme Court and, on October 22, by a split decision along party lines, was declared unconstitutional. State finances reverted to their previous chaotic condition. Finally, on December 18, the legislature passed a temporary tax bill, to be effective only until June 30, 1961, designed to produce $37 million through increased taxes on tobacco and liquor, new levies on telephone and telegraph services, and the addition of 1 mill to the 4-mill corporation franchise fee. The lawmakers also authorized liquidation of the Veterans Trust Fund securities.

Counterbalanced against governmental fiscal difficulties was the state's improved economic situation. Since September 1958 the automobile industry had been recovering from its slump. In 1959, monthly production reached new peaks, with profits in April the highest since 1957 levels. Later in the year, high manufacturing profits were yielded from production of the new "small cars." (See also AUTOMOBILES.) Although automobile production was high, the percentage of Michigan unemployment was twice the national average, a condition resulting from increased efficiency within the industries and the shift of defense spending away from the state. Another major economic development in the state was the opening of the St. Lawrence Seaway (q.v.), which brought large numbers of foreign freighters to the Great Lakes and crowded the Port of Detroit.

There were few and unimportant labor disputes until July, when the national steel strike (see IRON AND STEEL) idled some 17,000 workers in Michigan plants. Large steel stocks kept the automobile industry busy until early November, when production slowed and finally stopped in many assemblies. The Taft-Hartley injunction, returning workers to the steel mills, again started materials flowing, and full production of automobiles was resumed before the end of the year.

(See also DETROIT.)

Principal Events by: CHARLES M. DAVIS, *Professor of Geography, University of Michigan.*

MICROBIOLOGY. See Index entry.

MIDDLE CONGO. See CONGO.

MIDDLE EAST. Tensions in the Middle East slackened appreciably during 1959. Because of its oil the area remained of supreme importance to the West, and there were still many tensions and dangers to be observed there, particularly in Iraq. Nevertheless, governments such as Jordan and Lebanon, which seemed in 1958 to have their very existence threatened, had not, in fact, collapsed but seemed possibly stronger than ever. Communism had not, despite some ill-timed efforts, made appreciable progress in the area, and Western countries seemed to be having more success in coming to terms with Arab and other nationalisms.

One of the most obvious developments in 1959 was the decline in the prestige of President Gamal Abdel Nasser of Egypt, who had hitherto been fortune's darling. Even though his position was not seriously undermined, his astonishing luck seemed to have run out in 1959, and his remoter hopes seemed unlikely to be realized.

Before 1959, Nasser had enjoyed great popularity with the masses in other Arab countries, and with this mass support it seemed possible that he would be able to overturn other governments and weld the Arab peoples into a united whole under his leadership. This process he had already begun in 1958 by linking Syria with Egypt in the United Arab Republic (UAR) and joining Yemen with the UAR to form the United Arab States. The apogee of his success was reached in July 1958 when the rival short-lived Arab Union of Iraq and Jordan was destroyed by the coup d'état of Iraqi army officers in Baghdad. There seemed at first a likelihood that Iraq, too, would quickly join the United Arab Republic, but in this hope Nasser was disappointed when the nationalist and pro-Nasser uprising at Mosul, Iraq, on March 7–10, 1959, was easily defeated and most of the UAR's embassy officials were expelled from Baghdad on March 10. Confronted for the first time by a serious rival to his authority inside the Arab world in the person of Iraqi Brig. Gen. Abdul Karim al-Kassem, Nasser had reacted maladroitly by openly and unsuccessfully advocating treason against the established government of a fellow Arab state.

Nasser's hopes of taking over Jordan were equally frustrated. King Hussein I sailed through many storms in 1957 and 1958 into calmer waters, and Jordan had become by 1959 an oasis of peace amid the tumults and uncertainties of the Arab world. Nasser tacitly acknowledged that his previous pressure on Jordan was achieving nothing when it was announced on Aug. 16, 1959, that the UAR had resumed diplomatic relations (suspended since July 1958) with King Hussein's government. A further symbol of Jordan's new-found stability was the state visit to Amman paid by the shah of Iran on Nov. 2–7, 1959.

Nasser's problems were by no means confined to the field of foreign policy. His revolution had yet to bring any tangible benefits to the Egyptian masses. In the Syrian Region discontent was more overt and was naturally stimulated by resentment at a union which virtually meant Egyptian rule. The dictator of Egypt responded by appointing (Oct. 21, 1959) his right-hand man, Field Marshal Abdel Hakim Amer, UAR vice president and chief of the armed forces, as supervisor of general policy for Syria, with a very wide range of powers. The appointment was readily understandable from an administrative point of view, for Syria had proved an awkward partner during the first year of the union, but whether it would be popular in Syria was another matter. It speedily became obvious

UPI

Vice President Richard M. Nixon (at lectern) addresses the opening session of the Ministerial Council of the Central Treaty Organization (CENTO), meeting in Washington on October 7. Seated on the platform (left to right) are: (first row) Manuchehr Eqbal, prime minister of Iran, with his interpreter; Jamshid Amuzegar, Iranian minister of labor; Manzoor Qadir, foreign minister of Pakistan; M.O.A. Baig, secretary general of CENTO; Adnan Menderes, prime minister of Turkey; Sir Harold A. Caccia, British ambassador to the United States; and U.S. Secretary of State Christian A. Herter; (at rear right, behind Herter) Fatin Rüştü Zorlu, foreign minister of Turkey, and Sir Bernard A. Burrows, British ambassador to Turkey.

that the appointment was extremely unpopular in Iraq, where it was given a sinister interpretation as a preparatory step for an attack.

Syria also proved the occasion of another headache for Nasser. When the Chinese Communist government celebrated its 10th anniversary at Peking on Oct. 1, 1959, a representative of the UAR was there by invitation; but so was Khalid Baqdash, leader of the proscribed Syrian Communist Party, who, on September 28, was permitted by his Chinese hosts to make a bitter public attack on the Nasser regime in Syria. The UAR representative withdrew in protest, and Nasser's policy took a more pronounced anti-Communist slant. Russian policy, however, which is forced to deal with Middle Eastern realities more intimately than is distant China, has continued to be perfectly correct toward the UAR.

As Nasser has found himself more at odds with the Communist world, he has moved to a correspondingly more friendly relationship with the West, and the West has edged cautiously toward a rapprochement with him. A financial agreement between the UAR and Britain was initialed on Feb. 28, 1959. Diplomatic relations with Australia, ruptured at the time of the Suez crisis in 1956, were resumed in October 1959, and those with Britain on December 1.

In the Middle East in 1959 it was not only Nasser's prestige that diminished. The same decline infected the prestige of the Arab League (q.v.), which had enjoyed a sudden upsurge in importance in the years 1956–58 when the whole Arab world had appeared to be advancing rapidly toward unity. However, the atmosphere of 1959 was rather one of general disarray, the old slogans serving to cloak impotence and mutual distrust.

A meeting of the Arab League held at Casablanca for the first time in early September indicated the increased attention that the Arabs are paying, especially during the continuing Algerian crisis, to the Maghrib—the western part of the Arab world embracing Morocco, Algeria, Tunisia, and Libya—and symbolized the popular Arab slogan of "one nation from the Atlantic to the (Persian) Gulf." The unity, however, was somewhat illusory. Iraq was not represented, and neither was Tunisia, which, having no common frontier with Egypt, is able to take a firmly independent line. Tunisian Premier Bourguiba has declared his determination to have no truck with Egypt until the UAR has publicly retracted the attacks made on Tunisia at the Arab League meeting in October 1958—an apology not yet forthcoming.

Therefore, the representation at the Casablanca meeting of the Arab world, and even of the Maghrib, was noticeably defective. The only subjects at the meeting on which there was any general agreement were an endorsement of Nasser's policy in closing the Suez Canal to Israeli shipping, and a resolution in favor of raising an Arab "Army of Palestine" of 250,000 men and of establishing a separate Palestine Arab government. These proposals, which looked to the expiration in 1960 of the United Nations mandate to care for Palestine refugees, were flamboyant and unlikely to be carried out, the more so since they were opposed by Jordan, obviously the country most closely concerned.

In 1959, as earlier, the two poles of the Arab world continued to be Cairo and Baghdad, and it continued to be possible to write the history of the Middle East almost exclusively in terms of the rivalry between Egypt and Iraq, for that rivalry had merely taken a new form. Precisely what the long-term significance of General Kassem's rule in Iraq would turn out to be was still quite uncertain. By the end of 1959 the situation in Iraq was as obscure as ever, and the mystery hung like a dark cloud over the Middle East. Three forces contended for control of Iraq: the pro-Nasser Arab nationalists, the Iraqi Communists, and the Iraqi nationalists. The last-named and the pro-Nasser element had a tendency to work together, at least in opposition to the Communists; but the truth was that the country was so bitterly divided that whoever tried to rule it was bound to find large-scale and determined opposition from one quarter or another.

The personality and policy of General Kassem could not be discerned with certainty through the shifting fog of events in Iraq. The fury with which he punished the Mosul uprising in March played into the hands of the Communists, who appeared

to gain more and more influence as spring wore on toward summer. But after the Communist-led revolt at Kirkuk on July 14–18, he appeared to turn against them and sharply curtailed their powers. Throughout the year there was a steady decline in Kassem's popularity as administration of the country became less efficient, business lay in the doldrums of general uncertainty, and the brave promises with which the regime came to power became more and more a mocking memory. Finally, after the attempt on Kassem's life on October 7 by unknown assassins, it was by no means certain who actually ruled in Iraq. In the last days of the year, Kassem seemed to be bent on distracting attention from his incompetence at home by picking a border quarrel with Iran.

The one thing that was quite clear was that Iraq was no longer, as it had been before July 1958, an element of strength for the West in the Middle East. Yet even that point was not free of ambiguities until well into 1959. Iraq did not at first withdraw from membership in the Baghdad Pact, though it was obvious to the other members (Britain, Iran, Pakistan, and Turkey) that she had effectively ceased to be a member; and this was recognized at the sixth session of its Council of Ministers, held in Karachi on January 26–28, which Iraq did not attend.

The Baghdad Pact was essentially replaced by bilateral defense agreements signed at Ankara on March 5, 1959, between the United States and Turkey, Iran, and Pakistan. A point of significance about these new arrangements is that the "northern tier" of Middle East countries are not Arab, for Iraq's formal withdrawal from the Baghdad Pact on March 24 meant the loss of the pact's only Arab member. Despite the fact that the United States has never been a member of the Baghdad Pact, the next meeting of the Council of Ministers of the organization, which by this time had changed its name to the Central Treaty Organization (CENTO), was held in Washington on October 7–9. The United States continued to resist all blandishments to become a member, and the new bilateral treaties rendered its membership less necessary than it had ever been.

One trouble spot within the general Middle East area whose problems seemed to be approaching solution in 1959 was Cyprus. On February 19, agreements were initialed in London which envisaged the establishment by Feb. 19, 1960, of the Republic of Cyprus. The agreements resulted from rather surprising concessions: the Cypriote Greeks gave up the ideal of *enosis* (union with Greece); the British gave up control of the island, apart from some military bases; and the Turkish Cypriotes agreed to live in a state in which they would be a minority. Many details of the proposed constitution remained to be worked out, and several times during the year the negotiations approached stalemate.

The trend of events in the extreme south of Arabia was also satisfactory to the West. There, in the British-controlled Western Aden Protectorate, 6 of the 18 principalities of the area joined on Feb. 11, 1959, to form the Federation of the Arab Amirates of the South (see ADEN). The new grouping was formed with British encouragement as a counterweight to the neighboring state of Yemen, a member of the United Arab States.

Although by the end of the year, crude projects of nationalization were in abeyance for the moment, Arab opinion throughout the Middle East continued to be exercised by the problem of giving the Arab world a greater control over the exploitation of its one great resource, oil, and a greater share of the profits therefrom. This was the theme of a conference convened by the Oil Affairs Department of the Arab League at Jiddah, Saudi Arabia, on Oct. 25–27, 1959. Oil experts from all members of the league except Tunisia attended. Approval was given to the proposal for a 1,250-mile pipeline linking the oilfields of Iraq, Kuwait, and Saudi Arabia with ports in Syria and Lebanon.

(See also separate articles on the Middle Eastern countries.)

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MIDWAY. An atoll and two islets—Eastern and Sand—in the central Pacific, about 1,200 miles northwest of Honolulu, Hawaii. Area, 2 sq.mi.; pop. (1950), 416. Midway is administered by the U.S. Navy, which maintains a base there. In 1959 the Navy sought means of eliminating the hazard to flying presented by Midway's large albatross colony, without killing the birds.

MIGRATION. See IMMIGRATION AND NATURALIZATION; REFUGEES AND DISPLACED PERSONS.

MIKOYAN, Anastas Ivanovich. See Index entry.

MILITARY AFFAIRS. See the Index entry, *Military.*

MILITARY POLICY, U.S. See NATIONAL SECURITY.

MILK. See DAIRY PRODUCTS and the Index entry, *Milk.*

MINERAL PRODUCTION. The following table shows the trend of production of the more important mineral commodities in the major producing countries during recent years. (See also separate articles on the more important minerals.) Totals include outputs of minor countries not listed. In some cases production data are too incomplete to justify showing a total. Listing usually includes countries that have produced more than 1% of the total at any time since 1939. (These tables are based largely on data supplied by the Foreign Activities Staff of the U.S. Bureau of Mines, with gaps filled from other sources.)

Figures in parentheses are for the preceding year, as a substitute for those lacking for the year indicated. A figure with fewer decimal places indicated than others in the same table is an estimate. A question (?) means unknown or an estimate; a dash (—) means no production reported.

WORLD PRODUCTION OF MAJOR MINERALS

	1939	1956	1957	1958
Aluminum		(Thousands of metric tons)		
Austria	—	59.4	56.4	56.9
Canada	75.0	562.7	505.1	586.0
France	50.0	149.8	160.2	169.1
Fr. Cameroon	—	—	7.6	31.5
Germany[1]	200.	147.4	153.8	136.8
Italy	34.2	63.4	66.2	64.1
Japan	23.0	66.0	68.0	84.6
Norway	31.0	91.9	95.6	121.6
Switzerland	28.0	30.0	31.0	31.2
USSR	45.	450.(?)	500.(?)	550.0(?)
United Kingdom	25.0	28.0	29.9	26.8
United States	148.4	1,523.1	1,494.8	1,420.2
Total (est.)	667.	3,372.	3,381.	3,530.
Antimony		(Metric tons)		
Algeria	217.	2,150.	1,403.	1,003.
Australia	419.	292.	493.	700.(?)
Austria	102.	444.	390.	466.
Bolivia[5]	9,225.	5,112	6,374.	5,278.
Canada	550.(?)	971.	617.	420.
China	12,017.	13,000.(?)	14,000.(?)	15,000.(?)
Czechoslovakia	1,012.(?)	1,600.(?)	1.600.(?)	1,600.(?)
France	—	228.	—	—
Mexico	7,243.	4,556.	5,202.	2,747.
Morocco	474.	300.	330.	183.
Peru	775.	969.	835.	791.
South Africa	6.	14,233.	10,000.	7,170.
Spain	22.	230	200.	215.
Turkey	460.	964.	1,118.	1,530.[5]
United States	328.	572.	643.	640.
Yugoslavia[2]	1,511.	1,603.	1,769.	1,665.
Total (est.)	38,200.	48,000.	46,000.	40,000.

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1956	1957	1958
Arsenic (white)		(Thousands of metric tons)		
Australia	1.44	—	—	—
Belgium[5]	3.33	2.77	2.07	0.40(?)
Canada	0.79	0.81	1.68	1.02
France	5.99	6.00	5.10	5.60(?)
Germany[1,5]	1.26	0.30	0.20	0.19
Italy	1.15	1.06	0.99	1.00(?)
Japan	3.54	1.66	1.38	1.40(?)
Mexico	7.06	2.64	4.60	3.09
Portugal	0.32	1.01	0.82	0.80(?)
Sweden	10.20	12.19	10.10	10.(?)
United States	20.27	11.07	9.52	10.44
Total[15] (est.)	56.5	43.0	39.0	36.0
Asbestos		(Thousands of metric tons)		
Canada	330.6	920.1	949.0	839.4
Cyprus	10.4[5]	13.9	13.6	13.3[5]
Italy	6.8	33.1	34.3	35.9
South Africa	20.0	123.8	142.9	159.1
S. Rhodesia	52.9	107.9	119.9	115.3
Swaziland	7.2	27.1	27.9	22.9
USSR	(?)	450.(?)	450.(?)	500.(?)
United States	14.0	37.5	39.6	39.9
Total (est.)	(?)	1,790.	1,875.	1,830.
Barite		(Thousands of metric tons)		
Algeria	(?)	29.8	34.2	43.0
Canada	(?)	291.1	206.9	182.6
France	(?)	55.0	65.0	65.0(?)
Germany	420.3	436.7	431.6	396.1
Greece	24.1	26.2	130.2	150.0
Italy	53.9	93.5	102.6	93.2
Japan	(?)	18.7	25.0	14.9
Mexico[5]	—	213.9	390.0	190.0(?)
Morocco[19]	—	29.6	14.8	42.7
Peru	—	10.5	86.5	106.9
Spain	8.9	7.7	18.4	26.8
USSR	(?)	100.0(?)	100.0(?)	120.0(?)
United Kingdom	96.3	76.8	79.2	64.3
United States	331.9	1,226.4	1,183.5	441.2
Yugoslavia	(?)	64.6(?)	94.3	137.0
Total (est.)	(?)	2,800.	3,200.	2,300.
Bauxite		(Thousands of metric tons)		
British Guiana	483.7	2,520.8	2,237.2	1,611.3
France	800.	1,465.8	1,683.4	1,816.8
Fr. Guinea	—	451.5	366.0	330.0
Ghana[5]	—	140.1	188.4	210.4
Greece	186.9	698.0	833.7	800.0
Haiti	—	—	267.2	284.9
Hungary	485.	892.7	917.3	1,053.0
Indonesia	230.7	303.3	241.5	343.9
Italy	484.0	275.8	261.1	299.0
Jamaica	—	3,191.7	4,717.7	5,813.5
Surinam	511.6	3,485.0	3,377.0	2,988.0
USSR	270.(?)	2,225.0(?)	2,450.0(?)	2,750.0(?)
United States	381.3	1,771.6	1,438.9	1,331.7
Yugoslavia	318.8	881.4	888.2	733.0
Total (est.)	4,344.	18,805.	20,430.	21,000.
Beryl		(Metric tons)		
Argentina	299.	1,562.	1,425.	1,000.(?)
Australia	6.	323.	401.	270.(?)
Belgian Congo[21]	—	1,728.	1,607.	1,000.(?)
Brazil	276.	2,106.	1,938.[5]	806.[17]
India	9.	3,048.[17]	1,139.[17]	544.[17]
Madagascar	(?)	153.	271.	70.(?)
Mozambique	—	856.	1,697.	1,029.
Portugal	(?)	221.	173.	40.(?)
S. Rhodesia	—	550.	519.	302.
South Africa	(?)	121.	645.	419.
S. West Africa	(?)	412.	350.	224.
United States	86.	404.	473.	420.
Total (est.)	676.[16]	11,700.[20]	10,800.[20]	6,300.[20]
Bismuth		(Metric tons)		
Bolivia[5]	13.	34.	41.	40.(?)
Canada	186.	130.	145.	207.
France	—	65.	54.	50.(?)
Japan	(?)	71.	66.	65.(?)
Korea[14]	—	182.	109.	90.
Mexico	164.	631.	354.	190.
Peru	454.	288.	365.	406.
Spain	—	33.	86.	50.
United States	(?)	(?)	(?)	(?)
Yugoslavia	(?)	111.	100.	77.
Total (est.)[20]	1,300.	2,600.	2,500.	2,200.
Cadmium		(Metric tons)		
Australia	175.	280.	399.	358.
Belgian Congo	—	277.	413.	488.
Belgium	531.	675.(?)	675.(?)	675.(?)
Canada	426.	1,061.	1,074.	835.
France	130.	109.	176.	177.
Germany[1]	401.	293.	277.	319.
Italy	146.	183.	220.	204.
Japan	80.(?)	402.	396.	441.
Mexico[16]	817.	858.	759.	769.
Poland	221.	246.(?)	254.(?)	254.(?)
S. West Africa[16]	82.	1,056.	1,287.	1,219.
USSR	50.(?)	360.(?)	475.(?)	470.(?)
United Kingdom	106.	114.	104.	126.
United States	2,173.	4,814.	4,785.	4,388.
Total (est.)	4,577.	9,125.	9,560.	8,990.

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1956	1957	1958
Cement		(Millions of metric tons)		
Argentina	1.13	2.04	2.36	2.47
Australia	0.68	2.14	2.32	2.46
Austria	0.74	1.94	2.13	2.15
Belgium	2.55	4.66	4.71	4.06
Brazil	0.7	3.28	3.38	3.77
Canada	0.91	4.56	5.49	5.59
China	0.54	6.42	6.81	10.00
Czechoslovakia	0.28	3.15	3.67	4.10
Egypt	0.37	1.35	1.47	1.51
France	(?)	11.44	12.48	13.41
Germany[1]	13.96	19.66	19.25	19.79
India	1.73	5.01	5.69	6.20
Italy	5.11	11.34	11.87	12.82
Japan	5.07	13.02	15.18	14.99
Mexico	0.41	2.28	2.56	2.58
Poland	1.49	4.04	4.49	5.04
South Africa	0.95	2.47	2.53	2.72
Spain	1.19	4.73	4.97	5.26
Sweden	1.18	2.50	2.45	2.49
Switzerland	(?)	2.38	2.38	2.20
USSR	5.7	24.90	29.00	33.40
United Kingdom	8.34	12.97	12.16	11.70
United States	21.27	56.88	53.51	55.66
Yugoslavia	0.66	1.56	1.98	1.97
Total (est.)	93.	236.41	246.94	263.00
Chromite		(Thousands of metric tons)		
Albania	3.0	140.0	167.3	201.3
Cuba	59.6	53.7	115.3	75.1(?)
Greece	57.1	78.9	75.0	25.0[5]
India	49.9	53.5	79.8	61.4
New Caledonia	52.0	48.9	64.2	47.4
Philippines	127.6	709.1	725.5	416.3
South Africa	160.0	626.7	655.5	631.5
S. Rhodesia	139.1	407.3	593.4	561.4
Turkey	191.6	833.1	955.0	475.(?)
USSR	(?)	740.(?)	775.(?)	800.(?)
United States	3.7	188.4	150.7	130.4
Yugoslavia	59.5	118.8	120.3	113.6
Total (est.)	1,163.	4,150.	4,655	3,680.
Coal		(Millions of metric tons)		
Australia	17.5	30.3	31.2	32.6
Belgium	29.8	29.5	29.1	27.1
Canada	14.1	13.5	12.0	10.6
Czechoslovakia	37.3	69.7	75.2	78.4
France	50.2	57.4	59.1	60.0
Germany	388.9	441.2	448.3	446.7
Saar	(?)	17.1	16.5	16.4
Hungary	10.6	20.6	21.2	24.2
India	28.2	39.9	44.2	46.1
Netherlands	13.1	12.1	11.7	12.1
Poland	65.5	101.3	100.1	102.5
South Africa	16.9	33.6	34.8	37.1
USSR	134.5	429.2	463.0	496.0
United Kingdom	235.1	225.6	227.2	219.3
United States	404.9	480.6	470.0	391.6
Total (est.)	1,647.	2,254.6	2,334.7	2,436.0
Cobalt		(Metric tons)		
Belgian Congo	1,080.	9,089.	8,115.	6,501.
Canada	332.	1,595.	1,779.	1,144.
Morocco[19]	680.	644.	454.	926.
N. Rhodesia	1,598.	1,093.	1,436.	1,609.
United States	—	1,151.	1,498.	1,825.
Total (est.)	4,200.	14,500.	14,400.	13,300.
Coke[18]		(Thousands of metric tons)		
Australia	1,402.	2,268.	2,312.	2,335.
Austria	(?)	2,090.	2,190.	1,598.
Belgium	5,177.	7,270.	7,156.	6,906.
Canada	1,830.	3,634.	3,450.	3,006.
Czechoslovakia	2,367(?)	7,327.	7,485.	7,400.(?)
France	8,151.	12,288.	12,564.	12,467.
Germany[1]	43,511.	43,435.	45,692.	43,578.
India	1,947.	2,535.	2,604.	3,068.
Italy	1,985.	3,410.	3,687.	3,360.
Japan	(?)	5,440.	6,269.	5,906.
Netherlands	2,208.	4,253.	4,283.	4,081.
Poland	(2,523.)	10,500.	10,121.	10,100.
Saar	(?)	4,206.	4,324.	4,176.
South Africa	185.	1,475.	1,606.	1,768.
Spain	685.	1,649.	1,884.	2,014.
USSR	16,670.	46,600.	48,600.	50,900.
United Kingdom	14,187.	19,959.	20,820.	18,747.
United States	40,212.	67,569.	68,901.	48,629.
Total (est.)	(?)	256,597.	266,521.	254,247.
Columbite-Tantalite		(Thousands of pounds)		
Belgian Congo[21]	361.	933.	525.	590.(?)
Brazil[5]	130.	386.	273.	302.
Malaya	—	619.	317.	356.
Mozambique	(?)	57.	289.	376.
Nigeria	965.	5,867.	4,348.	1,853.
Norway[17]	—	573.	489.	610.
Portugal	—	38.	79.	98.
United States	—	217.	370.	428.
Total (est.)	1,545.	8,950.	6,910.	5,000.
Copper (mine)		(Thousands of metric tons)		
Belgian Congo[2]	122.6	250.0	242.2	237.7
Canada	276.2	321.9	325.8	314.6

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1956	1957	1958
Chile	339.2	489.7	485.6	462.2
Cyprus[5]	6.0	35.8	39.6	33.2
Germany	30.0	22.0(?)	23.1(?)	23.0(?)
Japan	91.0	78.5	81.7	80.8
Mexico	44.9	54.9	60.6	65.0
N. Rhodesia	215.1	404.1	435.7	400.1
Peru	44.0	46.2	57.2	49.8
South Africa	14.3	46.5	46.2	49.5
USSR[2,8]	130.5	390.0(?)	425.0(?)	425.0(?)
United States	660.7	1,001.7	986.0	888.4
Yugoslavia[2]	64.2	29.4	33.7	33.7
Total (est.)	2,251.	3,430.	3,540.	3,390.
Diamonds		(Thousands of carats)		
Angola	690.	740.	861.	1,001.
Belgian Congo	8,360.	14,013.	15,646.	16,673.
Ghana	1,088.	2,127.	3,125.	3,132.
Sierra Leone	600.	1,427.	1,725.	1,490.
South Africa	1,250.	2,535.	2,580.	2,554.
S. West Africa	35.	970.	997.	904.
Brazil	350.(?)	300.(?)	300.(?)	300.(?)
Total (est.)	12,500.	23,130.	26,000.	28,000.
Feldspar		(Thousands of metric tons)		
Australia	4.5	18.9	9.8	7.4
Canada	11.3	16.5	18.6	16.1
France	(?)	77.2	66.3	70.0(?)
Germany[1]	11.4	166.8	191.3	190.5
Italy	12.5	51.3	57.9	56.1
Japan	4.1	49.4	44.1	45.0(?)
Norway	24.3	53.3	50.0(?)	50.0(?)
Sweden	40.8	53.3	53.8	44.4
United States	257.5	569.1	506.1	477.3
Total (est.)	(?)	1,110.	1,060.	1,040.
Fluorspar		(Thousands of metric tons)		
Canada	11.4	127.0	60.1	56.0(?)
France	(51.9)	84.7	93.5	90.0(?)
Germany[1]	162.0	146.0	135.0	117.9
Italy	13.2	124.0	144.2	140.0
Mexico[5]	—	326.7	353.6	222.2[17]
South Africa	10.3	31.8	31.8	43.8
Spain	8.4	73.7	88.4	103.0(?)
USSR	(?)	150.0(?)	150.0(?)	165.0(?)
United Kingdom	38.8	93.0	94.8	78.6
United States	165.8	299.1	298.3	289.9
Total (est.)	577.	1,710.	1,740.	1,600.
Fuel Briquettes		(Millions of metric tons)		
Australia	0.42	0.63	0.62	0.67(?)
Belgium	1.56	1.82	1.84	1.04
Canada	0.07	0.68	0.36	0.31(?)
Czechoslovakia	0.84	0.61	0.64	0.65(?)
France	8.36	7.87	8.26	7.09
Germany	51.88	76.27	78.05	76.14(?)
Japan	(?)	2.70(?)	2.33	2.30(?)
Netherlands	1.34	1.11	1.22	1.16
Poland	0.47	0.84	0.90	0.89(?)
Spain	0.79	1.30	1.38	1.44(?)
USSR	(?)	8.50(?)	8.50(?)	8.50(?)
United Kingdom	0.81	1.81	2.14	2.25(?)
United States	1.0	1.44	1.05	0.97
Total (est.)	69.[15]	107.7	109.5	105.9
Gold		(Millions of ounces)		
Australia	1.65	1.03	1.08	1.10
Belgian Congo[21]	0.55	0.37	0.37	0.35
Canada	5.09	4.38	4.43	4.54
Colombia	0.57	0.44	0.33	0.37
Ghana	0.79	0.64	0.79	0.85
Japan	1.96	0.24	0.25	0.26
Mexico	0.84	0.35	0.36	0.33
Philippines	1.04	0.41	0.38	0.42
South Africa	12.82	15.90	17.03	17.67
S. Rhodesia	0.80	0.54	0.54	0.55
USSR	5.20	10.0(?)	10.0(?)	10.0(?)
United States	4.62	1.87	1.80	1.76
Total (est.)	40.04	38.4	39.60	40.40
Graphite		(Thousands of metric tons)		
Austria	24.0	18.7	18.9	21.2
Canada	1.2	—	—	—
Ceylon[5]	22.8	9.4	8.4	5.8
Germany[1]	24.2	11.7	11.4	10.9
Italy	5.7	3.0	3.3	4.0
Japan	1.4	3.4	4.8	3.6
Korea[14]	83.4	61.1	147.6	94.2
Madagascar	12.2	15.8	15.4	13.0(?)
Mexico	9.8	29.6	23.5	19.6
Norway	4.3	5.0	5.7	4.5
United States	(?)	(?)	(?)	(?)
Total (est.)	205.	255.	370.	305.
Gypsum		(Thousands of metric tons)		
Australia	180.9	475.0	486.1	510.0(?)
Canada	1,390.2	4,445.4	4,269.7	3,606.2
Egypt	700.2	203.7	945.0	1,000.0(?)
France	(?)	3,598.8	3,556.2	3,500.0(?)
Germany[1]	(?)	948.6	890.5	1,022.0
Italy	433.1	873.4	951.8	670.0(?)
Japan	164.8	378.7	477.9	477.1
South Africa	40.8	189.9	163.2	231.9
Spain	—	1,129.5	1,334.9	1,055.0(?)

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1956	1957	1958
United Kingdom	1,042.8	3,387.8	3,403.2	4,055.2
United States	2,927.2	9,358.9	8,341.1	8,709.2
Total (est.)	8,031.	33,040.	33,240.	33,435.
Iron (pig)		(Millions of metric tons)		
Australia	1.12	2.10	2.24	2.29
Austria	[12]	1.74	1.96	1.82
Belgium	3.06	5.76	5.59	5.52
Canada	0.85	3.46	3.56	2.88
China	(?)	4.78	5.50(?)	9.50(?)
Czechoslovakia	1.61	3.28	3.56	3.72(?)
France	7.46	11.64	12.08	12.14
Germany	20.3	19.15	20.02	18.43
Saar	[12]	3.03	3.17	3.10
India	1.79	1.99	1.94	2.17
Italy	1.10	2.00	2.21	2.17
Japan	3.0	6.26	7.13	7.71
Luxembourg	1.8	3.32	3.37	3.29
Poland	—	3.51	3.68	3.76(?)
Sweden	—	1.41	1.54	1.25
USSR	15.2	35.80	37.00	39.60
United Kingdom	8.11	13.38	14.54	13.20
United States	32.32	70.46	73.41	53.40
Total (est.)	102.	201.20	211.50	196.35
Lead (smelter)		(Thousands of metric tons)		
Argentina	14.0	24.3	26.0	32.0
Australia[13]	238.6	240.5	243.2	252.6
Belgium[8]	96.2	102.3	99.3	95.9
Burma	78.6	19.9	19.8	17.8
Canada	172.9	135.4	130.6	122.3
France	42.4	66.4	73.8	70.6
Morocco[19]	—	28.1	31.2	33.1
Germany[1]	175.5	116.5	137.8	134.3
Italy	38.8	39.1	39.6	48.0
Japan	18.2	37.3	45.6	38.5
Mexico	213.7	194.1	210.2	198.0
Peru	24.3	59.8	68.9	64.1
Poland	25.0[8]	35.2	35.7	35.7
Spain	26.0	65.8	59.0	68.4
Tunisia	22.9	24.8	26.9	28.6
USSR	74.8[8]	263.1(?)	290.0(?)	310.0(?)
United States	404.3	491.9	484.0	425.8
Yugoslavia	—	75.8	78.5	84.3
Total (est.)	1,765.	2,180.	2,280.	2,250.
Magnesium		(Thousands of metric tons)		
Canada	—	8.71	7.61	5.27
France	3.9	1.52	1.59	1.74
Germany[1,8]	14.	0.18	0.24	0.19
Italy	0.3	3.72	3.78	3.80(?)
Japan	1.6	0.08	0.43	0.40(?)
Norway	—	7.43	8.62	9.28
USSR	1.	40.(?)	40.(?)	40.(?)
United Kingdom[8]	5.1	3.69	3.48	2.38(?)
United States	3.0	62.00	73.72	27.30
Total (est.)	29.4	128.	140.	91.
Manganese Ore		(Thousands of metric tons)		
Belgian Congo	—	329.5	367.0	331.1
Brazil	257.8	310.8	918.0	695.0[5]
Chile	12.6	47.1	54.2	38.2
China	(?)	525.0(?)	550.0(?)	(550.0(?))
Cuba	102.4	234.1[5]	134.5[5]	68.7[5]
Ghana[5]	388.1	646.1	651.6	520.8
Hungary	(22.2)	85.0(?)	120.0(?)	120.0(?)
India	858.2	1,713.7	1,680.5	1,249.7
Japan	(?)	285.0	288.9	276.2
Mexico	61.	155.(?)	200.(?)	170.(?)
Morocco[19]	75.4	421.4	491.5	410.1
Portuguese India	8.2	195.8	234.0	125.6[5]
Rumania	41.5	235.0	265.3	200.0(?)
South Africa	419.7	697.1	714.8	847.4
USSR	2,557.0	4,938.0	5,148.0	5,366.0
United States	29.8	312.7	332.3	293.1
Total (est.)	5,175.	11,715.	12,820.	11,843.
Mercury		(Thousands of flasks)		
Chile	(0.04)	0.58	0.68	0.60(?)
China	4.93	(11.5(?))	(?)	(?)
Czechoslovakia	2.67	0.73(?)	0.73(?)	0.73(?)
Italy	67.15	61.93	63.24	58.71
Japan	1.36	8.33	11.87	10.30
Mexico	7.38	19.53	21.07	22.57
Peru	—	0.34	0.41	1.98
Philippines	—	3.02	3.36	3.32
Spain	35.91	48.27	54.75	55.00(?)
USSR	(?)	(12.3(?))	(?)	(?)
United States	18.63	24.18	34.63	38.07
Yugoslavia	(?)	13.23	12.33	12.27
Total (est.)	145.	220.	245.	248.
Mica		(Thousands of metric tons)		
Argentina	0.3	0.1	0.1	0.1(?)
Brazil	0.4	1.3	1.5	1.4(?)
Canada	1.0	0.8	0.6	0.5(?)
India[5]	10.1	21.8	22.2	20.2
Madagascar	0.6	0.5	1.0	1.0
South Africa	1.0	2.3	1.9	1.9
United States	22.8	78.7	84.2	85.0
Total (est.)	(?)	140.	145.	145.
Molybdenum		(Thousands of metric tons)		
Canada	—	0.38	0.36	0.26

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1956	1957	1958
Chile	0.03	1.42	1.36	1.35
Mexico	0.52	0.02	0.01	0.03
Norway	0.43	0.17	0.18	0.22
USSR	(?)	(?)	4.20(?)	4.20(?)
United States	13.76	26.06	27.56	18.63
Total (est.)	15.2	31.9	34.6	25.6
Nickel (mine)		(Thousands of metric tons)		
Canada	102.5	161.9	170.5	127.8
Cuba	—	14.6	20.2	17.9
Greece	1.3	0.4	(?)	(?)
Japan	0.9	—	—	—
New Caledonia	10.6	23.0	30.0	12.0(?)
Norway	1.1	—	—	—
South Africa	(?)	3.3	4.1	3.5(?)
USSR	(?)	47.0(?)	50.0(?)	50.0(?)
United States	0.4	6.1	9.1	10.7
Total (est.)	122.	257.0	285.0	223.0
Petroleum		(Millions of barrels)		
Argentina	18.61	31.0	30.6	35.8
Canada	7.84	172.0	181.8	165.5
Colombia	23.86	45.0	46.8	48.0
Indonesia	62.09	93.8	114.2	118.7
Iran	78.15	197.1	263.1	301.4
Iraq	30.79	232.3	163.5	266.1
Kuwait	—	399.9	416.0	509.7
Mexico	42.90	90.7	88.3	93.5
Rumania	45.65	81.4	83.3	84.5
Saudi Arabia	3.9	360.9	362.1	370.5
Trinidad	19.27	28.9	34.1	37.4
USSR	216.87	611.7	732.6	834.2
United States	1,264.96	2,617.3	2,616.8	2,448.9
Venezuela	206.47	899.2	1,014.5	950.8
Total (est.)	2,086.	6,124.6	6,450.7	6,617.7
Phosphates		(Thousands of metric tons)		
Algeria	450.	605.9	605.4	565.0
Christmas Is.[5]	178.0	346.1	341.0	350.0(?)
Egypt	547.5	615.0	585.5	600.0(?)
Fr. Oceania[5]	160.7	254.0	304.6	319.6
Morocco[19]	1,703.0	5,521.8	5,567.5	6,335.8
Nauru Island[5]	1,244.2	1,354.0	1,123.0	1,254.3
Ocean Island[5]		301.9	296.8	329.0
Tunisia	1,627.9	2,076.8	2,067.3	2,278.5
USSR	1,618.	5,350.0(?)	5,750.0(?)	6,000.(?)
United States	3,817.4	15,999.5	14,200.0	15,117.9
Total (est.)	11,500.	34,400.	33,100.	35,400.
Platinum Metals		(Thousands of ounces)		
Canada, total[9]	284.3	314.9	416.2	295.3
Platinum	148.9	151.4	199.6	144.6
O.P.M.[11]	135.4	163.5	216.6	150.7
Colombia	39.1[10]	26.2	19.8	16.0
South Africa[9]	65.3	491.3	609.1	305.(?)
USSR	100.(?)	250.(?)	250.(?)	250.(?)
United States	41.2	21.4	18.5	14.3
Total (est.)	543.	1,100.	1,310.	880.
Potash[6]		(Thousands of metric tons)		
France	598.0	1,327.2	1,401.8	1,463.0(?)
Germany, East	2,061.7	1,450.(?)	1,500.(?)	1,540.(?)
Germany, West		1,654.0	1,690.0	1,716.0
Israel	31.8	28.0(?)	45.0(?)	72.6(?)
Spain	25.5	239.0	228.1	214.0(?)
United States	283.2	1,970.0	2,056.1	1,948.3
Total (est.)	—	7,600.	7,900.	8,000.
Pyrite		(Thousands of metric tons)		
Australia	55.1	190.4	230.4	232.7
Canada	206.5	949.6	1,058.1	1,690.9
Cyprus	403.9	1,629.1	1,097.4	1,022.3
Germany[1]	560.5	644.4	605.8	565.5
Greece	217.2	240.8	235.0	150.0
Italy	977.7	1,371.0	1,468.1	1,513.7
Japan	(?)	3,097.5	3,377.7	3,193.3
Norway	1,024.9	853.0	843.5	787.0
Portugal	502.3	669.8	666.8	598.2
Spain	2,600.0	2,295.6	2,216.9	2,054.0
Sweden	191.7	493.5	501.6	334.7
United States	524.7	1,087.1	1,084.5	989.7
Total (est.)	10,800.	18,000.[20]	18,100.[20]	18,200.[20]
Salt		(Millions of metric tons)		
Brazil	0.56	0.80	0.80	0.80(?)
Canada	0.39	1.45	1.61	2.14
China	3.0	6.0(?)	8.0(?)	10.4(?)
Egypt	0.44	0.53	0.52	0.45(?)
France	2.13	3.42	3.38	3.52
Germany, East	3.72	1.69	1.76	1.76(?)
Germany, West		3.58	3.59	3.56
India	1.52	3.22	3.67	4.14
Italy	1.36	1.87	1.49	1.61
Japan	0.64	0.63	0.83	1.06
Poland	0.65	1.27	1.3(?)	1.3(?)
Rumania	0.37	0.84	0.85	0.85(?)
Spain	0.82	1.13	1.35	1.83
United Kingdom	3.26	5.07	5.07	5.01
United States	8.41	21.97	21.64	19.88
Total (est.)	31.97	68.15	71.00	73.40
Silver		(Millions of ounces)		
Argentina	4.77	1.67	1.35	1.54
Australia	15.32	14.59	15.74	16.25
Belgian Congo	2.80	3.79	3.04	4.53
Bolivia[5]	7.24	7.55	5.38	6.05

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1956	1957	1958
Burma	5.94	1.50	1.53	1.96
Canada	23.16	28.43	28.82	31.09
Honduras	4.21	2.03	2.19[17]	2.66[17]
Japan	11.	6.17	6.54	6.73
Mexico	75.87	43.08	47.15	47.59
Peru	18.80	22.97	24.85	24.16
USSR	(?)	25.0(?)	25.0(?)	25.0(?)
United States	63.87	38.74	38.72	36.80
Yugoslavia	(?)	2.76	2.59	3.75
Total (est.)	267.	225.0	230.1	236.8
Sulfur (native)		(Thousands of long tons)		
Chile	27.0	37.3	18.5	25.0
Italy[3]	350.2	170.1	171.7	158.7
Japan	202.6[12]	243.3	253.5	177.2
Mexico	—	758.4	1,007.9	1,236.9
United States	2,091.0	6,484.3	5,578.5	4,645.6
Total (est.)	2,700.	8,000.0	7,300.0	6,500.0
Talc		(Thousands of metric tons)		
Austria	(?)	66.1	73.4	70.8
Canada	11.9	26.6	31.5	30.4
France	(?)	115.1	142.0	140.8
Germany[1]	7.7	35.8	30.0(?)	30.0(?)
India	22.6	47.6	44.7	46.7
Italy	71.4	95.3	92.6	109.0
Japan	(?)	313.7	425.6	346.0
Norway	31.5	74.5	66.0	57.5
Spain	5.5	27.6	29.1	29.1
Sweden	7.2	13.1	12.6	13.8
United States	230.4	670.4	620.9	668.9
Total (est.)	500.	1,750.	1,840.	1,810.
Tin (mine)		(Thousands of long tons)		
Australia	2.8	2.1	2.0	1.9
Belgian Congo[21]	7.1	14.8	14.3	11.2
Bolivia[5]	27.2	26.8	27.8	17.7
China[2]	15.0[8]	20.0(?)	23.0(?)	23.0(?)
Indonesia	27.8	30.1	27.7	23.2
Malaya	46.8	62.3	59.3	38.5
Nigeria	9.6	9.1	9.5	6.2
Thailand	17.3[6]	12.5	13.5	7.7
USSR[2]	(?)	11.8(?)	13.0(?)	13.5(?)
Total (est.)	176.	199.3	200.1	152.4
Tungsten[7]		(Thousands of metric tons)		
Argentina	1.31	1.17	1.31	1.00
Australia	1.03	2.68	2.39	1.45
Bolivia[5]	3.34	4.77	4.36	3.51
Brazil[5]	[4]	1.83	2.09	2.36
Burma	7.82	2.71	2.61	1.51
China	12.87	18.00(?)	20.00(?)	(20.(?))
France	0.28	1.22	0.92	1.02
Korea[14]	3.97	4.06	4.16	3.29
Peru	0.17	1.13	1.10	0.89
Portugal	3.85	5.00	4.32	1.87
Spain	0.37	1.23	1.03	0.92
Sweden	0.16	0.46	0.51	0.52
Thailand	0.38	1.28	0.98	0.66
USSR	0.3(?)	7.50(?)	7.50(?)	7.50(?)
United States	3.89	13.37	5.01	3.44
Total (est.)	42.0	74.8	68.1	57.6
Vanadium		(Thousands of metric tons)		
Finland	—	0.04	0.26	0.39
Peru	1.02	—	—	—
S. West Africa	0.51	0.28	0.27	0.40
United States	0.90	3.51	3.35	2.75
Total (est.)	2.91	3.84	3.90	3.84
Zinc (smelter)		(Thousands of metric tons)		
Australia	72.4	106.7	112.1	116.6
Belgium[3]	186.0	230.7	235.6	214.8
Canada	159.3	231.8	224.4	228.7
France	61.0	112.6	130.6	149.9
Germany[1]	231.	185.9	183.7	133.2
Italy	33.4	73.6	73.7	71.4
Japan	54.2	136.2	138.0	141.0
Mexico	35.4	56.4	56.6	57.5
Netherlands	25.3	29.0	30.0	26.6
N. Rhodesia	10.4	29.4	30.0	30.7
Norway	45.9	48.8	48.4	45.1
Poland	117.9	153.3(?)	158.8(?)	163.0(?)
Spain	7.7	23.0	21.9	24.3
USSR	80.(?)	318.0(?)	350.0(?)	365.0(?)
United Kingdom	56.2	82.8	78.1	75.8
United States	460.2	892.3	894.3	708.7
Total (est.)	1,650.	2,830.	2,930.	2,730.

[1] Federal Republic only, in postwar years. [2] Smelter output. [3] Crude. [4] Less than 50 tons. [5] Exports. [6] Marketable in equivalent K_2O. [7] Concentrates, 60 per cent WO_3. [8] Includes secondary. [9] Total platinum group metals. [10] Exports of crude platinum. [11] Other platinum metals. [12] Included under Germany. [13] Includes Pb content of lead bullion. [14] Republic of Korea only, in postwar years. [15] Excludes estimate for USSR. [16] Cadmium content of flue dust exported for treatment elsewhere; to avoid duplication, data are not included in total. [17] U.S. imports. [18] Oven and beehive coke, excluding breeze. [19] Southern Zone (formerly French Morocco) only. [20] Includes estimate for USSR. [21] Including Ruanda-Urundi.

BERENICE B. MITCHELL,
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MINERALOGY. International Mineralogical Association.—The association held its first congress in Zurich, Switzerland, on Aug. 28–Sept. 4, 1959, attended by more than 200 mineralogists from all parts of the world. At Technical University, which acted as host for the conference, two symposia were conducted, one on twinning in crystals and the other on Alpine fissure minerals. Two five-day field trips, in the eastern and western Alps, were conducted following the meeting.

The International Mineralogical Association came into being in Madrid, Spain, in April 1958, when delegates representing 14 countries were present. By the time of the Zurich meeting, seven additional mineralogical societies had joined the association, and official delegates from 19 of these 21 members attended the 1959 conference. Arrangements are being made in several other countries to join the association, and in some cases national mineralogical societies are being organized for this purpose.

Mineralogical Society of America.—The annual meeting of the Mineralogical Society of America, held in Pittsburgh, Pa., on Nov. 2–4, 1959, was attended by more than 400 fellows and members. There were 10 scientific sessions at which 107 papers of mineralogical interest were presented. The meeting was the occasion of the presentation of the Roebling Medal, the society's highest honor, to Professor Felix Machatschki of the University of Vienna, for his many contributions to the science of mineralogy, particularly for his early work on the structure of the silicate minerals. The Mineralogical Society of America Award, an honor conferred annually by the society for a major contribution to mineralogy made by an individual under 35 years of age, went in 1959 to Dr. Harry F. W. Taylor of Aberdeen, Scotland, for his work on the calcium silicate minerals.

The Mineralogical Society of America has grown continuously since its formation in 1920. The year 1959, however, saw a greater growth than in any previous year of the society's history, and on November 1 there were 1,877 members, an increase of more than 300 over the previous year. In addition there were 1,339 subscribers to the *American Mineralogist,* the journal published by the society.

Mineralogical Abstracts.—Since 1920 the British Mineralogical Society has published with its *Mineralogical Magazine* a separately paged appendix of "Mineralogical Abstracts." These were discontinued in December 1958, but in their place there is a new enlarged journal, *Mineralogical Abstracts,* published under the joint auspices of the British and American Mineralogical societies. This new journal, issued quarterly, will provide a greater world coverage of mineralogical literature.

Mineralogy Textbooks.—Not for many years has a new United States textbook of mineralogy been published. In 1959, however, there appeared two new college textbooks and complete revisions of two old ones. The new books are *Mineralogy: Concepts, Descriptions, Determinations* (San Francisco), by L. G. Berry and Brian Mason; and *Principles of Mineralogy* (New York), by W. H. Dennen. The revised books are *Mineralogy* (New York), 5th edition, by E. H. Kraus, W. F. Hunt, and L. S. Ramsdell; and Dana's *Manual of Mineralogy* (New York), 17th edition, by C. S. Hurlbut, Jr. The book *Getting Acquainted with Minerals* (New York), by G. L. English, written for the amateur mineralogist, appeared in 1958 completely revised by D. E. Jensen.

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MINING. U.S. Bureau of Mines.—Reduced demand for certain minerals and increased production capacity for others combined to create surpluses of several commodities in 1959, causing the Bureau of Mines to relax its search for assured mineral supplies and to shift attention to investigating and developing the potential of less-well-known elements and alloys. At the same time, the bureau emphasized studies designed to improve United States technology and to help the nation's industries meet increasing competition from other countries now recovered from the impact of World War II.

Preliminary estimates by the bureau placed the value of all United States mineral production in 1959 at $17.1 billion, compared with $16.5 billion in 1958. These values include petroleum, coal, and other fuels, as well as metals and nonmetals.

Important advances were made in most phases of bureau activity during the year. Mining and metallurgical studies yielded new or improved extraction and processing methods; research in coal, petroleum, and natural gas developed more precise investigative tools; and the bureau's helium-production capacity was increased substantially with completion of a new government plant to extract this valuable lightweight element from natural gas. The bureau also stepped up its production of safety education films for mineral industry workers, while its scientific studies in this field developed new protective devices for coal miners.

Mining and Metallurgy.—Furthering long-range fundamental studies of blasting effects in mining, the bureau employed high-speed photography to obtain new information on the use of explosives in stone quarries. Similar investigations yielded physical data on rock breakage by explosives.

During the year, two accomplishments by bureau metallurgists awakened widespread scientific interest. The attainments, both of which promise to speed the nation's space exploration and missiles programs, were laboratory production of the world's first shaped molybdenum casting and development of techniques for making high-purity tungsten.

Other metallurgical features of the year were basic studies that uncovered new facts about such rare-earth metals as erbium, holmium, dysprosium, gadolinium, and neodymium, and the beginning of experiments to evaluate the commercial possibilities of the bureau's new electrolytic process for recovering high-purity titanium from scrap and other materials. The bureau also advanced research on conventional metals. Natural gas and coal were used successfully in an experimental blast furnace, and a method for making low-nickel austenitic stainless steel from offgrade ores was demonstrated. (See also CHEMISTRY; METALLURGY.)

Bureau studies of nonmetallic minerals included experiments with super-refractories that shed new light on the thermal properties of certain mineral salts. Development of methods for upgrading fire clays to improve their heat resistance was intensified, and additional knowledge was gained on the structure of asbestos.

Helium.—Completion of a new plant to extract helium from natural gas produced in Oklahoma's Keyes field was a major accomplishment in 1959. The plant, which began operating early in August, adds 290 million cubic feet a year to the government's helium-production capacity. The Interior Department in 1959 renewed its request to Congress for legislation that would establish a national helium-conservation program and permit recovery of helium now lost when it goes to fuel markets as a constituent of natural gas.

Fuels Research.—In 1959 the bureau completed

its part in a long-range cooperative study to determine estimates of future United States requirements for petroleum and natural gas, and to formulate plans for assuring adequate supplies of these essential fuels. Another cooperative program, under which the Bureau of Mines and the Atomic Energy Commission are exploring the feasibility of using nuclear explosives in mineral development, resulted in the government's proposal for a joint experiment with industry to evaluate the effects of detonating a small atomic device in an oil-shale formation. Industrial interest in such a test—which ultimately might lead to a means of extracting oil from shale without mining it—was generally high, and the two federal agencies began making preliminary plans for the experiment.

Bureau petroleum researchers devised new scientific instruments and techniques for which widespread future use is indicated. Two of these—a lightweight, battery-powered apparatus that can be used to detect and record radiation in remote areas where central power is unavailable, and a technique that employs foam generated by detergents to remove unwanted water from natural gas wells—attracted international interest. Another achievement was the development of a special container that permits use of the corrosive liquid metal, gallium, to gain greater accuracy in recording the characteristics of natural gas and other hydrocarbons under pressure.

Research on missile fuels was aided greatly by the bureau's determination of the nitrogen-fluorine bond energy in organic compounds. During the year, bureau scientists also made the first positive identification of a nonbasic nitrogen compound in petroleum. The compound (dibenzopyrrole) was separated from a California crude oil by chromatography and was identified by mass and infrared spectroscopy.

The bureau continued intensive research on coal extraction, preparation, and utilization during the year. Field experiments were begun on hydraulic mining of bituminous coal and in degasifying coalbeds (eliminating explosive methane) in advance of underground mining. A full-scale longwall-mining project aimed at developing a highly productive system for extracting anthracite from seams of moderate thickness and pitch remained active, employing a continuous mining machine imported from Germany. Research to find improved mining techniques for veins that pitch more steeply progressed with joint bureau-industry tests of a continuous borer-type machine with auxiliary loading and conveying equipment, a new-type auger for drilling crosscuts between gangways, and steel-arch roof supports.

Coal-preparation studies were directed toward improving methods for cleaning fine sizes of bituminous coal and toward producing a calcined anthracite that might substitute effectively for foundry coke. Preliminary investigations were made to determine the effects of radiation on both anthracite and bituminous coal.

Coal-utilization studies in the bituminous realm included a continuing cooperative project with the Atomic Energy Commission to determine whether nuclear heat can be used for economic production of synthesis gas from coal, and new research aimed at developing a coal-burning gas turbine for stationary power plant use. Anthracite-utilization research emphasized studies of the effects produced when anthracite is reacted with hydrogen as part of the gasification process.

Under the federal-state Anthracite Mine-Water Control Program, eight projects were approved by the secretary of the interior in the first half of 1959. The total cost, to be shared equally by the federal government and the Commonwealth of Pennsylvania, is estimated at $4.4 million. By late 1959, 21 projects had been undertaken at a total cost of $7.7 million.

Health and Safety.—Advances in mine safety in 1959 included commercial manufacture of a bureau-developed, portable mining face shield, and development by bureau research of a new methane-detecting device, small enough to be carried in a man's pocket and operated by one standard flashlight cell. At the same time, the bureau and industry sought a practical design for a continuous methane-monitoring system with automatic power shutoff for electrical equipment operated in face areas of coal mines.

Production of safety-education films for mineral industry workers was intensified in 1959, and enrollment in the bureau's various accident prevention courses increased. In the 1959 fiscal year, the bureau's 246 coal-mine inspectors made nearly 12,000 safety surveys of the nation's coal mines.

Foreign Activities.—The Bureau of Mines continued to provide industry and government with information on mineral developments in other countries and, through a series of special studies, obtained realistic appraisals of production, trade, and mineral potential in Communist nations. Bureau specialists gave technological aid on minerals problems to 15 countries, and 25 foreign scientists and engineers received training at bureau installations during the year.

Other Activities.—The Bureau of Mines in 1959 helped many federal, state, and private agencies solve problems of water and power supply, mine drainage, pollution, and inundation of mineral resources.

A noteworthy attainment in 1959 was the publication, by midyear, of seven volumes of the *Minerals Yearbook*, on which production had fallen behind during World War II. In addition, the bureau issued 337 other technical publications and produced some 260 articles for technical journals and scientific meetings.

Economic conditions of the domestic metal-mining industries and the domestic petroleum industry were studied during 1959 to obtain a sound basis for evaluating numerous plans proposed to Congress.

(For additional references, see the Index entry, *Mining.*)

MARLING J. ANKENY,
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MINISTRY, Canadian. See CANADA.

MINNESOTA. North Central state, United States; admitted to the Union, May 11, 1858. The "Gopher State" ranks 12th in area and 18th in population among the 50 states.

Area and Population.—Area: 84,068 square miles (land, 80,009; inland water, 4,059), divided into 87 counties. Population: (1950) 2,982,483; (est., July 1, 1958) 3,342,000. Urban places with populations above 10,000 in 1950 (unless another date is given):

Albert Lea	13,545	New Canada twp.	12,082[2]
Austin	23,100	Owatonna	10,191
Bemidji	10,001	Red Wing	10,645
Brainerd	12,637	Richfield	31,756[1]
Crystal	13,724[1]	Robbinsdale	11,289
Duluth	104,511	Rochester	29,885
Faribault	16,028	St. Cloud	28,410
Fergus Falls	12,917	St. Louis Park	35,292[1]
Hibbing	16,276	St. Paul (*capital*)	311,349
Mankato	18,809	South St. Paul	15,909
Minneapolis	521,718	Virginia	12,486
Minnetonka twp.	12,800	White Bear Lake	13,032[3]
Moorhead	14,870	Winona	25,031
Mounds View twp.	10,896[2]		

[1] Special census, 1954. [2] Special census, 1955. [3] Special census, 1957.

Executive.—Chief state officers in 1959:
Governor: Orville L. Freeman (Democrat)
Lieutenant Governor: Karl F. Rolvaag
Secretary of State: Joseph L. Donovan
Treasurer: Val Bjornson
Attorney General: Miles Lord
Auditor: Stafford King
Commissioner of Education: Dean M. Schweickhard

Constitution and Judiciary.—The present constitution went into effect in 1858. The Supreme Court comprises seven justices; chief justice in 1959 was Roger L. Dell.

Legislature.—The Minnesota Legislature comprises a 67-member Senate (in 1959, 43 Conservatives and 24 Liberals) and a 131-member House of Representatives (72 Liberals and 59 Conservatives), which meet in odd-numbered years commencing the first Tuesday after the first Monday in January.

Bitter disagreement over fiscal policy between the Conservative-controlled Senate and the Liberal-controlled House kept the 1959 Minnesota Legislature at the capitol

for six months. When the regular session ended on April 24 with most of the major bills still in committee, the legislature was forced into the longest extra session (48 legislative days) in the state's history.

A withholding plan for state income tax, supported by Gov. Orville L. Freeman and the Liberals, was the focus of controversy. The compromise tax package which was finally approved increased levies on personal and corporation incomes, beer and liquor, cigarettes and tobacco, inheritances, and iron ore to provide an estimated $47 million in additional revenue for the 1959–61 biennium, but the withholding plan was defeated. A record $498 million was appropriated for the biennium, an increase of $71 million over the preceding two years. Of this total, $113.4 million was for welfare and $292.7 million for education. A $51.8 million state building appropriation authorized construction of three new classroom buildings at the University of Minnesota, a new diagnostic youth center in Anoka County, and major additions to several state hospitals. To provide funds for the building program, the 1959 state tax on property was increased to 14.32 mills, the highest in Minnesota's history.

Other important laws among the 793 passed during the regular and special sessions authorize reapportionment of legislative districts (see below, *Principal Events, 1959*); require that every county furnish or arrange for the services of probation officers for juvenile offenders; establish statewide daylight saving time from the fourth Sunday in May through Labor Day; require that all boats on Minnesota waters be registered and safety precautions observed; and approve for submission to the voters in November 1960 four constitutional amendments affecting succession to the governorship, the basis for legislative reapportionment, residence requirements for voters, and lengths of legislative sessions.

Finance.—In the 1958–59 fiscal year, state revenue of $874,404,353.29 comprised $314,322,552.32 from state tax sources, $116,046,016.91 from the federal government, and $444,035,784.06 from other sources. Tax revenue consisted of $183,028,662.47 from selective sales and gross receipts taxes, $77,318,078.75 from individual income taxes, $26,355,432.36 from corporate income taxes, $19,918,876.98 from property taxes, and $7,701,501.76 from other sources. An additional $7,956,083.60 was obtained from licensing. Expenditures of $876,062,976.48 comprised $174,101,747.81 for education, $171,988,068.62 for health, welfare, and safety, $223,277,076.63 for highways, and $306,696,083.42 for all other purposes. Long-term indebtedness on June 20, 1959, amounted to $158,069,196.54.

Banking.—As of June 10, 1959, the state's 179 national banks had $2,917,330,000 in assets, $1,816,535,000 in demand deposits, and $774,556,000 in time deposits. The 505 state banks (June 30, 1959) had assets of $1,162,954,618.09, demand deposits of $518,628,085.09, and time deposits of $644,326,533.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $223,636,927 ($364 per pupil), and revenue comprised $103,163,870 from local school districts, $98,362,997 from the state, and $4,800,873 from the federal government. Outlays for construction and improvements amounted to $118,552,480, and teachers' salaries averaged $4,699 (high school, $5,038; elementary, $4,284).

MINNESOTA SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–6; 1–8)	2,915	13,768	338,998
Public secondary (7–9; 10–12)	670	12,770	244,591
Private and parochial elementary and secondary	563	4740	142,378
Public junior colleges	9	133	2,656*
Private junior colleges	2	...	453*
Teachers colleges	5	611	9,630*
Colleges and universities	17	...	43,214*
Other higher institutions	10	...	2,480*

*1958–59 school year.

Public Assistance.—In the 1958–59 fiscal year, state and federal funds spent for public assistance (excluding institutional costs) totaled $81,517,641, including $48,814,846 for the aged, $16,620,179 for dependent children, and $13,252,485 for general relief. A monthly average of 113,252 persons received public assistance.

Labor Force.—The state's labor force totaled 1,444,900 in August 1959, including 320,000 agricultural workers. An expected record in nonagricultural employment for 1959 was realized in mid-June when there were 932,579 persons in nonfarm positions. By August, nonfarm employment, because of steel and packinghouse strikes, declined to 919,000, although it remained above the 912,900 figure of the previous August and the 1958 average of 896,200. Unemployment amounted to 49,700 in August 1959, well below the 83,000 figure for the previous August.

Manufacturing.—The state's 5,000 manufacturing plants in 1958 employed an average of 218,200 persons who received $1,051,500,000 in wages. Value added by manufacture (1957) totaled $2,043,918,000, and outlays for new plant and equipment amounted to $101,880,000. Production workers averaged $91.78 for an average workweek of 40.8 hours during August 1959.

MAJOR MINNESOTA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Food and kindred products	52,181	$234,628	$532,367
Nonelectrical machinery	32,135	147,476	255,658
Pulp, paper, and products	17,144	88,926	194,741
Printing and publishing	20,098	93,740	150,155
Chemicals and products	6,329	29,179	120,816
Transportation equipment	8,293	40,217	105,064
Fabricated metal products	12,724	53,925	105,024
Lumber and wood products	8,813	32,110	57,969
Primary metal industries	6,540	33,487	55,292

* For definition see footnote 1 in the article *Industrial Production*. (Source: *Annual Survey of Manufactures: 1957*.)

Mining.—Minnesota ranked 11th among the states in the value of its 1958 mineral output which, though 32% under that of 1957, accounted for 2.4% of the national total. Shipments of iron ore were the lowest since 1939, chiefly due to the reduced demand by the domestic steel industry. Taconite concentrate shipments reached 9 million long tons, 21% of the state's total output of iron ore, as against 10% in 1957. Ore production in 1959, though continuing highest in the nation, received a serious setback in July when the nation's steelworkers went on strike. It was estimated that some 22,000 Minnesotans became jobless in the mining, processing, and shipping phases of the iron ore industry.

MINNESOTA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Coke	642,618	$ 14,834,820[1]
Iron ore, usable (long tons)	42,503,000	354,528,000
Manganiferous ore	370,603	...[2]
Sand and gravel	29,634,000	21,680,000
Stone	3,519,000	9,560,000
Other minerals	...	10,304,000
Total	...	$395,880,000[3]

[1] Values for processed materials are not included in the total. [2] Value included in "Other minerals." [3] Value has been adjusted to eliminate duplication of value of limestone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $990,366,000 from $1,058,146,000 for the corresponding period of 1958. For the full year 1958, income comprised $1,074,873,000 from livestock and livestock prod-

MINNESOTA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	29,356	30,960	29,174
Corn (1,000 bu.)	268,215	312,448	334,278
Flaxseed (1,000 bu.)	10,928	6,993	5,302
Hay (1,000 tons)	6,613	6,663	6,403
Oats (1,000 bu.)	186,255	211,464	176,673
Potatoes (1,000 cwt.)	8,960*	11,346	11,674
Rye (1,000 bu.)	2,072	1,170	1,026
Soybeans (1,000 bu.)	30,879	53,935	41,667
Sugar beets (1,000 short tons)	636	883	885
Wheat (1,000 bu.)	16,202	25,345	23,287

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

ucts, $392,879,000 from crops, and $41,720,000 from government payments. Principal income sources in 1958 were: cattle, $363,241,000; dairy products, $277,128,000; and hogs, $258,441,000.

There were 162,000 farms in the state in 1958. Total acreage (1954) of 32,285,000 included 19,493,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 3,973,000 cattle, 3,815,000 hogs, 765,000 sheep, and 21,185,000 chickens (excluding commercial broilers). There were 211,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for trunk highways in the 1958–59 fiscal year totaled $107,637,106, and 472 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 123,367 miles (112,319 surfaced). Registered *motor vehicles* numbered 1,583,062 on Sept. 30, 1958, including 1,174,688 passenger cars. There were (1958) 26 *railroads* operating 8,251.12 line miles and (1959) 7 regularly scheduled *airlines* and 400 *airports and airfields* (117 commercial and municipal and 283 private), in addition to 12 public and 64 private seaplane bases.

Communication media (1959) included 67 AM and 4 FM *radio stations;* 10 VHF *television stations;* 27 daily *newspapers* (circulation, 1,083,111) and 401 other newspapers (629,839); and (January 1) 310,100 business and 952,200 residential *telephones.*

Principal Events, 1959.—A sharp decline in tax revenue from iron ore mining created a serious financial problem for Minnesota in 1959. As a result of mine shutdowns during the 1958 business recession, iron ore taxes dropped $17.9 million for the fiscal year ending June 30. The overall decline ($5.6 million) in taxes collected by the state was larger than in any year since the depression period of the 1930's. The problem was intensified when Minnesota mines were again closed, from mid-July to mid-November, as a result of the nationwide steel strike (see IRON AND STEEL). It was estimated that the state lost $1.7 million in taxes each week during the strike.

The steel strike idled 30,500 Minnesota workers, largely in mining and transportation. Duluth and the Iron Range communities were hardest hit. There were two major labor disputes in the Twin Cities (Minneapolis and St. Paul) during the year. A strike-lockout closed Minneapolis grocery stores for 28 days in March. In November a 22-day strike against the Twin City Rapid Transit Company left the state's largest metropolitan area without public transportation for the first time since 1939. At Albert Lea, violence broke out in December at a meatpacking plant which had been struck by the United Packinghouse Workers since November 3. Governor Freeman declared martial law and on December 11 moved in National Guardsmen to close the establishment. A federal court on December 23 ordered it reopened, and four days later martial law was ended, although the dispute continued.

In the Minneapolis mayoralty election on June 10, P. Kenneth Peterson was returned to office for a second term, after a campaign in which city liquor licensing was the dominant issue.

The driest 20-month period ever recorded in the Twin Cities found the area short of normal rainfall by 14.57 inches on April 30. Normal to heavy rains during the late spring and summer replenished shrunken lakes and parched farmlands over much of the state, but drought conditions in western Minnesota continued to threaten agricultural production there.

Duluth formally marked the completion of the improved St. Lawrence Seaway with a week-long celebration in July. The first deep-draft ocean-going freighters had entered the Duluth Harbor on May 3, thus inaugurating a new era in world trade for the inland port. The $10 million Arthur M. Clure Public Marine Terminal was dedicated on July 11 in ceremonies presided over by U.S. Secretary of the Interior Fred A. Seaton.

After decades in which a deadlock between urban and rural interests prevented action, the 1959 Minnesota Legislature hammered out a compromise on reapportionment of state legislative districts. It authorized redistricting according to population (as presently required by the state constitution) for the 1962 election—the first such change since 1913. As a result, urban centers, particularly the Twin Cities, will gain heavily in representatives. At the same time the legislature approved a constitutional amendment, to be submitted to the voters in 1960, which would change the basis of representation in the Senate from population to area, beginning in 1971.

Legislature and Principal Events by:
JEANNE SINNEN,
Senior Editor, University Press, University of Minnesota.

MINT ESTABLISHMENT, U.S. The U.S. Mint, a bureau of the Treasury Department, administers laws dealing with the coinage of money and the purchase, sale, deposit, assay, refining, and custody of the government's stock of monetary gold and silver. The Mint also administers, in part, Treasury controls over the acquisition, ownership, possession, and use of gold and silver. The Office of the Director, in Washington, D.C., supervises operations of the mints in Philadelphia, Denver, and San Francisco (the latter now operates as an assay office and bullion depository); the gold bullion depository in Fort Knox, Ky.; the assay office in New York City; and the silver bullion depository at West Point, N.Y.

During the fiscal year ended June 30, 1959, the mints produced 1,575,712,736 United States coins, and 137,410,000 coins for Costa Rica, Cuba, Honduras, and the Philippines.

United States monetary stocks of gold and silver bullion in custody of Mint depositories at the close of the fiscal year 1959 were valued at approximately $22,027,000,000.

LELAND HOWARD,
Assistant Director of the Mint.

MIQUELON. See SAINT PIERRE AND MIQUELON.

MISSILES. The United States missile program has come a long way in the past few years. In 1955 the United States was far behind the Soviet Union in almost every phase of missile development, but by late 1959 it was judged to be about on a par with the USSR in most fields of missile development, including guidance systems, metals, instrumentation, and high-yield nuclear warheads. The United States remained clearly behind in high-thrust booster rockets and propulsion systems, but it had made some gains even in that field.

A budget-balancing administration and Congress, which held the defense appropriation for the fiscal year 1960 to $39.2 billion, forced major reductions in a number of missile programs, but sufficient funds were provided to enable the Department of Defense to continue its emphasis on development of advanced missile warfare. Increased funds were provided for intercontinental ballistic missiles, antimissile missile development, the Navy's fleet ballistic missile Polaris, and modernization of the Army's missile program.

A new defense master plan, announced in mid-1959, called for reductions in the Bomarc and Nike-Hercules surface-to-air missile programs, and resulted in a sharp cutback in funds for the Mace, an Air Force tactical missile. Additional funds

were granted for development of the Nike-Zeus antimissile missile, and funds were provided also to accelerate refinements and production of the Atlas intercontinental ballistic missile and its second-generation counterpart, the Minuteman.

During 1959, several missiles in different categories reached operational status, and were assigned to military units. A number of other missiles were far enough along in their development and test-firing programs to ensure their attainment of operational status in 1960.

(Note: This article is concerned with missiles which have a direct military application. For a discussion of rockets used in space research, see the article SPACE FLIGHT.)

GUIDED AND BALLISTIC MISSILES

Surface-to-Surface Missiles.—The first United States intercontinental ballistic missile (ICBM), the Atlas, joined the nation's growing missile arsenal in September 1959. The Atlas is designed to deliver a thermonuclear warhead more than 6,325 statute miles, and has been fired successfully at that range a number of times. Its first operational firing took place on September 9 at Vandenberg Air Force Base, Calif., where a squadron of 15 Atlas launchers is in combat-ready status. Six other Atlas bases were being built at the end of 1959. Authorities believed that the USSR had perhaps 10 to 30 operational ICBM's at the year's end, therefore surpassing the United States in long-range missile launching capability.

DIRECTORY OF MAJOR U.S. MISSILES

Missile	Status[1]	Service	Approx. range (miles)	Engine Type
Surface-to-Surface				
Asroc	D	Navy	10+	...
Astor	D	Navy	...	...
Atlas	O	Air Force	6,325+	Liquid rocket
Corporal	O	Army	100	Liquid rocket
Crossbow	D	Air Force	...	...
Dart	O	Army	1.1	Solid rocket
Davy Crockett	D	Army	...	Solid rocket
Honest John	O	Army	18–20	Solid rocket
Jupiter	O	Army	1,500–2,000	Liquid rocket
Lacrosse	O	Army	20	Solid rocket
Little John	O	Army	10	Solid rocket
Lobber	D	Army	50	...
Mace	O	Air Force	800+	...
Matador	O	Air Force	500+	Jet
Minuteman	T	Air Force	6,325	Solid rocket
Missile A	D	Army	65–70	Solid rocket
Pershing	D	Army	700	Solid rocket
Polaris	T	Navy	1,200–1,500	Solid rocket
Redstone	O	Army	180–250	Liquid rocket
Regulus I	O	Navy	500	Turbojet; rocket-launched
Sargeant	T	Army	100+	Solid rocket
Shillelagh	D	Army	...	...
SLAM	D	Air Force	Vast	Nuclear ramjet
SS-10[2]	O	Army	9.4	Solid rocket
SS-11[2]	O	Army	18.8	Solid rocket
Snark	O	Air Force	5,000–6,500	Jet
Subroc	D	Navy	300+	...
Thor	O	Air Force	1,500–2,200	Liquid rocket
Titan	T	Air Force	6,000+	Liquid rocket
Surface-to-Air				
Bomarc	O	Air Force	200–250	Ramjet
Bomarc B	T	Air Force	400+	Ramjet
Hawk I	O	Army	22	Solid rocket
Nike-Ajax	O	Army	35	Liquid rocket
Nike-Hercules	O	Army	75+	Solid rocket
Nike-Zeus	D	Army	...	Solid rocket
Redeye	D	Army-Marine Corps	...	Solid rocket
Super Talos	D	Navy	...	Ramjet
Talos	O	Navy	65	Ramjet
Tartar	P	Navy	20	Solid rocket
Terrier I	O	Navy	8–10	Solid rocket
Terrier II	O	Navy	15–20	Solid rocket
Air-to-Surface				
Bullpup	O	Navy	5	Solid rocket
Corvus	T	Navy	...	Solid rocket
Hound Dog	T	Air Force	500+	Jet
Mauler	D	Army	...	...
Petrel	O	Navy	50	Jet
Quail	O	Air Force	...	Jet
Rascal	O	Air Force	100+	Liquid rocket
Wagtail	D	Air Force	...	...
Zuni	O	Navy	5	Solid rocket
Air-to-Air				
Eagle	D	Navy	100	...
Falcon I–III	O	Air Force	5	Solid rocket
Genie	O	Air Force	1.5	Solid rocket
Sidewinder	O	Navy	6.7	Solid rocket
Sparrow I, III	O	Navy	8	Solid rocket

[1] Status code: O, for operational; P, in production, not yet operational; T, under test; D, under development. [2] Produced in France.

The Air Force's Titan ICBM, designed to complement the Atlas, made its first flight test early in 1959, and was expected to be approaching operational status by mid-1960. Larger and lighter than the Atlas, it is a two-stage missile launched initially by a 300,000-pound-thrust booster rocket. An advanced inertial guidance system is expected to give the Titan unusual accuracy at its full range of over 6,000 miles. At the end of 1959, five bases for Titan missiles were being built.

The first of the Air Force's second-generation ICBM's, the XSM-80 Minuteman, is scheduled for operational readiness in 1962 or 1963. Smaller, lighter, and considerably less expensive than the Atlas or Titan, it will be a highly sophisticated solid-fuel missile, incorporating the best features of earlier ICBM's. Its maximum range is 5,500 nautical miles (6,325 statute miles). When operational, Minutemen will be stored in underground bomb-proof silos, ready for instantaneous firing. The missiles will be fully transportable as assembled units from plants to launching sites.

At the end of 1959, the United States had two operational IRBM's (intermediate-range ballistic missiles): the Thor, developed by the Air Force; and the Jupiter, developed by the Army. The Thor, which became operational in September 1958, was judged the more reliable of the two missiles, with a probability of hitting target areas estimated at 80–90%. Now in full production, it is a single-stage missile and is transportable by air. Under study is a two-stage version, called Thoric, with intercontinental range.

The Army-developed Jupiter, the first United States IRBM to complete a guided flight over an extended distance (about 1,500 nautical miles) to a target area, became operational in 1959, and was deployed to overseas bases. Its all-inertial guidance system, erector, and launcher have features which permit both rapid movement between tactical firing positions (unidentifiable in advance by the enemy) and quick assembly prior to launching.

Development of the fleet ballistic missile Polaris, a missile of major importance for launching from submarines, neared completion in 1959. This solid-fuel missile underwent extensive component testing in 1959, and is scheduled to be ready for limited operation in late 1960, when the first Polaris-launching submarines will be ready. Considerably lighter and smaller than its land-based IRBM counterparts, Polaris will have an initial range of about 1,200 nautical miles, but by 1962 it should achieve its full range of 1,500 nautical miles with a reliability of over 90%. During 1959 several Polaris missiles were successfully test-fired from naval vessels at sea. It is possible that the Polaris may be adapted for firing from cruisers, land installations, and aircraft.

One of the newest surface-to-surface artillery missiles is the Lacrosse, which went into service with Army units in the summer of 1959. A tactical rocket with a range of 20 miles, it is designed to provide highly accurate support against enemy strongpoints, as well as for general support. It has a command guidance system and a solid-fuel rocket motor. Little John, a solid-fuel free-flight rocket, armed with either atomic or nonatomic

warheads, went into service in late 1959. Its range is about 10 miles, and its speed is supersonic. Designed to provide increased firepower for small, mobile combat units, it complements rather than replaces the Honest John, a long-range artillery rocket based in Europe and the Far East for several years. During the year, the Army let a contract for Missile A, scheduled to be the successor of Honest John and Little John. It will have a range of from 65 to 70 miles.

The jet-propelled TM-76 Mace, a relatively low-cost missile designed to replace the obsolescent Matador (also jet-propelled) at overseas Air Force bases, is expected to become operational in 1960. The Mace uses either an inertial guidance system or ATRAN (automatic tracking and navigation), a map-matching guidance system, depending on its mission. Its range of over 800 miles is substantially greater than that of the Matador (over 500 miles).

The Pershing, a selective-range two-stage ballistic missile, is under accelerated development by the Army as an eventual successor to the Redstone. Considerably lighter and smaller than its predecessor, it will have a high degree of mobility, a built-in guidance system, and a range of 700 miles. It will be armed with a nuclear warhead.

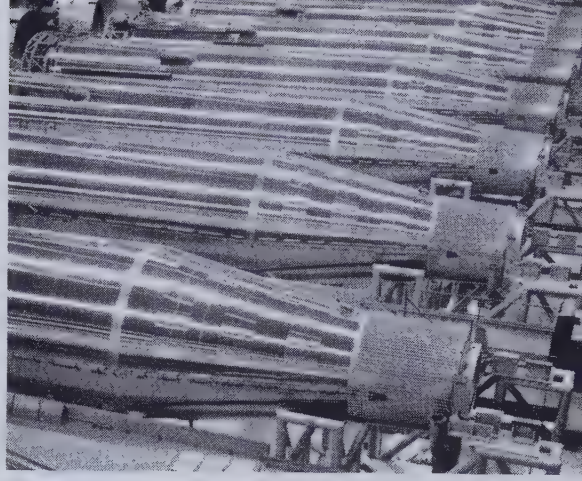
The Sergeant, a solid-fuel ballistic missile, will soon replace the Corporal. The Sergeant offers improved reliability, mobility, and accuracy as compared with its predecessor. It can carry either a nuclear or conventional warhead; it is air transportable; and it can be put in position and fired quickly by a small crew under all conditions of weather and terrain.

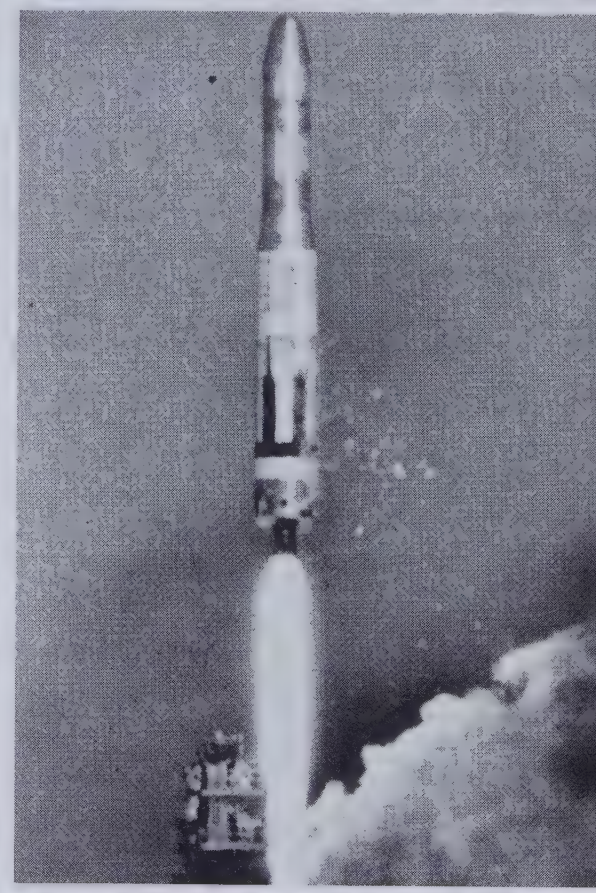
The Army's Dart antitank missiles are likely to be replaced by SS-10 and SS-11 solid-propellant wire-guided missiles, now in production in France. The jet-propelled Regulus II was canceled by the Navy in December 1958 after 90% of its development program had been completed.

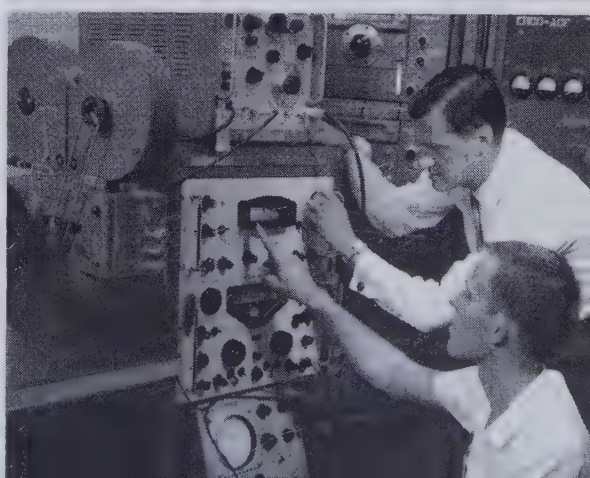
Surface-to-Air Missiles.—The Bomarc, a rocket-launched supersonic pilotless interceptor with a range of more than 200 miles, attained operational status in the fall of 1959. The Bomarc is designed to attack enemy bomber formations before they reach the vicinity of the target; its guidance equipment is tied in with the SAGE (semi-automatic ground environment) electronic communications system. The advanced Bomarc B, with a range of about 400 miles, has been ordered into production and should be operational in 1961.

The Army's liquid-propellant Nike-Ajax defensive missile is being replaced gradually by the solid-fuel Nike-Hercules, which has a range of about 80 miles and employs radar command guidance. The Nike-Zeus is an antimissile system being developed to intercept and destroy ICBM's in the last stage of their flight. A high-thrust solid-propellant power plant will boost the Zeus to speeds of about 5,000 mph.; its range will be about 200 miles. It is uncertain when the Zeus will attain operational status; there is even a possibility that it may never be ordered into production.

An advanced version of the Terrier surface-to-air guided missile went into production in 1959.







(*Top*) Atlas intercontinental ballistic missiles are assembled and checked on production line of San Diego, Calif., plant. (*Center*) The Titan ICBM rises from launching pad at Cape Canaveral, Fla., in its first test firing, February 6. (*Bottom*) New monitoring system (Project Tepee) is capable of detecting missile launchings and atmospheric nuclear explosions thousands of miles distant. Conceived by Dr. W. J. Thaler (standing) of the Office of Naval Research, the monitor reflects high-frequency radio signals from the ionized gas of rocket exhausts and from nuclear gas clouds, and in 1959 was used to record rocket firings within the Soviet Union.

CONVAIR; WIDE WORLD; U.S. NAVY

A two-stage solid-fuel rocket, it will be installed on missile cruisers, frigates, and nuclear-powered ships of several categories; and it also will be launched from mobile ground vehicles. The Tartar, a supersonic antiaircraft guided missile with a solid-fuel rocket motor, will enter service with the fleet in late 1960.

The Talos, a solid-propellant missile which became operational in mid-1959, can be used as an air defense missile, as a bombardment weapon, or as a long-range antisubmarine weapon (when equipped with a nuclear warhead). It employs beam-rider guidance and can reach targets at ranges of 65 miles and altitudes of over 75,000 feet. A Super Talos is being developed as an antimissile missile.

A new air defense weapon called the Hawk will join the Army's missile arsenal in 1960, complementing present Nike defenses. A mobile system for use in the field, it can be transported by helicopter or medium-size aircraft. It is effective at altitudes ranging from less than 100 feet to more than 38,000 feet. A special agency of the North Atlantic Treaty Organization (NATO) is being organized to produce the Hawk in five western European countries.

The Army's Plato, which aimed at providing a defense against ballistic missiles for battlefield troops, was canceled in mid-1959, presumably because of obsolescence; and the Air Force canceled the Goose, a turbojet-powered long-range surface-to-air missile.

Air-to-Surface Missiles.—The Air Force's only operational air-to-surface missile is the GAM-77 Hound Dog, which is powered by a turbojet engine and extends the capability of Strategic Air Command heavy bombers. Launched from a B-52G, the missile can deliver a nuclear payload on a target more than 500 miles away. The GAM-72 Quail, a diversionary or decoy missile to be air-launched from B-47 or B-52 bombers, was nearing operational status at the end of 1959.

The Zuni, designed primarily for use by fighter and attack aircraft against surface targets, but also usable against aircraft targets, has been approved by the Navy for operational use. The new air-to-surface Corvus has had a number of successful test firings at sea, and may join the fleet in 1960. Small enough to be used by carrier-based aircraft, the Corvus is designed primarily as a stand-off weapon. Near production is a Super Bullpup, with a 1,000-pound conventional warhead and a prepackaged liquid-fuel rocket engine. (The standard Bullpup has a solid-fuel motor and carries a 250-pound payload.)

Air-to-Air Missiles.—Five versions of the Air Force's Falcon air-to-air missile had been produced by the end of 1959, the latest being the GAR-3 and GAR-4. The GAR-3 employs semiactive radar-seeker guidance, while the GAR-4 has an infrared homing system. A new solid-propellant engine with greater burning time provides increased range and speed. The Air Force's Genie is an unguided rocket which travels at about four times the speed of sound and carries an atomic warhead. It is part of the armament of the F-89J, F-101B, and F-106 aircraft.

An advanced version of the Navy's Sparrow III, for launching from the F4H-1 supersonic all-weather fighter, is under development. Guidance is by radar homing. (Sparrow III has a range of 5 to 8 miles and a top speed more than 1,500 mph. in excess of the speed of the launching plane.) Also under development is the Sidewinder 1-C, which will have higher speed and greater range than its predecessors.

Future U.S. Missiles.—In 1959 the Air Force released a few details about its highly classified SLAM (supersonic low-altitude missile) developed under the code name of Project Pluto. The new missile is to have a nuclear-powered ramjet engine and an advanced electronic support system. It will be a surface-to-surface weapon with almost unlimited range. Also, the Air Force awarded a contract during the year for development of an air-launched ballistic missile which, if it meets expectations, could ensure the effectiveness of manned aircraft for an indefinite period. Designated the SGAM-87A, it will have a range of more than 1,000 miles. It is designed for firing from both the present Mach-2 B-58 and any forthcoming Mach-3 bombers, and it is seen as the progenitor of a missile launched from space craft.

The Army awarded a contract in 1959 for development of an infrared homing missile for use against low-flying aircraft. Called the Mauler, it is to be a highly mobile self-propelled missile system, capable of providing all-weather air defense for front-line troops. Joint development of a new surface-to-air, shoulder-fired guided-missile system called Redeye was initiated in 1959 by the Army and the Marine Corps. Fired from a bazooka-like launching tube, it can be carried by foot soldiers. A new family of "pocket" missiles, designed for limited nuclear warfare, is expected to result from the Army's Davy Crockett, a light nuclear-armed rocket designed to be fired like a rifle grenade by one or two men in the field. Another light-weight missile system being developed for close-in support of ground troops is the Army's Shillelagh. Expected to be operational in the mid-1960s, it is designed to provide greatly increased firepower (probably nuclear) against armor, troops, and fortifications.

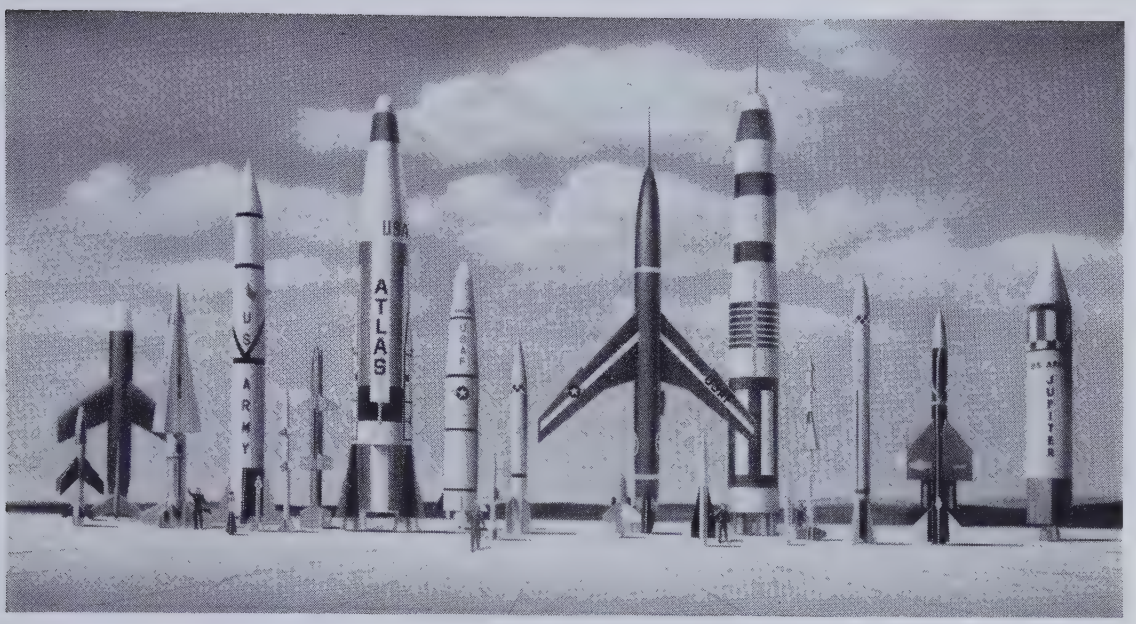
Still in the early stages of its long-range development is the Navy's Eagle air-to-air missile. This stand-off weapon will have long air-to-air range (about 100 miles) and can be fitted with a nuclear warhead. High performance will be built into the missile, enabling it to be fired from relatively slow launching aircraft.

The Navy has a research and development contract for Subroc, an antisubmarine missile which can be launched from above or below the surface, and associated equipment which can detect a submarine 25 to 50 miles distant, compute its course, and fire the missile. The Subroc is expected to be a defensive weapon for Polaris-launching submarines. The Astor (antisubmarine torpedo ordnance rocket) is a submarine-launched wire-guided, electrically propelled weapon carrying a nuclear warhead. The Asroc is a sophisticated antisubmarine rocket designed for launching from surface ships to seek submarines at longer ranges (up to 10 miles through air, plus limited underwater range) than were possible with the canceled Rat missile. An acoustic homing device provides underwater guidance. Also under development is a highly accurate, unguided, air-launched rocket called Gimlet.

The Air Force is developing Wagtail, an air-to-ground missile designed for greater penetration of defenses by means of low-altitude launching. The Crossbow, an adaptation of the drone aircraft to combat use, is designed to attack enemy defenses by homing on ground radar.

Under development for the Army is the cargo-carrying ballistic missile Lobber, designed to carry a 50-pound payload over a 50-mile range to test the feasibility of moving high-priority equipment to inaccessible areas via missile. The project could lead to missile transport of much larger payloads, ultimately including men.

Missile Development in Other Countries. *USSR.*—The Soviet Union, which started its missile research and de-



RAYTHEON COMPANY

Scale drawing of 21 major missiles in United States arsenal shows (left to right): Lacrosse, Mace, Nike-Hercules, Redstone (large rocket behind small Falcon and Sidewinder), Terrier, Talos, Atlas, Thor, Sparrow III, Sergeant, Quail, Snark, Hawk, Titan, Bullpup, Nike-Ajax, Corporal, Bomarc, and Jupiter. The Atlas became the nation's first operational ICBM in September.

velopment ahead of the United States, keeps pushing forward its missile programs. How effective its missiles are in comparison with those of the United States cannot be assayed with accuracy.

The USSR's two-stage T-2, an advanced weapon with a range of about 1,800 miles, is the mainstay of the Soviet missile arsenal. The T-3, like the U.S. Air Force's Atlas and Titan ICBM's, is designed to carry a nuclear warhead more than 5,000 miles; it became operational in 1959. Nearing full production status is an advanced version, the T-3A, with an estimated range of more than 6,000 miles and a velocity of 16,000 mph.

The J-2 is a radio-guided pilotless aircraft, adaptable as a surface-to-surface missile or antisubmarine weapon. Its range is about 525 miles and its speed is subsonic. An advanced version, the J-3, has swept wings, carries a one-ton warhead, and has a ramjet engine that gives it supersonic speed.

The M-2, similar to the Nike-Ajax but larger, with a range of 20 miles, is operational. Its speed exceeds 1,500 mph.

The Comet series of three surface-to-surface missiles comprises the 100-mile-range Comet I, in operational service; the 600-mile-range Comet II, with a greatly improved power plant and an inertial guidance system; and the 100-mile-range Comet III. Comet I can be launched from a submarine.

The T-6 is a surface-to-air weapon with a speed in excess of 1,500 mph. It is a two-stage solid-propellant missile, radar guided, with a high-explosive warhead. Also operational is the T-7A solid-fuel surface-to-surface missile, comparable to the U.S. Army's Corporal.

The Golem family of missiles is part of the Soviet naval arsenal. The Golem I is now obsolete. The Golem II, a two-stage liquid-propelled underwater-to-surface missile, is believed not yet operational. Its range is 1,200–1,500 miles, and it is launched from a towed underwater chamber. The solid-fuel Golem III, still in development, is a two-stage equivalent of the U.S. Navy's Polaris; its range is estimated between 1,500 and 2,000 miles.

Great Britain.—For IRBM's, Great Britain continues to rely on the United States-built Thor, but development of the first British IRBM, the Blue Streak, is going ahead approximately on schedule. Designed to carry a nuclear warhead over distances up to 2,000 miles, the Blue Streak is expected to become operational in the early 1960's.

In the surface-to-air category, the United Kingdom has two known missiles in production: the Bloodhound, for use by both the Royal Air Force (RAF) and the Swedish Air Force; and the Thunderbird, for use by the RAF and the British Army. The Bloodhound is a semiactive homing missile with built-in counterevasion capability. The Thunderbird is similar in performance and operational use to the American Nike-Hercules. Under development, and scheduled for operational status in the early 1960's, is the solid propellant Seacat, which is due to become the standard short-range weapon for the Royal Navy. A variant known as the Tigercat is being developed for land forces. Firestreak, an advanced air-to-air missile with infrared homing guidance and a range of about 8 miles, is in service with the RAF and is in production also for the Royal Navy.

France.—France has elected to concentrate its missile development and production on a variety of antiaircraft and antitank weapons. Its most successful missiles have been the wire-guided solid-propellant SS-10 and SS-11, for short-range battlefield use. The SS-11 has twice the SS-10's range of 1,650 yards, and higher speed. Capable of being launched from jeeps, tanks, or aircraft, the missiles are likely to be ordered as standard equipment for the U.S. Army. An improved version, the SS-12, is under development.

In the air-to-air category, the Nord 5103, sometimes called the "poor man's Sidewinder," is standard equipment with the French Air Force. To be produced in West Germany, it has a solid-propellant motor and a beam-rider guidance system.

The French government and aircraft manufacturers in 1959 established a new organization called the Société pour l'Etude et la Réalization d'Engine Balistiques, to push development and production of ballistic missiles.

Japan.—The Japanese Defense Agency decided in 1959 that Japan would have to rely for some time to come on missiles built in the United States. A tentative decision was reached to establish three guided missile units in Japan by 1962: a Bomarc B unit; a Nike-Hercules unit; and a Super Hawk unit. These, together with a supersonic fighter aircraft developed in the United States, would comprise the country's major defense elements.

West Germany.—West Germany has been chosen as the dominant partner in a six-nation NATO program to build the United States-developed Sidewinder air-to-air missile in Europe. West Germany also is participating in the five-nation $500 million Hawk program.

Italy.—Italy is producing the Oerone, a solid-propellant unguided surface-to-surface missile; the Orione Star, a limited-range surface-to-air weapon, and the C-7, a solid-fuel air-to-air missile using an infrared homing system. Under development is a family of unguided supersonic battlefield rockets named Robotti.

Missile Technology

Fuels.—With the range, speed, and payload capabilities of future additions to the United States missile arsenal so dependent on their propulsion systems, government and industry in 1959 spent millions of engineering and research man-hours in seeking more powerful, more efficient, and safer rocket fuels.

The nation's first and most widely used propellant, liquid oxygen, has been eclipsed in some major applications by less powerful but more versatile solid fuels. Solid propellants have assumed an increasingly important role in missile applications, except in cases where high specific impulse is the prime requirement for a mission. Thus, most new systems under development, including the Polaris, Minuteman, and Pershing, call for solid fuels.

Research and testing programs, however, have been pointing to the likely development of important new liquid propellants. Liquid hydrogen, de-

scribed by U.S. Air Force scientists as the "ultimate chemical fuel," is in large-scale production at three plants in the United States. Liquid hydrogen has an energy content of almost three times that of present fuels, and in combination with liquid oxygen gives an increase in thrust per pound of fuel expended of about 40% over present rocket propellants. Another chemical, liquid fluorine, possibly the most powerful of all known oxidizing agents, in 1959 was developed to the point where it could be used in large-scale thrust-chamber firings. Fluorine can be combined with existing fuels to produce propellant combinations capable of increasing the power output of existing rocket engines by 22 to 40%.

Defense Department plans for quantity production of high-energy boron were canceled in the summer of 1959 because of improvements in other fuels. Research is under way on a storable liquid monopropellant with a specific impulse higher than the approximately 260 pound-seconds per second specific impulse of present liquid propellants.

The Advanced Research Projects Agency (ARPA) has let a number of contracts for development of high-energy solid propellants with specific impulses of 280 pound-seconds per second. Another promising new development is a solid-fuel propellant containing aluminum in addition to the usual plastic materials. Research on solid fuels is being intensified by ARPA, which has a research and devolopment program (called Principia) aimed at obtaining a solid propellant with a specific impulse 10 to 20% greater than that of any solid fuel now known.

The National Aeronautics and Space Administration (NASA) is exploring the possibility of developing a new rocket propellant with both liquid and solid applications. This fuel would permit substantial increases in rocket payload, and its successful development would represent a major breakthrough in rocket fuels. (See also CHEMISTRY.)

Power Plants.—Most United States authorities were of the opinion that by late 1959 the United States had about caught up with the Soviet Union in nearly all phases of missile development except high-thrust rocket engines. In a move to remedy this last major lag, NASA was given control of design and development of all propulsion units for missile and space projects. Together with the earlier transfer to NASA of the Jet Propulsion Laboratory near Pasadena, Calif., and a portion of the research and development facilities of the Army Ballistic Missile Agency at Huntsville, Ala., this action placed NASA in a position both to go forward with a broad program of theoretical and experimental research on advanced rocket engines, and to play the major role in a proposed national rocket-booster program. Expected to contribute importantly to this program are new metals under development in 1959 that will be stronger, more heat resistant, and lighter than any used to date.

Guidance Systems.—The performance of the Atlas and the Thor in test firings in 1959 indicated that missile guidance systems now in use have been greatly improved in accuracy. Extensive research continued in this field, however, to attain at least a 90% probability that missiles would hit their target areas. In general, inertial guidance systems, predominant in today's guided missiles, have kept pace with overall missile development.

Consideration has been given to developing guidance units without reference to the missiles or space vehicles in which they would ultimately be used. This would mean a national guidance system program similar to the one proposed for propulsion units, resulting in a building-block concept that would allow designers to put units of a missile system together in whatever combinations they require.

Other Developments.—Both NASA and ARPA continue to study the basic physical phenomena associated with the re-entry of a ballistic missile nose cone into the atmosphere at hypersonic speeds. Nose cones are being improved as more heat-resistant materials come into use, and recovery of intact nose cones following long-range firings and re-entry are now commonplace.

Missile-tracking instruments designed to provide more precise and reliable data during missile firings are getting increased attention, and NASA and ARPA have a joint development program in this field. The new Azusa Mark II electronic tracking system, scheduled to go into operation at the Atlantic Missile Range early in 1960, is designed to measure changes in missile position of one tenth of a foot at distances hundreds of miles down-range from Cape Canaveral.

Also getting close attention is the early detection and tracking of enemy missiles. In this connection, the Navy in mid-1959 disclosed some details of Project Tepee, which holds promise of doubling the warning time for ballistic missiles launched in enemy territory. Based on the use of ionosphere backscatter from high-frequency radar transmitters, Tepee is considered capable of detecting the firing of missiles on the Eurasian land mass seconds after launching. Now in the research and development stage, Tepee could be operational in about three years—perhaps only a year after the Ballistic Missile Early Warning System (BMEWS) now under development. It is uncertain whether BMEWS will be rendered obsolete by Tepee. Project Midas, an early-warning satellite now under development, will not be affected by Tepee because it has other potential uses. The application of infrared devices to early detection of missile launchings is also under study.

Other areas of missile technology (including launchers, underground bases, transportation, fuel storage and handling, and electronics miniaturization) are the subjects of varied research and development programs, some of which are expected to yield results of considerable magnitude in the near future.

(For additional and related information, see ADVANCED RESEARCH PROJECTS AGENCY; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; SPACE FLIGHT; and the Index entry *Missiles*.)

KEITH SAUNDERS,
American Aviations Publications, Inc.

MISSISSIPPI. South Central state, United States; admitted to the Union, Dec. 10, 1817. The "Magnolia State" ranks 32d in area and 28th in population among the 50 states.

Area and Population.—Area: 47,716 square miles (land, 47,248; inland water, 468), divided into 82 counties. Population: (1950) 2,178,914; (est., July 1, 1958) 2,157,000. Urban places with 1950 populations above 10,000 are:

Biloxi	37,425	Laurel	25,038
Clarksdale	16,539	McComb	10,401
Columbus	17,172	Meridian	41,893
Greenville	29,936	Natchez	22,740
Greenwood	18,061	Pascagoula	10,805
Gulfport	22,659	Tupelo	11,527
Hattiesburg	29,474	Vicksburg	27,948
Jackson (*capital*)	98,271		

Executive.—Chief state officers in 1959:
Governor: James P. Coleman (Democrat)
Lieutenant Governor: Carroll Gartin
Secretary of State: Heber A. Ladner
Treasurer: Robert D. Morrow
Attorney General: Joe T. Patterson
Auditor: E. B. Golding
Supt. of Public Instruction: J. M. Tubb

Constitution and Judiciary.—The present constitution went into effect in 1890. The Supreme Court comprises nine justices; chief justice in 1959 was Harvey McGehee.

Legislature.—The Mississippi Legislature (Senate, 49 members; House of Representatives, 140) meets in even-numbered years commencing the first Tuesday after the first Monday in January.

Finance.—State revenue in the 1957–58 fiscal year totaled $262,397,067, comprising $162,585,000 in state tax revenue, $74,571,663 from the federal government, and $25,240,404 from other sources. Tax revenue consisted of $53,563,415 from a 3% general sales tax, $6,209,974 from individual income taxes, $12,473,339 from corporate income taxes, $40,743,451 from motor fuel taxes, $13,204,086 from licensing, and $36,390,735 from other sources. Expenditures of $247,976,269 comprised $73,537,846 for education, $60,347,075 for health, welfare, and safety, $64,154,844 for highways, and $49,936,504 for other purposes. Long-term indebtedness on June 30, 1958, amounted to $103,237,000.

Banking.—As of June 10, 1959, the state's 27 national banks had $367,465,000 in assets, $245,365,000 in demand deposits, and $89,595,000 in time deposits. The 164 insured commercial state banks had assets of $932,966,000, demand deposits of $634,082,000, and time deposits of $219,183,000.

Education.—Operating expenditures for public elementary and secondary education in the 1958–59 school year totaled $83,980,642.89 ($177.54 per pupil), comprising $35,775,753.87 from local school districts, $46,525,276.16 from the state, and $1,679,612.86 from the federal government. Outlays for construction and improvements amounted to $41,062,539.68, and teachers' salaries averaged $3,080.21 (high school, $3,405.30; elementary, $2,887.95).

MISSISSIPPI SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–8)	1,661	10,201	456,070
Public secondary (9–12)	628	6,236	113,762
Private and parochial elementary and secondary	47	746	18,303
Junior colleges	28	...	10,716
Colleges and universities	16	...	25,491

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $42,410,881.01, including $28,688,109.81 for the aged, $8,490,720 for dependent children, and $2,656,908.20 for the needy blind. A monthly average of 146,968 persons received public assistance. The state spent $4,314,250 for mental health activities and $1,275,000 for correctional and penal programs.

Labor Force.—The insured labor force totaled 274,168 persons in March 1959. Nonagricultural employment was up to 257,766 from 241,049 a year earlier but slightly below the 258,105 average for the 12 intervening months. Of the March 1959 nonfarm total, manufacturing accounted for 44.5% and wholesale and retail trade for 26.1%. Unemployment as of Aug. 27, 1959, stood at 9,453, compared with 13,883 in the previous August. The state paid $11,585,023 in unemployment compensation during the 1958–59 fiscal year.

Manufacturing.—The state's 2,034 manufacturing plants in 1958 employed an average of 111,935 persons who received $366,915,741 in wages. Value added by manufacture (1957) totaled $615,566,000, and outlays for new plant and equipment amounted to $49,169,000. New plant investment alone in 1958 was $38,688,000. Production workers averaged $61.39 for an average workweek of 41.2 hours in August 1959.

MAJOR MISSISSIPPI MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1]
Pulp, paper, and products	8,240	$38,814	$98,369
Lumber and wood products	21,318	46,668	74,840
Food and kindred products[2]	11,017	31,118	73,979
Apparel and related products	22,327	49,430	69,812
Chemicals and products	5,084	19,803	61,962
Transportation equipment	5,468	26,151	52,144
Fabricated metal products	3,118	11,087	26,109
Stone, clay, glass products	2,758	9,431	25,090

[1] For definition see footnote 1 in the article *Industrial Production.* [2] 1956 data. (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Mississippi ranked 23d among the states in the value of its mineral production, with 0.9% of the national total. Marked increases in the value of construction materials and natural gas sufficiently offset decreases in clay and petroleum output values to give the state a record production value. Second among the states in bentonite production, Mississippi accounted for 14% of the national output.

Agriculture.—Cash farm income for the first nine months of 1959 was up to $314,365,000 from $287,904,000 in the corresponding period of 1958. For the full year 1958, income comprised $266,152,000 from livestock and livestock products, $277,720,000 from crops, and $43,725,000 from government payments. Principal income sources in 1958 were cotton lint, $175,042,000; cattle, $124,688,000; and broilers, $46,872,000.

WIDE WORLD

Miss America honors go to a Mississippi college student for the second straight year as Lynda Lee Mead, 20, of Natchez, is crowned by the 1959 titleholder, Mary Ann Mobley of Brandon, in ceremony at Atlantic City on September 12.

MISSISSIPPI MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	576,000	$ 3,338,000
Natural gas (1,000 cu. ft.)[1]	160,143,000	22,260,000
Natural gasoline (bbl.)	612,810	1,658,000
Petroleum (bbl.)[1]	38,551,000	110,256,000
Petroleum gases (bbl.)	219,238	503,000
Sand and gravel	6,545,000	6,240,000
Stone[2]	102,000	92,000
Other minerals	...	4,820,000
Total	...	$148,663,000[3]

[1] Preliminary. [2] Excludes certain stone, value of which is included in "Other minerals." [3] Total adjusted to avoid duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

MISSISSIPPI CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Corn (1,000 bu.)	39,642	44,469	42,501
Cotton lint (1,000 bales)	1,710	961	1,570
Cottonseed (1,000 tons)	694	409	656
Hay (1,000 tons)	920	1,257	1,159
Oats (1,000 bu.)	8,570	4,389	8,600
Peanuts (1,000 lb.)	3,074	2,400	2,000
Pecans (1,000 lb.)	9,515	16,000	4,500
Potatoes (1,000 cwt.)	437[1]	405	450
Rice (1,000 bags)	993[2]	1,092	1,188
Soybeans (1,000 bu.)	7,013	18,400	20,769
Sweet potatoes (1,000 cwt.)	1,146[1]	912	1,083
Wheat (1,000 bu.)	731	1,904	858

[1] Average, 1949–57. [2] Average, 1953–57. (Source: U.S. Department of Agriculture.)

There were 204,000 farms in the state in 1958. Total acreage (1954) of 20,702,000 included 5,530,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 2,363,000 cattle, 741,000 hogs, and 5,367,000 chickens (excluding commercial broilers). Some 399,000 family and hired workers were engaged in farming in the week of Oct. 18–24, 1959.

Transportation and Communications.—State and

federal funds disbursed for highways in the 1958–59 fiscal year totaled $70,113,501.57.

Highways and roads on Dec. 31, 1958, totaled 62,761.7 miles (14,140 surfaced). Registered *motor vehicles* numbered 653,571 on Oct. 31, 1958, including 465,580 passenger cars. There were (1958) 18 *railroads* operating 3,760 line miles and (1959) 4 regularly scheduled *airlines* and 80 *airports and airfields* (57 commercial and municipal, 4 military, and 19 other).

Communications media (1959) included 72 AM *radio stations;* 6 *television stations;* 19 daily *newspapers* and 114 other newspapers; and (January 1) 103,700 business and 281,600 residential *telephones.*

Principal Events, 1959.—Ross R. Barnett, attorney of Jackson, won the Democratic nomination for governor over three other candidates in the August primary elections. Barnett led his nearest opponent, Lt. Gov. Carroll Gartin of Laurel, by 3,441 votes in the first primary on August 4 and defeated Gartin by a margin of 36,074 votes in the run-off contest on August 25. The nominee had no opposition in the general election on November 3. Barnett, who had sought the office twice before without success, was elected on a platform advocating strict segregation of the races, increased support for education and social welfare, and reduced taxes on industry. The primaries, at which most state and county officials were chosen, attracted a record total of 439,720 voters.

Mack C. Parker, a Negro awaiting trial on an indictment charging criminal assault on a white woman on February 24, was taken from his cell in the Pearl River County jail at Poplarville by a mob in the pre-dawn hours of April 25, two days before his trial was scheduled to begin. An intensive search by local officers and agents of the Federal Bureau of Investigation, who were immediately called into the case by Gov. J. P. Coleman, resulted in the discovery on May 4 of the body of Parker, apparently the victim of gunshot. After four weeks of investigation, federal agents withdrew from the case and filed a report with the governor. This report was held in secrecy until just prior to the session of the Pearl River County Circuit Court in November, when it was turned over to the prosecuting attorney for submission to the grand jury. The grand jury, empaneled on November 2 by Judge Sebe Dale, heard no testimony concerning the investigation and returned no indictments. On November 6 the U.S. Justice Department petitioned a federal court for a grand jury investigation of the case, and on November 23 Judge S. C. Mize of the U.S. District Court announced in Jackson that a federal grand jury would be convened in Biloxi on Jan. 4, 1960, to consider the Parker case.

Lynda Lee Mead of Natchez, a student at the University of Mississippi, was chosen "Miss America" in the national beauty pageant on September 12, bringing this honor to the state for the second consecutive year.

On November 28 Governor Coleman called a special session of the legislature which convened on December 2. On the agenda were various matters thought to need attention before a new legislature assembles in January 1960.

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MISSOURI. Central state, United States; admitted to the Union, Aug. 10, 1821. The " 'Show Me' State" ranks 19th in area and 13th in population among the 50 states.

Area and Population.—Area: 69,674 square miles (land, 69,226; inland water, 448), divided into 114 counties and the city of St. Louis. Population: (1950) 3,954,653; (est., July 1, 1958) 4,217,000. Urban places with populations above 10,000 in 1950 (unless another date is given):

Cape Girardeau	21,578	Maplewood	13,416
Carthage	11,188	Mexico	11,623
Clayton	16,035	Moberly	13,115
Columbia	31,974	Overland	11,566
Ferguson	11,573	Poplar Bluff	15,064
Fulton	10,052	Richmond Heights	15,045
Hannibal	20,444	St. Charles	14,314
Independence	36,963	St. Joseph	78,588
Jefferson City[1]	25,099	St. Louis	870,000[2]
Jennings	15,282	Sedalia	20,354
Joplin	38,711	Sikeston	11,640
Kansas City	456,622	Springfield	66,731
Kirksville	11,110	University City	39,892
Kirkwood	18,640	Webster Groves	23,390

[1] Capital. [2] Est., Jan. 1, 1958.

Executive.—Chief state officers in 1959:
Governor: James T. Blair, Jr. (Democrat)
Lieutenant Governor: Edward V. Long
Secretary of State: Walter H. Toberman
Treasurer: M. E. Morris
Attorney General: John M. Dalton
Auditor: Haskell Holman
Commissioner of Education: Hubert Wheeler

Constitution and Judiciary.—The present constitution went into effect in 1945. The Supreme Court comprises 7 justices; chief justice in 1959 was Frank Hollingsworth.

Legislature.—The Missouri General Assembly comprises a 34-member Senate (in 1959, 26 Democrats and 8 Republicans) and a 157-member House of Representatives (112 Democrats and 45 Republicans), which meet in odd-numbered years commencing the first Wednesday after the first Monday in January, and must adjourn by May 31.

At the 1959 session, Governor Blair recommended a list of reforms and a budget of $1,157 million for the biennium. He wanted a use tax and increased taxes on gasoline, liquor and beer, and cigarettes, and he suggested laws increasing the size and power of the state patrol, revising the criminal code to provide for indeterminate sentences, strengthening the mental health program, altering the drivers' license law so that the penalty point system could be used, and revising the mining code and the water law. The legislature approved a 2% use tax and the mining code revision, but it refused to pass the other recommendations, and it cut budget requests by about $7 million. While the public school foundation program was broadened by raising the grant per pupil from $110 to $130 and the flat grant from $75 to $102, the $26 million needed to finance expansion was not allowed. Other laws created a Crippled Children's Service, revised the state's judicial circuits, and increased welfare payments.

Finance.—In the 1958–59 fiscal year, state revenue of $502,338,851.55 included $289,385,994.54 from state tax sources and $186,510,469.53 from the federal government. Tax revenue comprised $105,001,464 from a 2% general sales tax, $43,033,019.27 from individual and corporate income taxes, $43,124,250.15 from motor fuel taxes, $51,844,914 from licensing, and $46,382,347.12 from other sources. Expenditures of $528,788,710.31 consisted of $117,485,955.69 for education, $163,919,174.22 for health, welfare, and safety, $160,217,824.75 for highways, $21,368,368.63 for capital improvements, and $65,797,387.02 for other purposes.

Banking.—As of June 10, 1959, the state's 75 national banks had $2,219,840,000 in assets, $1,624,469,000 in demand deposits, and $379,363,000 in time deposits. The 550 state banks had assets of $3,905,100,233.57, demand deposits of $1,982,535,096.13, and time deposits of $903,514,376.05.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $304,277,349 ($286.54 per pupil), comprising $191,694,730 from local school districts, $109,539,846 from the state, and $3,042,773 from the federal government. Teachers' salaries averaged $4,030 (high school, $4,369; elementary, $3,894).

MISSOURI SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k–8)	1,713*	20,573	610,507
Public secondary (9–12)	541*	8,589	194,850
Junior colleges	15	606	6,695
Teachers colleges	6	681	16,113
Colleges and universities	20	8,625	51,606

* Districts.

Social Welfare.—Federal and state funds expended for public assistance (excluding institutional costs) in the 1958–59 fiscal year approximated $125 million. Major expenditures (during June 1959) were: $6,669,354 to 119,367 aged,

$2,342,740 to 25,985 dependent children, and $895,639 to 15,458 permanently and totally disabled persons. The state spent $18,936,000 in the 1958–59 fiscal year for mental health activities and $6,059,716 for correctional and penal programs.

Labor Force.—The state's labor force on June 30, 1959, totaled 1,815,800 persons, including 277,550 agricultural workers. Nonagricultural employment rose to 1,299,900 from 1,267,400 a year earlier and also exceeded the 1,271,900 average for 1958. Of nonfarm employees in 1959, 29.7% were engaged in manufacturing, 23.5% in trade, and 14.5% in government. Unemployment on June 30, 1959, was down to 102,100 from 165,600 on the previous June 30, and the state paid $37,775,518.72 in unemployment compensation during the intervening year.

Manufacturing.—There were 400,153 persons employed in manufacturing plants in the state during 1957 who received $1,757,697,000 in wages. Value added by manufacture totaled $3,294,752,000, and outlays for new plant and equipment amounted to $174,219,000. Production workers averaged $85.31 for an average workweek of 40 hours during August 1959.

MAJOR MISSOURI MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Transportation equipment	56,254	$306,139	$652,085
Food and kindred products	53,352	244,373	510,483
Chemicals and products	19,151	92,713	297,266
Nonelectrical machinery	25,844	124,786	226,480
Leather and leather goods	38,347	108,519	204,844
Fabricated metal products	23,702	113,462	203,198
Printing and publishing	26,750	124,824	202,996
Electrical machinery	25,261	118,086	193,828
Stone, clay, glass products	15,376	77,400	164,796
Apparel and related products	39,553	108,423	162,203

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures:* 1957.)

Mining.—In 1958 Missouri ranked 24th among the states in the value of its mineral output, with 0.87% of the national total. For the 51st consecutive year the state was foremost in output of lead. It was also first in barite and bituminous sandstone; second in cobalt, lime, and nickel; and third in fire clay. Of the total value of mineral output, nonmetals represented 69%.

MISSOURI MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Barite	199,268	$ 2,666,000
Cement (bbl.)	12,116,000	40,657,000
Clays	2,060,000	5,986,000
Coal	2,592,000	11,111,000
Copper	1,429	752,000
Iron ore, usable (long tons)	387,000	3,820,000
Lead	113,123	26,471,000
Lime	1,173,000	14,136,000
Sand and gravel	8,972,000	9,728,000
Silver (fine ounces)	251,000	227,000
Stone	24,276,000	32,878,000
Zinc	362	74,000
Other minerals	...	1,926,000
Total	...	$144,009,000*

* Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $712,058,000 from $722,998,000 for the corresponding period of 1958. For the full year 1958, income comprised $759,039,000 from livestock and livestock products, $333,380,000 from crops, and $61,141,000 from government payments. Principal income sources were cattle, $286,905,000, hogs, $248,579,000, and dairy products, $119,157,000.

There were 215,000 farms in the state in 1958.

MISSOURI CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	931	730	700
Corn (1,000 bu.)	155,480	180,712	257,345
Cotton lint (1,000 bales)	386	275	505
Cottonseed (1,000 tons)	166	118	218
Hay (1,000 tons)	4,103	5,428	4,102
Oats (1,000 bu.)	37,121	22,272	18,252
Popcorn (1,000 lb.)	20,641	35,420	18,500
Soybeans (1,000 bu.)	27,917	55,432	52,210
Strawberries (1,000 lb.)	7,230*	7,840	6,750
Tobacco (1,000 lb.)	4,998	3,185	4,350
Wheat (1,000 bu.)	35,537	40,488	37,950

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Total acreage (1954) of 34,195,000 included 12,336,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 4,098,000 cattle, 3,956,000 hogs, and 13,783,000 chickens (excluding commercial broilers). There were 253,000 family and hired workers engaged in farming during the week of Nov. 22–28, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $160,217,824.75, and 275 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 27,903 miles (19,866 surfaced). Registered *motor vehicles* numbered 1,728,909 on June 30, 1959, including 1,298,043 passenger cars. There were (1958) 20 *railroads* operating 7,132 line miles, and (1959) 9 regularly scheduled *airlines* and 233 *airports and airfields* (106 commercial and municipal, 3 military, and 124 private).

Communications media (1959) included 74 AM *radio stations;* 17 *television stations;* 60 daily *newspapers* (circulation, 1,816,142) and 311 other newspapers (357,487); and (January 1) 430,800 business and 1,174,000 residential *telephones.*

Principal Events, 1959.—While no general election was held in Missouri during the year, three local elections were of more than passing importance. A vacancy in the 4th Congressional District, caused by the death on January 23 of George H. Christopher, Democrat, was won on March 3 by William J. Randall, also a Democrat. Composed of parts of Kansas City and eight rural counties, the district is closely divided politically.

On March 31, Democratic organization candidates captured a majority of seats in the City Council of Kansas City, thus unseating the Nonpartisan Citizens Association, a reform group that had governed for 19 years. L. P. Cookingham, the city manager, who resigned on April 16, was replaced by Reed McKinley, but council members really took over the direction of city affairs. On November 3, the voters of St. Louis and St. Louis County defeated (2–1) a charter that would have set up a municipal district to take care of traffic, policing, sewage disposal, and other services for the metropolitan area.

Visitors stand in line to tour the birthplace of former President Truman at Lamar, Mo. The small white cottage was dedicated as a Missouri shrine in ceremonies on April 19.

WIDE WORLD

The growing season was a long one in 1959, and the result was high production of food crops, especially corn, which yielded 257.3 million bushels, as compared with 180.7 million in 1958. Livestock population was high, but a sharp decline in the price of hogs, eggs, and poultry reduced the income of Missouri farmers. Rural areas continued to lose population, while those around St. Louis and Kansas City continued to gain rapidly. Some cities in the southwestern part of the state had a good growth, and new industries moved into the region, whose power was increased by the completion of facilities at Table Rock Dam on the White River. This area also prospered because of an increase in tourism, which rose 38% over 1958, with nearly 2 million persons visiting the state parks. On April 19, the birthplace of ex-President Harry S Truman at Lamar was dedicated as a state shrine.

Retail business and manufacturing also showed improvement over 1958, and unemployment was low. The steel strike affected some industries, but it was not decisive. Iron and lead mines were being developed in newly discovered deposits in the southeast.

Tornadoes struck St. Louis in February and northwestern Missouri during the summer. The St. Louis tornado, which hit on February 10, cut a wide swath in the central part of the city, killing 21 persons, leaving many homeless, and destroying property worth $12 million. There were no severe floods during the year.

Construction at state universities and colleges and other state institutions, financed by a bond issue, went forward rapidly. Enrollment continued to rise sharply both in the colleges and in the elementary and secondary schools.

(See also SAINT LOUIS.)

Legislature and Principal Events by:
W. FRANCIS ENGLISH,
Dean, College of Arts and Sciences,
University of Missouri.

MITCHELL, James Paul, U.S. secretary of labor: b. Elizabeth, N.J., Nov. 12, 1900. Assistant secretary of the Army from May to October 1953 and a former labor relations executive in private industry, Mitchell was appointed secretary of labor on Oct. 8, 1953.

In spite of the nation's slow recovery from the previous year's economic recession, the labor secretary in the early spring of 1959 offered to eat his hat if employment did not exceed 67 million in October and if the unemployed numbered more than 3 million. On November 11, at the Labor Department Building in Washington, he ate a hat—a white fedora-shaped layer cake—but protested that if it had not been for the steel strike, employment would have been considerably higher than the actual figure of 66,831,000, and unemployment considerably less than 3,272,000.

Mitchell played an important part in obtaining a settlement of the dispute between the steel industry and the steelworkers' union on Jan. 4, 1960. (See IRON AND STEEL.) In the last stages of negotiation during late December, he and Vice President Nixon reportedly cautioned the steel companies that Congress might enact legislation unfavorable to them if the dispute continued and resulted in a resumption of the 116-day strike.

Early in 1959 he defended the administration's labor reform bill before the Senate Labor Subcommittee, which was also considering a competing bill sponsored by its chairman, John F. Kennedy. Of the two parts of the administration's bill that differentiated it from that of Senator Kennedy—the curbs on secondary boycotts and on coercive picketing—Mitchell said that without these curbs no bill "can claim to be a truly effective labor-reform measure." (See also LABOR.)

MOHAMMEDANISM. See the Index entry, *Islam.*

MOLYBDENUM. United States production of molybdenum (metal content of concentrates) decreased to 41,069,000 pounds in 1958, compared with 60,753,000 in 1957. The 1958 output was the lowest in seven years, chiefly because of the general industrial recession and a 12-week strike at the world's largest molybdenum mine in Colorado, according to the U.S. Bureau of Mines. In the first 10 months of 1959, domestic output of molybdenum concentrates was 43,023,000 pounds. In 1958 the United States supplied 73% of the world total of 56,500,000 pounds, compared with 80% of 76,200,000 pounds in 1957. Chile was the second largest known producer, with 2,972,000 pounds. In 1958, United States consumption was 24,231,000 pounds, compared with 30,016,000 pounds in 1957. Exports declined to 11,962,938 pounds of molybdenum ore and concentrate in 1958, compared with 25,465,515 pounds in 1957. Exports went largely to West Germany, France, and the United Kingdom. (See also CHEMISTRY; and for table showing output for major producing countries, see MINERAL PRODUCTION.)

MONACO. A principality on the Mediterranean shore of France. Area, 368 acres; pop. (1956 census), 20,442 (of whom a small minority are citizens). Chief towns are Monaco-Ville, La Condamine, and Monte Carlo. The language and currency are French. Prince Rainier III (acceded in 1949) is the ruler. There is an elected 18-member National Council which has limited powers. The administration is headed by a minister of state (a French citizen proposed by France and appointed by the prince); Emile Pelletier was approved as minister of state on Jan. 29, 1959. The budget for 1958 was: expenditure, 2,812,956; revenue, 3,179,639. The economy depends largely on income from tourism; the number of visitors spending at least one night in Monaco totaled a record 92,551 in 1957.

Following a dispute with the National Council over the council's demands for constitutional reform in the direction of greater popular government, Prince Rainier on Jan. 29, 1959, suspended the constitution, dissolved the National Council and the Monte Carlo Municipal Council, and banned all public meetings. The powers of the National Council were transferred to the Council of State, a judicial body; and the functions of the municipal council were taken over by a specially appointed eight-man delegation.

On June 18, Prince Rainier and Princess Grace were received in the Vatican by Pope John XXIII; on October 12 they arrived in Paris on an official visit. The prince on September 14 issued a regency decree declaring that in the event of his death, Princess Grace would serve as regent during the minority of Prince Albert, provided she did not remarry.

MONETARY FUND, International. See INTERNATIONAL MONETARY FUND.

MONEY. See Index entry.

MONGOLIA. A vast plateau region of east-central Asia between China and Soviet Siberia, traditionally divided into Inner Mongolia (q.v.) to the southeast, and Outer Mongolia (Mongolian People's Republic, q.v.) to the northwest.

MONGOLIAN PEOPLE'S REPUBLIC (OUTER MONGOLIA). A republic of east-central Asia, between

Soviet Siberia and China. Estimated area, 600,000 square miles; pop. (est. 1958), 1,040,000, chiefly Khalkha, with some Mongols, Kazakhs, and other groups. Ulan Bator (est. 160,000) is the capital and chief city.

Government.—Soviet influence has been paramount since the 1920's, although Communist China's role in the economic and other spheres has grown in recent years. The republic's application for membership in the United Nations has been opposed by the United States and other Western powers on the ground that Outer Mongolia is not a truly independent nation. The republic has diplomatic relations with 18 nations, including those of the Communist bloc, India, Indonesia, and certain other Asian and African countries.

The Great People's Khural, or People's Assembly, is elected every three years by universal suffrage. It chooses from its number a seven-member Presidium, which carries on current functions when the assembly is not in session. The chief political force is the Mongolian People's Revolutionary Party (Communist), the only political party in the country. Yumzhagiyn Tsedenbal, first secretary of the party, has been premier of the republic since 1952. The state budget for 1958 estimated revenue at 680.2 million tughriks; expenditure, 674.7 million (the tughrik equals the Soviet ruble).

Education and Religion.—Pupil enrollment in all schools totals about 100,000. Primary schooling lasts 4 years; in the larger towns, 7 years of schooling is obligatory. National Choi-Balsan University had 2,500 students in 1959; an agricultural institute, 700; and a teachers college, 500. Some 1,000 students study abroad, mainly in the USSR. Buddhism continues to exercise a strong influence on the people's attitudes and customs, although the revolutionary regime has closed many monasteries and closely controls the formerly powerful Buddhist Church.

Economy.—About three fourths of the population are nomadic stock raisers, and the vast herds of sheep, goats, cattle, yaks, horses, and camels (said to exceed 20 million head) constitute the country's chief wealth. The government has organized the herdsmen into producers cooperatives, establishing production quotas and requiring deliveries to the state and special labor tasks. Agriculture is still of minor importance, although cultivation of grains and other crops has been extended under state efforts. Industrialization, public works construction, and minerals development are proceeding with Soviet and Chinese aid. Chief manufactures are meat and dairy products, leather goods, sheepskin coats, woolen garments, and felt. Foreign trade, chiefly with the USSR and China, consists mainly of the export of animal products in exchange for equipment and other manufactures. Most internal transport is by camel. Railways (totaling 857 miles) and airlines connect the republic with the USSR and China.

Principal Events, 1959.—Premier Tsedenbal and Soviet Premier Nikita S. Khrushchev signed an agreement in Moscow on Feb. 10, 1959, providing for Soviet technical assistance and farm machinery for the opening of Outer Mongolia's virgin lands, and for technical aid in geological prospecting. In late March a heavy purge took place within Outer Mongolian political leadership, reportedly over the tempo and tactics of the government's collectivization and modernization program. Premier Tsedenbal in late August and early September headed an Outer Mongolian delegation which visited Communist China, North Vietnam, and India.

MONTANA. Northwestern state, United States; admitted to the Union, Nov. 8, 1889. The "Treasure State" ranks 4th in area and 41st in population among the 50 states.

Area and Population.—Area: 147,138 square miles (land, 145,878; inland water, 1,260), divided into 56 counties. Population: (1950) 591,024; (est., July 1, 1958) 675,000. Urban places with 1950 figures and 1956 local estimates are:

	1956 est.	1950 census		1956 est.	1950 census
Anaconda	18,100	11,244	Helena*	24,626	17,581
Billings	46,000	31,834	Kalispell	13,400	9,737
Bozeman	12,900	11,535	Miles City	11,000	9,243
Butte	40,000	33,251	Missoula	30,328	22,485
Great Falls	48,000	39,214			

*Capital

Executive.—Chief state officers in 1959:
Governor: J. Hugo Aronson (Republican)
Lieutenant Governor: Paul Cannon
Secretary of State: Frank Murray
Treasurer: Horace F. Casey
Controller: William F. Koch
Attorney General: Forrest H. Anderson
Auditor: John J. Holmes
Supt. of Public Instruction: Harriet Miller

Constitution and Judiciary.—The present constitution went into effect in 1889. The Supreme Court comprises five justices; chief justice in 1959 was James Harrison.

Legislature.—The Montana Legislative Assembly comprises a 56-member Senate (in 1959, 38 Democrats, 17 Republicans, 1 independent) and a 94-member House of Representatives (61 Democrats, 31 Republicans, 2 independents), which meet in odd-numbered years commencing the first Monday in January.

The Democratic 36th Legislative Assembly repudiated welfare-statism for rigid economy in government. Budgetary requests totaling $105 million were pared to $78 million, of which about $7 million was earmarked for anticipated deficits in the general fund and for expenses connected with the school foundation program.

Some $13 million in new revenue was provided for. About $10 million was to come from increases in personal income taxes ranging from 20% to 43%, but by an oversight, collections were not allowed during 1959. Other state income was based mostly on increases in existing corporation license taxes. Angry with the Republican governor for vetoing a weight-distance tax on trucks, the Democrats refused to increase the gasoline tax by 1 cent, thus leaving the highway construction program in great uncertainty.

Constitutional amendments setting up a separate Board of Regents to administer higher education, fixing four-year terms for city and county officers, and abolishing the Board of Prison Commissioners, will appear on the ballot in 1960. An amendment providing for a constitutional convention narrowly failed to pass. Also killed were bills for increased federal aid to the jobless, the establishment of public utility districts, and a "right to know" bill opening official meetings to the public.

The governor was made responsible for preparing biennial budgets, presidential primaries were ended, VHF television booster stations were encouraged, and the state prison was reorganized. A new insurance code was approved. The customary memorials criticizing federal Indian policy, calling for more federal dams, and defending the National Guard, were sent off to Washington.

Finance.—State revenue in the 1957–58 fiscal year totaled $145,309,812.88, comprising $52,464,840.89 from state tax sources, $51,310,380.20 from the federal government, and $41,534,591.79 from other sources. Tax revenue consisted of $9,300,926.30 from individual income taxes, $2,357,693.40 from corporate income taxes, $19,773,-207.91 from motor fuel taxes, and $21,033,013.28 from other state tax sources, including licensing. Expenditures totaling $153,511,483.42 comprised $18,563,284.47 for education, $14,434,963.08 for health, welfare, and safety, $55,739,474.64 for highways, and $64,773,761.23 for all other purposes. Long-term indebtedness on June 30, 1958, amounted to $36,591,000.

Banking.—As of June 10, 1959, the state's 41 national banks had $415,588,000 in assets, $179,391,000 in demand deposits, and $119,389,000 in time deposits. The 74 commercial banks had assets of $420,870,000, demand deposits of $267,572,000, and time deposits of $119,326,-000.

Education.—School attendance is compulsory between the ages of 8 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $64,-646,030 ($325 per elementary pupil and $438 per high school pupil). Revenues comprised $48,634,-864 from local school districts, $13,539,849 from the state, and $2,308,547 from the federal government. Outlays for construction and improvements amounted to $9,203,184, and teachers' salaries averaged $4,224 (high school, $4,755; junior high, $4,860; rural elementary, $3,137; city elementary, $4,142).

In the 1957–58 school year there were 1,097 public elementary schools with 4,573 teachers and 102,467 pupils, and 175 public high schools with 1,911 teachers and 34,365 pupils. College and university enrollment (1958–59) totaled 11,235 students.

Public Assistance.—Public assistance expenditures from federal and state funds (excluding institutional costs) in the 1957–58 fiscal year totaled $11,355,594.83, of which $5,764,086.84 was spent for the aged, $2,797,395.88 for dependent children, and $916,264.33 for the totally disabled. A

monthly average of 17,542 persons received public assistance.

Labor Force.—The state's labor force totaled 274,800 persons in June 1959, including 65,500 agricultural workers. Nonagricultural employment rose to 194,500 from 190,600 a year earlier and was well above the 158,700 average for 1958. Of wage and salaried workers in 1959, 23.3% were engaged in wholesale and retail trade, 12.1% in transportation, communications, and other public utilities, and 22.5% in government. Unemployment dropped sharply to 15,200 in June 1959 from 22,400 in the previous June. The state paid $12,928,825.74 in unemployment compensation during 1958.

Manufacturing.—There were 20,560 persons employed in the state's manufacturing plants in 1957 who earned $89,359,000 in wages. Value added by manufacture totaled $202,479,000, and outlays for new plant and equipment amounted to $19,998,000. Principal manufactures were food processing, with 4,168 employees earning $17,158,000, and with $48,776,000 in value added by manufacture, and lumber and wood products (6,895; $26,850,000; $46,358,000). Production workers averaged $92.30 for an average workweek of 38.3 hours in August 1959.

Mining.—In 1958 Montana ranked 22d among the states in the value of its mineral output, with 1.07% of the national total. It was first in production of arsenic, chromite, and vermiculite (the latter, supplied by one company, the major national source); and third in copper, fluorspar, and manganese. The Anaconda mines yielded 80% of the state's zinc output, and seven uranium operations were reported during the year.

MONTANA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Chromite	119,057	$ ...[1]
Copper	90,683	47,699,000
Gold (fine ounces)	26,003	910,000
Lead	8,434	1,974,000
Manganese (35% and over)	53,123	4,036,000
Natural gas (1,000 cu. ft.)[2]	27,989,000	1,903,000
Crude petroleum (42-gal. bbl.)[2]	28,291,000	74,971,000
Sand and gravel	13,432,000	12,593,000
Silver (fine ounces)	3,630,000	3,286,000
Stone	1,545,000	2,214,000
Zinc	33,238	6,780,000
Other minerals	...	21,714,000
Total	...	$177,240,000[3]

[1] Figure withheld by producers. [2] Preliminary figure. [3] Total adjusted to eliminate duplication in values of clays and stone used in cement. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 rose slightly to $261,005,000 from $252,872,000 a year earlier. For the full year 1958, income comprised $242,277,000 from livestock and livestock products, $198,647,000 from crops, and $12,850,000 from government payments. Principal income sources in 1958 were cattle, $190,275,000, and wheat, $144,073,000.

MONTANA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	24,847	52,239	52,250
Beans, dry edible (1,000 bags)	199	224	195
Corn (1,000 bu.)	2,914	3,168	3,239
Flaxseed (1,000 bu.)	506	320	126
Hay (1,000 tons)	2,759	2,996	3,009
Oats (1,000 bu.)	8,954	9,348	7,392
Potatoes (1,000 cwt.)	1,326*	1,410	1,320
Sugar beets (1,000 short tons)	680	839	834
Wheat (1,000 bu.)	90,092	101,882	82,090

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state's 34,400 farms in 1958 had a total acreage of 66,500,000 (15,484,000 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 2,269,000 cattle, 1,668,000 sheep, and 1,505,000 chickens (excluding commercial broilers). Some 41,000 family and hired workers were engaged in farming in late November.

Transportation and Communications.—State and federal spending for highways in the 1958–59 fiscal year totaled $55,971,842. During 1958, 470 miles of new construction were completed.

Highways and roads on Dec. 31, 1958, totaled 74,853 miles (27,349 surfaced). Registered *motor vehicles* numbered 388,416 on the same date, including 245,241 passenger cars. There were (1959) 9 *railroads* operating 4,946.5 line miles; 4 regularly scheduled *airlines;* and 420 *airports and airfields* (81 commercial and municipal, 2 military, 317 private, 8 state, and 12 federal).

Communications media (1959) included 34 AM *radio stations;* 7 VHF *television stations,* as well as 94 VHF repeater booster stations, 3 UHF repeater booster stations, and 16 cable companies; 15 daily *newspapers* (circulation, 519,110) and 80 other newspapers (150,170); and (January 1) 63,900 business and 167,400 residential *telephones.*

Principal Events, 1959.—The economy continued to recover from the setbacks of 1957–58 until well past midyear. Renewed confidence in the state treasury ($7 million behind when the year began) was shown by the sale at low interest rates of bonds to finance payment of bonuses to veterans of the Korean War. Unemployment was declining rapidly. In August, however, some 5,500 miners and smeltermen struck the Anaconda Company properties at Butte, Anaconda, and Great Falls. Within a short time, public welfare agencies were hard pressed, and by November the state unemployment figure was twice the seasonal average. An additional worry was the coincident decline of retail sales in rural areas. The finely balanced Democratic budget for 1959–61 (see above, *Legislature*) seemed likely to go awry.

There were other unpleasant surprises during 1959. On April 16 two ringleaders and a dozen or so followers seized control of the state prison at Deer Lodge, slew the assistant warden, knifed a guard, and menaced the warden until he escaped. Sixteen hostages were threatened with death by burning if reforms promised by the legislature after the prison uprising of 1957 were not carried out immediately. Describing the demands as a blind, the warden ordered an assault by National Guardsmen and Highway Patrol forces on the 18th. All hostages were saved. The ringleaders were found dead in a tower. In 1960 the voters will pass on a $5 million bond issue for new prison facilities.

At 11:35 P.M. on August 17 the great Madison Valley earthquake occurred (see SEISMOLOGY). Loss of life was presumed greatest where a mountain top tumbled into the Madison River below Hebgen Dam (see DAMS), about 25 miles northwest of West Yellowstone. An undetermined number of campers were trapped in the enormous slide. Nine certain deaths were reported. Institutions as far distant as the Deer Lodge prison were damaged, as were public buildings at Bozeman, Galen, and Virginia City. Total property damage was estimated at $11 million, of which about $6 million was replacement cost for Montana Highway 287 in the Hebgen area. The already crippled highway program had no matching funds available for reconstruction. State officials hoped to convert a liability into an asset by luring tourists to see the ruins.

In the spring, reform groups hailed the sale of eight Anaconda Company daily newspapers to the Lee enterprises of Iowa, and also the appointment of Harry K. Newburn to the presidency of strife-torn Montana State University in Missoula.

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MONTREAL. Canada's largest city, Montreal is located on the St. Lawrence River in the Province of Quebec. Its estimated population in 1959 was 1,165,000 (1956 census, 1,109,439), of whom approximately 70% are French Canadian, making Montreal the second largest French-speaking city in the world (after Paris). Although the city itself, covering more than 50 square miles, is increasing in population, the most rapid growth is concentrated in some 50 suburban municipalities, which contain more than 650,000 residents.

The city's form of government, which is unique in Canada, is prescribed by a provincial charter. The Council, elected for three years, consists of a mayor and 99 members, with a 7-member Executive Committee exercising major administrative functions. For electoral purposes the city is divided into 11 districts, each of which has 6 representatives. One third of the Council is elected by property owners, and one third by the general voters. The remaining 33 councilors are nominated by 13 designated public and private bodies. Each group within the Council elects two members who, with the mayor, comprise the Executive Committee. (The party of Mayor Sarto Fournier, the Greater Montreal Rally, lacks a majority in the Council. New elections are due in October 1960.) Estimated expenditure for the city for 1959–60 was $155 million, of which $34 million was to be spent on education.

Montreal possesses the world's largest inland port, which, however, is closed by ice for several months of the year. With the onset of winter in 1958 a number of ships were trapped in the harbor by ice, but they were freed by icebreakers in mid-January 1959. The regular shipping season began again with the arrival of the first vessel from overseas on April 1, 1959. By the end of the season, some 170,000 passengers had passed through the port, as well as a record quantity of freight. Montreal is also a major port for lake and canal vessels and is Canada's principal grain port, with a storage capacity of 19 million bushels.

The headquarters of the two major Canadian railway systems are located in Montreal. The city's airport, which is being enlarged and equipped with new terminal facilities, is the principal international air center in Canada. Headquarters of the International Civil Aviation Organization and the International Air Transport Association are situated in the city.

Montreal is a major financial, manufacturing, and distribution center. Important commodities produced include aircraft, textiles and clothing, electrical supplies, gasoline and petrochemicals, and sugar. The city, located close to the main ski resorts of the Laurentian Mountains, provides a major attraction for tourists. There are two major universities, McGill University and the Université de Montréal.

The St. Lawrence Seaway (q.v.), the eastern entry of which is at Montreal, was brought into operation in 1959. Ships began moving through the canal in mid-April, but the ceremonial opening was deferred until June 26. The royal yacht *Britannia,* carrying Queen Elizabeth II and President Eisenhower, moved through the St. Lambert locks to perform the formal inauguration. The occasion was the chief feature of the 2½-day royal visit to the city.

The volume of construction in Montreal during 1959 broke all records. Much of this was concentrated on several major projects in the heart of the city. Work continued on the $60 million Place Ville-Marie project, and excavation was begun for the nearby Windsor Plaza. Plans were completed and funds were raised for the Place des Arts which is to group a large concert hall and two smaller theaters. The first tenants were installed in Les Habitations Jeanne Mance, Montreal's controversial slum-clearance and rehabilitation scheme. In the field of transportation, the Laurentian Autoroute was opened, leading from the city to the hill resorts to the north. The first eight miles of the east-west Metropolitan Boulevard were ready for use by the end of the year.

The year was marred by a severe epidemic of poliomyelitis which, in the Montreal region, involved over 900 cases and 43 deaths.

In March 1959 the provincial legislature enacted a law establishing the Montreal Metropolitan Corporation. This body contains representatives from the city and 14 suburban municipalities. It has few powers in its own right, but may assume functions by agreement among the municipalities. It is intended to form the framework of a system of metropolitan administration.

UPI

Montreal Mayor Sarto Fournier (left) presents silver tray to Queen Elizabeth, June 25, as she and Prince Philip visited the Canadian metropolis on their nationwide tour.

KEITH CALLARD,
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McGill University.

MONTSERRAT. See WEST INDIES FEDERATION.

MONUMENTS, National. See NATIONAL PARKS AND MONUMENTS.

MOON RESEARCH. See ASTRONOMY; SPACE FLIGHT.

MORMONS. See CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS.

MOROCCO. A kingdom on the northwest coast of Africa.[1] Estimated area, 171,305 square miles; pop. (est. July 1, 1958), 10,330,000, mainly Berbers and Arabs. Europeans number about 500,000, chiefly French and Spanish; native Jews, about 200,000. Rabat (est. 160,000) is the capital. Other large cities and estimated populations are: Casablanca (700,000), Marrakech (220,000), Fez (180,000), and Tangier (180,000).

Government.—Political power derives solely from the throne. King Mohamed V has stated his aim as the evolution of Morocco toward a constitutional monarchy (the country's first elections are scheduled for 1960). There is an advisory National Consultative Assembly of 76 members appointed by the king. A ministry, headed by a premier, is responsible to the king. Abdallah Ibrahim heads a nonparty ministry fomed on Dec. 23, 1958. The Istiqlal (Independence) Party has been the leading political force since the nation became independent, but in 1959 was split into a left and right wing.

Education and Religion.—School facilities are available for less than half the school-age children, and an estimated 80% of the population is illiterate. Primary schools in 1957 had 615,838 pupils; secondary schools, 33,091; and 15 technical schools, 6,059. Koranic schools continue to exist, although the newly independent government has taken steps to modernize the school system with French aid. Morocco's first modern university was inaugurated at Rabat in 1957. Fez remains the center of religious learning. The majority of the population are Moslems; Roman Catholics predominate among the Europeans, and there is a sizable native Jewish community.

Finance.—The administrative budget for 1959 was estimated at 140.9 billion Moroccan francs (132.8 billion in 1958). The development budget for 1959, as presented on May 11, called for expenditures of 36.9 billion francs; about half of this was to come from United States aid and the remainder out of profits from the phosphate monopoly, sale of development bonds, and other domestic sources.

[1] Morocco attained independence in 1956. It was formerly divided into the French Zone (area, 150,888 sq. mi.; pop. 1956, 8,580,000); the Spanish Zone (area, 7,589 sq. mi.; pop., 1,068,000); and Tangier (area, 135 sq. mi.; pop., 175,000). The former French and Spanish zones were ruled as protectorates; Tangier was under international administration. In 1958, Spain transferred to Morocco sovereignty over the Southern Protectorate of Morocco (area, 12,693 sq. mi.; pop. 1950, 5,878), which had also been known as the Northern Zone of Spanish West Africa.

United States aid in the fiscal year 1959–60 was to total $40 million in the form of a long-term, low-interest loan for the building of roads, irrigation, and modernization of agriculture. On Oct. 16, 1959, the Moroccan franc was devaluated from 420 to the U.S. dollar (at the official rate) to 506 to the dollar; at the same time a new currency unit, the dirham, was introduced, equal to U.S.$0.1976 (or 5.06 dirhams to the dollar). On July 1, 1959, the Bank of Morocco came into being as the national bank of issue and the fiscal agent of the government.

Production.—French enterprise and capital have hitherto played the dominant role in the modern sector of the economy. Following the attainment of independence in 1956, Morocco was faced with the problem of obtaining capital for investment, as well as skilled technicians and managerial personnel. Since there had been little development of a Moroccan middle class and the small upper class of landholders was little inclined toward entrepreneurship, the task of modernizing the economy devolved mainly on the government. In 1959, steps were taken to establish a National Bank for Industrial Development, with an initial capitalization of 2 billion francs (half to be subscribed by the government), to offer medium- and long-term loans to industrial enterprises. Plans were also formulated for a 5-year development program, in which state initiative would play the dominant role.

The government's chief efforts, however, have been directed toward raising the low living standards and output of the tillers and stock raisers who comprise some 75% of the total population. Under Operation Plow the government has organized over 100 rural centers in which small peasant plots are worked cooperatively, with the government providing seed, fertilizer, tractors, and modern tools. Output of cereals in the former French Zone in 1958 (about 75% over the extremely poor 1957 yield) included 40 million bushels of wheat, 58.4 million of barley, and 14.5 million of corn. Other important crops are: oranges (11.5 million boxes, 1958 prelim.); flaxseed (863,340 bushels in 1959); olive oil (25,000 metric tons from the 1958–59 crop); and vegetables, sorghum, almonds, oilseed, dates, esparto grass, and tobacco. Large herds of sheep and goats yield meat, wool, hides, and dairy products. Sardines are important in the fish catch, which totaled 145,100 metric tons in 1957.

Manufacturing accounts for about 15% of national income. Industries, centered mainly around Casablanca, include foodstuffs, chemicals, construction materials, metallurgy, textiles, footwear, tobacco products, and glassware. Carpets, rugs, leather goods, and other traditional handicraft items are important. Mining employs over 35,000 persons and is an important source of exports. Chief minerals and output in 1958 were: phosphates, 6,336,000 metric tons; iron ore, 1,538,400; manganese ore, 353,800; and lead ore, 136,700.

Foreign Trade.—Exports in 1958 totaled 145,098 million francs; imports, 168,532 million. Chief exports were phosphates and other minerals, fish products, wine, fresh and dried vegetables, and other agricultural products; imports: sugar and other foodstuffs, petroleum products, vehicles and parts, textiles, and other manufactures. France purchased about 50% of Morocco's 1958 exports and provided about 45% of imports.

Transportation and Communications.—Morocco's railroad network totals 1,170 miles, much of which is electrified. Main roads aggregated 6,830 miles in 1957, and there are about 20,000 miles of inferior grade roads. Air transport is provided by Royal Air Maroc (founded in 1957) and by international lines operating mainly out of Casablanca. Passenger cars numbered 138,000 in 1958; telephones, 128,133; and radio receiver licenses, 431,000 (1957, in the former French Zone only).

Principal Events, 1959.—The outbreak of rebellion by Berbers of the northern Rif Mountains in October 1958 appeared to have been met successfully by the Royal Army in January 1959. The rebellious tribesmen, who demanded greater Moroccan support of the Algerian rebels and a more aggressively nationalistic attitude toward France, seized control of areas around Alhucemas in late 1958 and early 1959. Following the expiration of a 48-hour ultimatum given to the rebels on January 5 by King Mohamed V, the Royal Army, under the command of Crown Prince Moulay Hassan, used tanks and aircraft to clear the main highways and relieve the city of Alhucemas, which had been cut off for several days by the rebels.

The long-smoldering conflict within the Istiqlal, the country's dominant political force, broke out into the open on January 25, when left-wing leaders split off from the party's executive committee and assailed the party as weak and moribund in the face of the difficult problems confronting the nation. The leftist spokesmen, who were backed by Premier Abdallah Ibrahim, included Mehdi Ben Barka, speaker of the National Consultative Assembly, Mohammed El Basri, leader of the unofficial Moroccan Liberation Army, and Mahjoub Ben Seddik, head of the Moroccan Trade Union Federation. Under Mehdi Ben Barka's leadership, a new political front, the National Union of Popular Forces, was established at Casablanca on September 6. The new group, terming itself "the spokesman of the masses," demanded nationalization of certain sectors of the economy, accelerated agrarian reform, evacuation of foreign troops, and an end to "colonialism" in the economic and other spheres.

Among the problems for which the leftists demanded more decisive action was the widespread unemployment in urban areas (estimated at 20% of the urban labor force), and the even greater underemployment in rural areas. On October 31, King Mohamed V inaugurated a new program of land reform by distributing parcels of state land to 293 peasant families in the area of Sidi Kacem. Under the program, which is part of the government's effort to modernize agriculture, the state retains ownership of the land but provides the peasants with seed, fertilizer, and tools. On November 24, Minister of the Economy Abderrahim Bouabid announced a five-year development plan (to go into effect in 1960), projecting expenditures of about $50 million for the building of roads and other public works, the creation of state-controlled utilities and other basic industries, and the improvement of the rural economy by the fostering of peasant cooperatives.

The 1957 Royal Charter for Tangier, which afforded the former international city certain privileges of a free money market and other advantages, was revoked by a government decree of Oct. 17, 1959. Measures were taken, however, to preserve Tangier's free port status after April 18, 1960 (the effective date of the revocation). A royal decree of May 27, 1959, effective beginning in 1960, ended all radio broadcasting other than that of the state radio. A Voice of America transmitter in Tangier continued to operate, however, pending a United States–Moroccan agreement as to its status.

An issue of importance in the domestic sphere, as well as regards relations with France, was the devaluation of Moroccan currency and Morocco's membership in the franc zone. Fearing possible dislocating effects on the Moroccan economy, Moroccan leaders did not follow France's 17.55% devaluation of the franc on Dec. 27, 1958. To prevent a flight of capital to other members of the franc zone, Morocco on Jan. 12, 1959, imposed a 10% tax on monetary transfers. This measure proved ineffective, however, and Morocco was forced to devaluate. On October 16 a new Moroccan currency unit was announced—the dirham (equal to 100 Moroccan francs), with an official value of U.S.$0.1976; thereby the Moroccan franc, which continued in use, was devaluated from its former official rate of 420 to the dollar, to 506 to the dollar. To counter the effects of the devaluation, strict price controls were established on major consumer goods.

Moroccan actions in the monetary sphere (including the establishment on July 1 of a new bank of issue to replace the French-controlled Banque d'État du Maroc) were seen as a victory for the leftists in their efforts to free the Moroccan economy from its financial dependence on France. As a result of these actions, however, considerable uncertainty attached to Morocco's status within the franc zone. Other sources of contention which clouded Moroccan-French relations in 1959 were Moroccan ties with the Algerian nationalist rebels,

activities of the irregular Moroccan Liberation Army in the southern Sahara, Moroccan opposition to the projected French nuclear detonation in the Algerian Sahara, and Moroccan demands for the evacuation of French forces (estimated at about 20,000), whose presence in Morocco dated from the former protectorate regime.

Morocco's relations with Spain took a turn for the better in 1959, when the two countries established a joint commission to settle differences between them. Prisoners taken by Spanish forces and by the Moroccan Liberation Army in the 1957 fighting around Ifni were released by both sides in May. Spanish forces in the former Spanish Zone of Morocco were steadily reduced during the year, and by the end of 1959 were reported to number only about 5,000.

It was in its relations with the United States, however, that the newly independent nation recorded its most heartening achievement of the year—a settlement of the issue of the United States-occupied airbases in Morocco. In addition, an agreement was signed on June 30 for $40 million in much-needed United States aid, and in early November the Royal Army received a small gift-shipment of United States arms.

The four United States-built strategic airbases (at Nouaseur, Ben Slimane, Sidi Slimane, and Benguérir) and the naval airbase at Kénitra (formerly Port Lyautey) had been obtained under a United States–French agreement of 1949, during the period of the French protectorate. When Morocco became independent in 1956, it refused to recognize the agreement and demanded that the United States evacuate the bases. Protracted negotiations produced only United States acceptance in 1958 of the principle of withdrawal. During a visit to the United States from Oct. 11–Nov. 1, 1959, Premier Abdallah Ibrahim took up the matter in talks with President Dwight D. Eisenhower and other leaders in Washington, and reportedly returned to Rabat with a more definite United States commitment on withdrawal. It was during President Eisenhower's visit to Casablanca on December 22, however, that the announcement was made of a concrete agreement on withdrawal. In the communiqué on the president's talks with King Mohamed V, it was stated that the United States would release the airfield at Ben Slimane before March 31, 1960, and that United States forces would be entirely withdrawn from Morocco by the end of 1963.

M. J. G.

MORTGAGES. See Index entry.
MOSLEMS. See the Index entry, *Islam.*
MOTELS (MOTOR HOTELS). See HOTELS.

MOTION PICTURES. In 1959, instead of exhibiting the usual vague Pollyanna certainty of success, film makers showed an optimism that was based on determination and an apparent knowledge of where they were going. Fewer films were made during the year (230, as compared with 600 during the lush period before 1950), but the films were more costly and the financial returns greater. The motion picture industry no longer considered television as an enemy-ogre, but recognized it as a medium to work with in some respects and to compete with in others.

General Trends.—Although motion picture executives were slow to admit that television has changed their business, they finally have met the younger medium's challenge head-on. All the major studios, except Paramount, made some movies in 1959 for hour and half-hour television programs, and most of the studios owned their own television stations. In addition, all the film makers watched with interest the experiments in subscription television, a form of transmission that could one day greatly increase the movie-making business. However, the possible success of subscription television was regarded with apprehension by the owners of motion picture theaters. Already the number of these theaters in the United States has dropped to 15,000, and, of those remaining, only the drive-ins (of which there are some 4,000), the newly renovated four-wall theaters, and the smaller art houses prospered.

Theater managers clamored for more films and deplored the decrease in Hollywood's output, especially since this decrease was mainly in low-budget pictures which theaters prefer for their double bills. The shortage became acute whenever expensive pictures failed at the box office, or when the exhibitor used two costly films on a double-feature program. Fortunately for the theaters, business picked up considerably during the summer of 1959, due, no doubt, to the release then of many attractive films and the decline of good television, as well as to the fact that the good pre-1948 films sold to television had been exhausted. Weekly average attendance at American motion picture theaters in 1959 rose to 51 million (40 million in 1958).

TV Sale of Post-1948 Films, and Labor Disputes.—Prior to 1959, all the major studios had sold or leased their pre-1948 films to television. Although some of the companies doubted the advisability of selling to a competitor, they appreciated the advantages of cash-in-hand to tide them over the lean period. The big problem confronting all studios in 1959, including the small independent producers who had no agreement on selling to television, was what to do with the enormous post-1948 library of pictures. Some of the companies were interested in selling, but they were deterred by the doubtful wisdom of supplying good products to a competing entertainment, and, more importantly, by the interference of unions and labor, which demanded a share of the proceeds on the sale of the post-1948 films. Primarily over this issue, the membership of the Writers Guild of America started a strike against independent producers in October 1959, and later authorized a strike, if necessary, against the major studios. By year's end, though contracts were reached with some independents, no final settlement was in sight; moreover, the Screen Actors Guild threatened to join the writers.

Communism.—Money, however, was not the only concern of the Writers Guild. It also asked that producers not be allowed to withhold screen credits because of a writer's political beliefs. This request came about because certain writers, as well as some actors, directors, producers, and other artists, who were formerly blacklisted as suspected Communists and fellow-travelers, were being used secretly, sometimes under pseudonyms, to work on films. When the American Legion accused the motion picture business of permitting its reinfiltration by Communists, Hollywood executives at first answered the accusations boldly, but later compromised (and confused) the issue. The Academy of Motion Picture Arts and Sciences, however, stood by its guns and refused to deny an Academy Award to anyone who is voted to receive one, regardless of his political ties.

Censorship.—The question of freedom of expression came up many times during 1959. Hollywood film makers, long accustomed to placating the Catholic Legion of Decency, found themselves under fire from another quarter: the Protestant National Council of Churches of Christ in the

U.S.A. The council charged that films too often "overemphasize sex for sex's sake and violence for violence's sake." Well aware that several films being made (like *Elmer Gantry* and *Rachel Cade*) were uncomplimentary to ministers, Hollywood was rather feeble in its answer that the public decided at the box office what it wanted and that no group had a right to censor the industry.

Furthermore, motion pictures were having official censorship problems. Although the U.S. Supreme Court ruled that New York State could not ban the showing of *Lady Chatterley's Lover* on the grounds that the "picture advocates an idea—that adultery under circumstances may be proper behavior," the court did not eliminate the state's censorship law entirely. The film makers themselves are of a divided opinion about censorship. On the one hand, they deplore pre-release censorship; on the other, they fear police actions against films and harassment by local judges. Further, they are doubtful about having a system similar to Great Britain's, in which some films are labeled "for adults only." In the long run, producers prefer the current, haphazard method of self-imposed censorship, known as the Production Code. (See also CENSORSHIP.)

New Films, 1959.—During 1959 many films appeared that had subject matter that would have been considered too daring in the years when the Production Code was followed strictly. Some of these were artistic, well-acted dramas that approached their unusual subjects seriously: *Compulsion,* with its story about two homosexuals, the murder they committed, and their trial; *Anatomy of a Murder,* with its frank dialogue about a rape that led to murder; *Suddenly, Last Summer,* with its shocking flashback revealing homosexuality and cannibalism; *Middle of the Night,* with its candid story of a middle-aged man and his love for a young divorcee; and *The Sound and the Fury,* with its dissection of a gone-to-seed Southern family. Others had little more to offer than sensationalism: *A Summer Place, Blue Denim, The Best of Everything, The Blue Angel,* and *Some Came Running.*

Also, there were many fine dramas with outstanding productions and performances: *The Nun's Story,* with Audrey Hepburn and a first-rate supporting cast; *The Diary of Anne Frank,* with a good cast led by Joseph Schildkraut as Anne's father; and *The Last Angry Man,* in which Paul Muni and David Wayne excelled. There were pictures especially designed for women: *Imitation of Life,* with Lana Turner, and *Woman Obsessed,* with Susan Hayward. Some films were failures in spite of their good casts and their being based on famous works: *Lonelyhearts* (from a Nathanael West novel), *Green Mansions* (from W. H. Hudson's nature story), and *The Devil's Disciple* (from G. B. Shaw's play).

Deciding that "Westerns" were being done to death on television, Hollywood made fewer of these in 1959, but did produce several with star-studded casts, magnificent scenery in color, and subject matter that was concerned with social problems as well as gun play: *The Hanging Tree, Last Train from Gun Hill, Warlock,* and *Rio*

(*Top to bottom*): (1) Kim Novak and Fredric March in a scene from Paddy Chayefsky's *Middle of the Night*. (2) Stephen Boyd (l.) and Charlton Heston as two charioteers in the famous race from *Ben-Hur*. (3) In the courtroom scene from *Anatomy of a Murder*, James Stewart (l.), an attorney, interrupts Lee Remick and George C. Scott while Joseph N. Welch, the judge, listens intently. (4) Sammy Davis, Jr. (l.) is the villainous Sportin' Life, Dorothy Dandridge is Bess, and Sidney Poitier is Porgy in the film version of George Gershwin's American folk opera, *Porgy and Bess*.

COLUMBIA; MGM; COLUMBIA; COLUMBIA

Bravo. The subject of bravery was the main theme of other outdoor dramas: *The Horse Soldiers* and *They Came to Cordura.*

While a few of the war films, such as *Pork Chop Hill, Up Periscope,* and *The Last Blitzkrieg,* concentrated on combat, most of them were comedies, like *Operation Petticoat* and *Don't Give Up the Ship,* or postwar farces about men in uniform, like *The Perfect Furlough, A Private's Affair,* and *It Started with a Kiss.* The year's best war films, *The Journey* and *The Diary of Anne Frank,* were more concerned with the effects of war on noncombatants. Outstanding among films of this type was Stanley Kramer's excellent production, *On the Beach,* which told about Australians and a few Americans who waited for the annihilation of mankind by radioactive fall-out after World War III. This well-acted and frightening film, designed to make people think seriously about nuclear warfare and the irresponsible use of atom bombs, had simultaneous premières in 18 cities throughout the world, including Moscow. Also dealing with atomic energy and the consequences of war was the fine United Nations documentary, *Power Among Men,* which placed its faith in man's will and ability to survive.

Harry Belafonte's film, *The World, The Flesh and the Devil,* was also concerned with radiation survivors, and, while it had beautiful scenes of the three last people (one Negro and two whites) wandering around a completely deserted New York City, it never really came to grips with the racial question it proposed. Other films stating Negro-white racial problems merited attention: *Odds Against Tomorrow, Take a Giant Step,* and an import from England, *Sapphire. The Young Land* was a historical drama pleading for equality and understanding between Californians and Mexicans in 1848.

Most of the historical dramas were expensive blockbusters done with elaborate sets and beautiful color photography displayed on wide screens. Outstanding among these was the $15 million *Ben-Hur,* which was not only the year's foremost spectacle (and, perhaps, the best spectacle ever made), but also a penetrating picture with a religious theme. *Ben-Hur's* well-directed cast, carefully written script (which improved on Lew Wallace's novel), and handsome production made for the success of this thoughtful, artistic, though lengthy, movie. The year's other religious-historical spectacles, also expensive, ran only second-best in comparison: *The Big Fisherman, Solomon and Sheba,* and *The Miracle.* Two big historical movies with star casts won only minor approval from the critics: *John Paul Jones* and *The Buccaneer.*

Biographical films were not outstanding in 1959. *The Naked Maja* (about Goya and his model), *Beloved Infidel* (about the love affair between F. Scott Fitzgerald and Sheilah Graham), and *The Gene Krupa Story* were neither critical nor box-office successes. The best biographical pictures were the realistic *Al Capone,* and the handsome musical, *The Five Pennies,* in which Danny Kaye portrayed Red Nichols.

Musicals in 1959 were only so-so affairs; for example, *Say One for Me, Li'l Abner,* and *Never*

(*Top to bottom*): (1) Peter Finch, as a doctor in a jungle mission hospital, with Audrey Hepburn in *The Nun's Story.* (2) Ava Gardner and Gregory Peck in *On the Beach,* based on Nevil Shute's novel about atomic annihilation. (3) In *Pillow Talk,* Rock Hudson carries inebriated Nick Adams as Doris Day looks on. (4) Millie Perkins, in the title role of *The Diary of Anne Frank,* and (l. to r.) Joseph Schildkraut, Gusti Huber, Lou Jacobi, Shelley Winters, Richard Beymer, and Diane Baker, watch from their attic hideaway as Allied bombers fly over Nazi-occupied Amsterdam.

WARNER BROTHERS; UNITED ARTISTS; UNIV.-INTL.; 20TH CENTURY-FOX

Steal Anything Small. The late Mario Lanza's fans applauded him in *For the First Time,* and admirers of George Gershwin's *Porgy and Bess* approved of the excellent recordings in the film version of the folk opera. However, *Porgy and Bess,* made with a good all-Negro cast by Samuel Goldwyn, attracted music lovers but annoyed cinema enthusiasts for its stagey presentation.

The year saw many comedies, most of which relied on sex and off-color jokes for their entertainment: *The Mating Game, Some Like It Hot, A Hole in the Head, But Not for Me, Count Your Blessings, Happy Anniversary,* and *Ask Any Girl.* The best comedy was *Pillow Talk,* in which Rock Hudson and Doris Day gave amusing performances that won applause.

Although there were many adventure films, only a few stood out from the routine: Alfred Hitchcock's *North by Northwest, The Wreck of the Mary Deare, The F.B.I. Story,* and *Third Man on the Mountain.* The latter was made by Walt Disney, whose cartoon film, *Sleeping Beauty,* was also released in 1959. Another full-length cartoon was Stephen Bosustow's *1001 Arabian Nights,* but neither this nor *Sleeping Beauty* was considered to be among the best of their producers' work.

AromaRama.—Technical innovations were few in 1959, although improvements in color photography and wide-screen processes were greeted with approval. Perhaps the most talked-about innovation was AromaRama, the first motion picture system to offer scents as well as sights and sounds. *Behind the Wall,* a well-made documentary on present-day China, was presented in AromaRama, and the viewer-smeller was able to experience the fragrance of flowers, spices, and incense. Olfactory reactions to other smells were mixed. The total impression created by the new gimmick was that scents with movies were more distracting than enlightening, and it remained to be seen if the installation costs of "smellies" were worth the entertainment values.

Foreign Films and Markets.—While exhibitors complained of the shortage of American films, they welcomed imports from abroad. Some of these played throughout the United States, but most of them were shown mainly in art-cinema houses in metropolitan centers. Outstanding among the foreign-language films were: *Nine Lives,* from Norway; *Eighth Day of the Week,* from Poland; *Wild Strawberries* and *The Magician,* from Sweden; *The Roof,* from Italy; *Aparajito,* from India; and *Embezzled Heaven,* from Austria. Britain sent over many films, including a hilarious comedy, *The Mouse That Roared,* and two highly considered serious dramas about the "angry young men": *Look Back in Anger* and *Room at the Top.* Pictures made by the French version of the "angry young men" (in France, the "New Wave") were startlingly frank in their treatment of sex, but also artistic and thoughtful in their handling of mature stories. The best French imports included *The Cousins, Back to the Wall, The Lovers, The 400 Blows,* and *Black Orpheus.* Russian films were also shown in the United States in 1959, and the much-discussed United States–USSR cultural exchange agreement—by which the Soviet Union agreed to buy ten selected American films, and the United States agreed to buy seven selected Russian pictures—was started late in 1959 with the showing of *The Cranes Are Flying* in Washington, and *Marty* in Moscow.

American film makers relied more than ever on foreign markets, and over half of their profits in 1959 came from abroad. Furthermore, partly to use these profits and partly to take advantage of appropriate locales and cheap labor, American companies produced more than 35% of their films abroad. Although American unions objected, producers said that some spectaculars had to be made abroad, or not at all.

While the motion picture industry changed greatly in the 1950–60 decade (both the competition from television and the rise of independent producers contributed to the decline of the major studios and to a smaller number of productions), it was evident that more changes were to come. However, film makers expressed confidence in the future, and, apparently, motion pictures would continue to be a dynamic art, whether presented in theaters or transmitted over the airwaves.

Motion Pictures of 1959

Listed here are films released in the United States in 1959; and while this list covers less than half of the year's pictures, it represents a cross section of the motion pictures made throughout the world. Because contributors to a single film are not now limited to one country, the nationality labels indicated below are not absolute. In most cases, however, the country named is that of the major contributors to the film.

American Films

Al Capone (Allied Artists). Producers, John. H. Burrows and Leonard J. Ackerman; director, Richard Wilson; screenplay by Malvin Wald and Henry Greenberg. With Rod Steiger, Fay Spain, Murvyn Vye, James Gregory, Martin Balsam, Nehemiah Persoff.

Alias Jesse James (United Artists). Producer, Jack Hope; director, Norman McLeod; screenplay by William Bowers and Daniel D. Beauchamp. With Bob Hope, Rhonda Fleming, Wendell Corey, Jim Davis.

Anatomy of a Murder (Columbia). Producer-director, Otto Preminger; screenplay by Wendell Mayes, from the novel by Robert Traver. With James Stewart, Lee Remick, Ben Gazzara, Joseph N. Welch, Arthur O'Connell, Eve Arden, Kathryn Grant, George C. Scott, Brooks West.

Anna Lucasta (United Artists). Producer, Sidney Harmon; director, Arnold Laven; screenplay by Philip Yordan, from his stage play. With Eartha Kitt, Sammy Davis, Jr., Frederick O'Neal, Henry Scott, Rex Ingram, Georgia Burke, James Edwards.

Ask Any Girl (MGM). Producer, Joe Pasternak; director, Charles Walters; screenplay by George Wells, based on the novel by Winifred Wolfe. With Shirley MacLaine, David Niven, Gig Young, Rod Taylor, Jim Backus, Claire Kelly, Elisabeth Fraser.

The Beat Generation (MGM). Producer Albert Zugsmith; director, Charles Haas. With Steve Cochran, Mamie Van Doren, Ray Danton, Fay Spain, Louis Armstrong, Maggie Hayes, Jackie Coogan, Jim Mitchum, Cathy Crosby, Ray Anthony, Dick Contino, Charles Chaplin, Jr.

Behind the Great Wall (Continental). Producer, Leonardo Bonzi; director, Carlo Lizzani; written and adapted for AromaRama by Sidney Kaufman and Thomas Orchard; narrated by Chet Huntley.

Beloved Infidel (20th Century-Fox). Producer, Jerry Wald; director, Henry King; screenplay by Sy Bartlett, from the book by Sheilah Graham and Gerold Frank. With Gregory Peck, Deborah Kerr, Eddie Albert, Philip Ober.

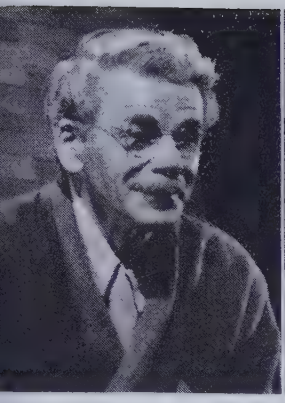
Ben-Hur (MGM). Producer, Sam Zimbalist; director, William Wyler; screenplay by Karl Tunberg, with additional dialogue by Christopher Fry, based on the novel by Lew Wallace. Musical score by Miklos Rozsa. With Charlton Heston, Jack Hawkins, Stephen Boyd, Haya Harareet, Hugh Griffith, Martha Scott, Cathy O'Donnell, Sam Jaffe, Ralph Truman.

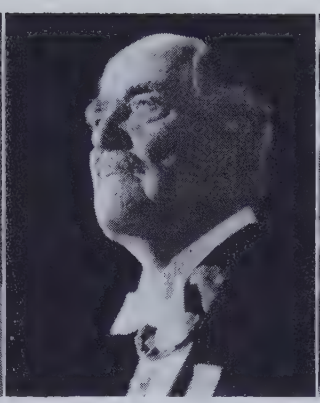
The Best of Everything (20th Century-Fox). Producer, Jerry Wald; director, Jean Negulesco; screenplay by Edith Sommer and Mann Rubin, from the novel by Rona Jaffe. With Hope Lange, Stephen Boyd, Suzy Parker, Louis Jourdan, Joan Crawford, Martha Hyer, Diane Baker, Brian Aherne, Robert Evans.

The Big Circus (Allied Artists). Producer, Irwin Allen; director, Joseph M. Newman. With Victor Mature, Red Buttons, Rhonda Fleming, Kathryn Grant, Vincent Price, David Nelson, Gilbert Roland, Peter Lorre.

The Big Fisherman (Buena Vista). Producer, Rowland V. Lee; director, Frank Borzage; screenplay by Howard Estabrook and Rowland V. Lee, based on Lloyd C. Douglas' novel. With Howard Keel, Susan Kohner, John Saxon, Martha Hyer, Herbert Lom, Ray Stricklyn, Alexander Scourby, Beulah Bondi.

The Black Orchid (Paramount). Producers, Carlo Ponti and Marcello Girosi; director, Martin Ritt; screenplay by Joseph Stefano. With Sophia Loren, Anthony Quinn, Ina Balin, Jimmie Baird, Mark Richman, Naomi Stevens, Frank Puglia.





COLUMBIA; 20TH CENTURY-FOX; VELDE; 20TH CENTURY-FOX

Outstanding film performances in 1959 were given by (left to right): Paul Muni, in *The Last Angry Man*; Margaret Leighton, in *The Sound and the Fury*; Victor Sjöström, in the Swedish film, *Wild Strawberries*; and Orson Welles, in *Compulsion*.

The Blue Angel (20th Century-Fox). Producer, Jack Cummings; director, Edward Dmytryk; screenplay by Nigel Balchin, based on the 1930 German screenplay which was based on Heinrich Mann's novel *Professor Unrath*. With Curt Jurgens, May Britt, Theodore Bikel.

Blue Denim (20th Century-Fox). Producer, Charles Brackett; director, Philip Dunne; screenplay by Edith Sommer and Philip Dunne, based on the play by James Leo Herlihy and William Noble. With Carol Lynley, Brandon de Wilde, Macdonald Carey, Marsha Hunt, Warren Berlinger.

The Buccaneer (Paramount). Producer, Henry Wilcoxon; director, Anthony Quinn; screenplay by Jesse L. Lasky, Jr., and Berenice Mosk, from Lyle Saxon's *Lafitte the Pirate*. With Yul Brynner, Claire Bloom, Charles Boyer, Charlton Heston, Inger Stevens, Henry Hull, E. G. Marshall.

But Not for Me (Paramount). Producers, William Perlberg and George Seaton; director, Walter Lang; screenplay by John Michael Hayes. With Clark Gable, Lilli Palmer, Carroll Baker, Lee J. Cobb, Barry Coe, Thomas Gomez.

Career (Paramount). Producer, Hal Wallis; director, Joseph Anthony; screenplay by James Lee, from his stage play. With Anthony Franciosa, Dean Martin, Shirley MacLaine, Carolyn Jones, Joan Blackman, Robert Middleton.

Compulsion (20th Century-Fox). Producer, Richard D. Zanuck; director, Richard Fleischer; screenplay by Richard Murphy, from the novel by Meyer Levin. With Dean Stockwell, Bradford Dillman, Orson Welles, Diane Varsi, E. G. Marshall, Martin Milner, Richard Anderson.

Count Your Blessings (MGM). Producer-writer, Karl Tunberg; director, Jean Negulesco. Based on Nancy Mitford's *The Blessing*. With Deborah Kerr, Rossano Brazzi, Maurice Chevalier, Martin Stephens, Tom Helmore, Ronald Squire, Patricia Medina, Lumsden Hare.

Crime and Punishment, U.S.A. (Allied Artists). Producer, Terry Sanders; director, Denis Sanders; screenplay by Walter Newman, from the novel by Fyodor Dostoevsky. With George Hamilton, Frank Silvera, Mary Murphy, Marian Seldes.

Darby O'Gill and the Little People (Buena Vista). Producer, Walt Disney; director, Robert Stevenson; screenplay by Lawrence Edward Watkin, suggested by H. T. Kavanagh's stories. With Albert Sharpe, Janet Munro, Sean Connery, Jimmy O'Dea, Kieron Moore, Estelle Winwood, Walter Fitzgerald.

The Devil's Disciple (United Artists). Producer, Harold Hecht; director, Guy Hamilton; screenplay by John Dighton and Roland Kibbee, based on the play by George Bernard Shaw. With Burt Lancaster, Kirk Douglas, Laurence Olivier, Janette Scott, Harry Andrews, Eva LeGallienne, Basil Sydney.

The Diary of Anne Frank (20th Century-Fox). Producer-director, George Stevens; screenplay by Frances Goodrich and Albert Hackett, from their stage play which was based on *Anne Frank: the Diary of a Young Girl*. With Millie Perkins, Joseph Schildkraut, Shelley Winters, Richard Beymer, Gusti Huber, Lou Jacobi, Diane Baker, Ed Wynn.

Don't Give Up the Ship (Paramount). Producer, Hal Wallis; director, Norman Taurog. With Jerry Lewis, Dina Merrill, Diana Spencer, Mickey Shaughnessy, Robert Middleton.

The FBI Story (Warners). Producer-director, Mervyn LeRoy; screenplay by Richard L. Breen and John Twist, from Don Whitehead's book. With James Stewart, Vera Miles, Murray Hamilton, Larry Pennell, Nick Adams, Diane Jergens.

First Man Into Space (MGM). Producers, John Croydon and Charles F. Vetter, Jr.; director, Robert Day. With Marshall Thompson, Marla Landi, Robert Ayres, Bill Edwards.

The Five Pennies (Paramount). Producer, Jack Rose; director, Melville Shavelson; screenplay by Jack Rose and Melville Shavelson. With Danny Kaye, Barbara Bel Geddes, Harry Guardino, Louis Armstrong, Bob Crosby, Tuesday Weld, Susan Gordon.

For the First Time (MGM). Producer, Alexander Gruter; director, Rudy Mate; screenplay by Andrew Solt. With Mario Lanza, Johanna Von Koszian, Kurt Kasznar, Zsa Zsa Gabor, Hans Sohnker.

The Gene Krupa Story (Columbia). Producer, Philip A. Waxman; director, Don Weis; screenplay by Orin Jannings. Drums recorded by Gene Krupa. With Sal Mineo, Susan Kohner, James Darren, Susan Oliver, Red Nichols, Bobby Troup.

Gidget (Columbia). Producer, Lewis J. Rachmil; director, Paul Wendkos; screenplay by Gabrielle Upton, from the book by Frederick Kohner. With Sandra Dee, James Darren, Cliff Robertson, Arthur O'Connell, Mary La Roche, Joby Baker.

Green Mansions (MGM). Producer, Edmund Grainger; director, Mel Ferrer; screenplay by Dorothy Kingsley, from the novel by W. H. Hudson. With Audrey Hepburn, Anthony Perkins, Lee J. Cobb, Sessue Hayakawa, Henry Silva, Nehemiah Persoff, Michael Pate.

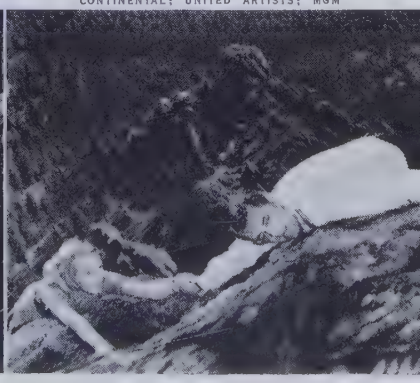
The Hanging Tree (Warners). Producers, Martin Jurow and Richard Shepherd; director, Delmer Daves; screenplay by Wendell Mayes and Halsted Welles, from the novel by Dorothy M. Johnson. With Gary Cooper, Maria Schell, Karl Malden, George C. Scott, Ben Piazza.

The Hangman (Paramount). Producer, Frank Freeman, Jr.; director, Michael Curtiz; screenplay by Dudley Nichols, from a story by Luke Short. With Robert Taylor, Tina Louise, Jack Lord, Fess Parker.

Happy Anniversary (United Artists). Producer, Ralph

(*Left*) Simone Signoret and Laurence Harvey, in *Room at the Top*. (*Center*) Jack Lemmon (l.), dressed as a woman, shares a berth with Marilyn Monroe in *Some Like It Hot*. (*Right*) Eva Marie Saint and Cary Grant in Hitchcock's *North by Northwest*.

CONTINENTAL; UNITED ARTISTS; MGM



Fields; director, David Miller; screenplay by Joseph Fields and Jerome Chodorov, from their stage play *Anniversary Waltz*. With David Niven, Mitzi Gaynor, Carl Reiner, Loring Smith, Phyllis Povah, Patty Duke, Kevin Coughlin, Monique Van Vooren, Elizabeth Wilson.

A Hole in the Head (United Artists). Producer-director, Frank Capra; screenplay by Arnold Schulman, from his stage play. With Frank Sinatra, Edward G. Robinson, Thelma Ritter, Eleanor Parker, Carolyn Jones, Eddie Hodges, Keenan Wynn.

The Horse Soldiers (United Artists). Producers-writers, John Lee Mahin and Martin Rackin; director, John Ford. Based on the novel by Harold Sinclair. With John Wayne, William Holden, Constance Towers, Althea Gibson, Hoot Gibson, Anna Lee, Russell Simpson.

Hound-Dog Man (20th Century-Fox). Producer, Jerry Wald; director, Don Siegel; screenplay by Fred Gipson and Winston Miller, from the novel by Fred Gipson. With Stuart Whitman, Carol Lynley, Fabian, Arthur O'Connell, Betty Field, Dodie Stevens, Dennis Holmes, Edgar Buchanan, Jane Darwell, Royal Dano.

Imitation of Life (Universal). Producer, Ross Hunter; director, Douglas Sirk; screenplay by Eleanore Griffin and Allan Scott, from the novel by Fannie Hurst. With Lana Turner, Juanita Moore, John Gavin, Sandra Dee, Susan Kohner, Robert Alda, Dan O'Herlihy, Mahalia Jackson, Troy Donahue.

It Happened To Jane (Columbia). Producer-director, Richard Quine; screenplay by Norman Katkov, from a story by Max Wilk and Norman Katkov. With Doris Day, Ernie Kovacs, Jack Lemmon, Steve Forrest, Teddy Rooney, Russ Brown.

It Started with a Kiss (MGM). Producer, Aaron Rosenberg; director, George Marshall; screenplay by Charles Lederer. With Debbie Reynolds, Glenn Ford, Eva Gabor, Gustavo Rojo, Fred Clark, Edgar Buchanan.

John Paul Jones (Warners). Producer, Samuel Bronston; director, John Farrow; screenplay by John Farrow and Jesse Lasky, Jr. With Robert Stack, Charles Coburn, Marisa Pavan, Erin O'Brien, Bette Davis, Macdonald Carey, Jean Pierre Aumont, David Farrar, Peter Cushing, Tom Brannum, Bruce Cabot, Thomas Gomez.

The Journey (MGM). Producer-director, Anatole Litvak; screenplay by George Tabori. With Deborah Kerr, Yul Brynner, Jason Robards, Jr., Robert Morley, E. G. Marshall, Anne Jackson, Kurt Kasznar, David Kossoff, Gerard Oury, Marie Daems, Anouk Aimee.

Journey to the Center of the Earth (20th Century-Fox). Producer, Charles Brackett; director, Henry Levin; screenplay by Walter Reisch and Charles Brackett, from the novel by Jules Verne. With James Mason, Pat Boone, Arlene Dahl, Peter Ronson, Diane Baker, Thayer David.

The Last Angry Man (Columbia). Producer, Fred Kohlmar; director, Daniel Mann; screenplay by Gerald Green, from his novel. With Paul Muni, David Wayne, Luther Adler, Betsy Palmer, Nancy R. Pollock, Joby Baker, Claudia McNeil, Billy Dee Williams, Joanna Moore, Robert F. Simon, Dan Tobin.

The Last Blitzkrieg (Columbia). Producer, Sam Katzman; director, Arthur Dreifuss; screenplay by Lou Morheim. With Van Johnson, Kerwin Mathews, Dick York, Larry Storch, Lise Bourdin.

Last Train from Gun Hill (Paramount). Producer, Hal Wallis; director, John Sturges; screenplay by James Poe. With Kirk Douglas, Anthony Quinn, Carolyn Jones, Earl Holliman, Brad Dexter, Brian Hutton.

Li'l Abner (Paramount). Producer, Norman Panama; director, Melvin Frank; screenplay by Norman Panama and Melvin Frank, from their stage musical comedy which stemmed from characters created by Al Capp. With Peter Palmer, Leslie Parrish, Stubby Kaye, Howard St. John, Billie Hayes, Joe E. Marks, Robert Strauss, Julie Newmar, Stella Stevens, Bern Hoffman.

Lonelyhearts (United Artists). Producer-writer, Dore Schary; director, Vincent J. Donehue. Based on Nathanael West's novel *Miss Lonelyhearts* and the play by Howard Teichman. With Montgomery Clift, Robert Ryan, Myrna Loy, Dolores Hart, Maureen Stapleton, Jackie Coogan, Frank Maxwell, Onslow Stevens.

The Man Who Understood Women (20th Century-Fox). Producer-director-writer, Nunnally Johnson. Based on Romain Gary's *The Colors of the Day*. With Henry Fonda, Leslie Caron, Cesare Danova, Myron McCormick.

The Mating Game (MGM). Producer, Philip Barry, Jr.; director, George Marshall; screenplay by William Roberts, from H. E. Bates' *The Darling Buds of May*. With Debbie Reynolds, Tony Randall, Paul Douglas, Fred Clark, Una Merkel, Philip Ober.

Middle of the Night (Columbia). Producer, George Justin; director, Delbert Mann; screenplay by Paddy Chayefsky, from his stage play. With Fredric March, Kim Novak, Glenda Farrell, Albert Dekker, Martin Balsam, Lee Grant, Joan Copeland, Lee Philips, Edith Meiser.

The Miracle (Warners). Producer, Henry Blanke; director, Irving Rapper; screenplay by Frank Butler, based on the play by Karl Vollmoeller as produced by Max Reinhardt. With Carroll Baker, Roger Moore, Walter Slezak, Vittorio Gassman, Katina Paxinou, Dennis King, Gustavo Rojo, Isobel Elsom.

The Naked Maja (United Artists). Producer, Goffredo Lombardo; director, Henry Koster; screenplay by Norman Corwin and Giorgio Prosperi. With Ava Gardner, Anthony Franciosa, Amedeo Nazzari, Gino Cervi, Lea Padovani.

Never Steal Anything Small (Universal). Producer, Aaron Rosenberg; director, Charles Lederer; screenplay by Charles Lederer, from the stage play, *Devil's Hornpipe*, by Maxwell Anderson and Rouben Mamoulian. Music by Allie Wrubel; lyrics by Maxwell Anderson. With James Cagney, Shirley Jones, Roger Smith, Cara Williams, Nehemiah Persoff, Royal Dano, Anthony Caruso, Horace McMahon.

Night of the Quarter Moon (MGM). Producer, Albert Zugsmith; director, Hugo Haas; screenplay by Frank Davis and Franklin Coen. With Julie London, John Drew Barrymore, Nat "King" Cole, Anna Kashfi, Dean Jones, Agnes Moorehead, Ray Anthony, Jackie Coogan, Cathy Crosby, Charles Chaplin, Jr., James Edwards.

North By Northwest (MGM). Producer-director, Alfred Hitchcock; screenplay by Ernest Lehman. With Cary Grant, Eva Marie Saint, James Mason, Jessie Royce Landis, Leo G. Carroll, Philip Ober, Josephine Hutchinson, Martin Landau, Adam Williams.

The Nun's Story (Warners). Producer, Henry Blanke; director, Fred Zinnemann; screenplay by Robert Anderson, from the novel by Kathryn C. Hulme. With Audrey Hepburn, Edith Evans, Peggy Ashcroft, Peter Finch, Dean Jagger, Mildred Dunnock, Beatrice Straight, Patricia Collinge, Margaret Phillips, Rosalie Crutchley, Colleen Dewhurst, Barbara O'Neil.

Odds Against Tomorrow (United Artists). Producer-director, Robert Wise; screenplay by John O. Killens and Nelson Gidding, from the novel by William P. McGivern. Music by John Lewis. With Harry Belafonte, Robert Ryan, Shelley Winters, Ed Begley, Gloria Grahame, Will Kuluva, Kim Hamilton, Mae Barnes.

1001 Arabian Nights (Columbia). Producer, Stephen Bosustow; director, Jack Kinney; screenplay by Czenzi Ormonde, stemming from the Aladdin story in *The Arabian Nights*. Feature-length animated cartoon with the voices of Jim Backus, Kathryn Grant, Dwayne Hickman, Hans Conried.

On the Beach (United Artists). Producer-director, Stanley Kramer; screenplay by John Paxton and James Lee Barrett, based on the novel by Nevil Shute. With Gregory Peck, Ava Gardner, Fred Astaire, Anthony Perkins, Donna Anderson, John Tate, Lola Brooks.

Operation Petticoat (Universal). Producer, Robert Arthur; director, Blake Edwards; screenplay by Stanley Shapiro and Maurice Richlin. With Cary Grant, Tony Curtis, Joan O'Brien, Dina Merrill, Gene Evans, Arthur O'Connell.

The Perfect Furlough (Universal). Produced by Robert Arthur; directed by Blake Edwards; screenplay by Stanley Shapiro. With Tony Curtis, Janet Leigh, Keenan Wynn, Elaine Stritch, Linda Cristal, Troy Donahue.

Pillow Talk (Universal). Producers, Ross Hunter and Martin Melcher; director, Michael Gordon; screenplay by Stanley Shapiro and Maurice Richlin. With Rock Hudson, Doris Day, Tony Randall, Thelma Ritter, Marcel Dalio, Lee Patrick, Nick Adams, Allen Jenkins.

Porgy and Bess (Columbia). Producer, Samuel Goldwyn; director, Otto Preminger; screenplay by N. Richard Nash, from the folk opera with libretto by DuBose Heyward, which was based on the stage play *Porgy*, by DuBose and Dorothy Heyward, from the novel by DuBose Heyward. Music by George Gershwin; lyrics by Ira Gershwin and DuBose Heyward. With Sidney Poitier, Dorothy Dandridge, Sammy Davis, Jr., Pearl Bailey, Brock Peters, Diahann Carroll, Leslie Scott, Ruth Attaway.

Pork Chop Hill (United Artists). Producer, Sy Bartlett; director, Lewis Milestone; screenplay by James R. Webb, from the book by S. L. A. Marshall. With Gregory Peck, Harry Guardino, Rip Torn, George Peppard, James Edwards, Woody Strode, George Shibata.

A Private's Affair (20th Century-Fox). Producer, David Weisbart; director, Raoul Walsh; screenplay by Winston Miller. With Sal Mineo, Barry Coe, Gary Crosby, Christine Carere, Barbara Eden, Terry Moore, Jim Backus, Jessie Royce Landis.

The Rabbit Trap (United Artists). Producer, Harry Kleiner; director, Philip Leacock; screenplay by J. P. Miller. With Ernest Borgnine, David Brian, Bethel Leslie, Kevin Corcoran, June Blair.

Rally Round the Flag, Boys! (20th Century-Fox). Producer-director, Leo McCarey; screenplay by Claude Binyon and Leo McCarey, from Max Shulman's novel. With Paul Newman, Joanne Woodward, Joan Collins, Jack Carson.

The Remarkable Mr. Pennypacker (20th Century-Fox). Producer, Charles Brackett; director, Henry Levin; screenplay by Walter Reisch, from the stage play by Liam O'Brien. With Clifton Webb, Dorothy McGuire, Charles Coburn, Jill St. John, Ron Ely, Ray Stricklyn, Dorothy Stickney, Larry Gates, David Nelson.

Rio Bravo (Warners). Producer-director, Howard Hawks; screenplay by Jules Furthman and Leigh Brackett, from a story by B. H. McCampbell. With John Wayne, Dean Martin, Ricky Nelson, Angie Dickinson, Walter Brennan, Ward Bond, John Russell, Pedro Gonzalez-Gonzalez.

Say One for Me (20th Century-Fox). Producer-director, Frank Tashlin; screenplay by Robert O'Brien. Songs by Sammy Cahn and James Van Heusen. With Bing Crosby, Debbie Reynolds, Robert Wagner, Ray Walston, Les Tremayne, Connie Gilchrist, Frank McHugh.

The Shaggy Dog (Buena Vista). Producer, Walt Disney; director, Charles Barton; screenplay by Bill Walsh and Lillie Hayward, stemming from Felix Salten's *The Hound of Florence*. With Tommy Kirk, Kevin Corcoran, Fred MacMurray, Jean Hagen, Annette Funicello, Tim Considine, Cecil Kellaway, Alexander Scourby.

Shake Hands with the Devil (United Artists). Producer-director, Michael Anderson; screenplay by Ivan Goff and Ben Roberts. With James Cagney, Don Murray, Dana Wynter, Glynis Johns, Michael Redgrave, Sybil Thorndike, Cyril Cusak, Noel Purcell.

Sleeping Beauty (Buena Vista). Producer, Walt Disney; supervising director, Clyde Geronimi; screenplay by Erdman Penner, based on the Charles Perrault version of the fairy tale. Music by George Bruns, based on Tchaikovsky's *Sleeping Beauty Ballet*. Feature-length animated cartoon with the voices of Mary Costa, Verna Felton, Barbara Jo Allen, Barbara Luddy, Bill Shirley, Eleanor Audley, Taylor Holmes.

Solomon and Sheba (United Artists). Producer, Ted Richmond; director, King Vidor; screenplay by Anthony Veiller, Paul Dudley and George Bruce, based on a story by Crane Wilbur. With Yul Brynner, Gina Lollobrigida, George Sanders, Marisa Pavan, John Crawford, David Farrar, Laurence Naismith, Jose Nieto.

Some Came Running (MGM). Producer, Sol C. Siegel; director, Vincente Minnelli; screenplay by John Patrick and Arthur Sheekman, from the novel by James Jones. With Frank Sinatra, Dean Martin, Shirley MacLaine, Martha Hyer, Arthur Kennedy, Nancy Gates, Betty Lou Keim, Larry Gates.

Some Like It Hot (United Artists). Producer-director, Billy Wilder; screenplay by Billy Wilder and I. A. L. Diamond. With Marilyn Monroe, Jack Lemmon, Tony Curtis, George Raft, Joe E. Brown, Pat O'Brien, Nehemiah Persoff.

The Sound and the Fury (20th Century-Fox). Producer, Jerry Wald; director, Martin Ritt; screenplay by Irving Ravetch and Harriet Frank, Jr., from the novel by William Faulkner. With Yul Brynner, Joanne Woodward, Margaret Leighton, Stuart Whitman, Ethel Waters, Jack Warden, John Beal, Francoise Rosay, Albert Dekker, Stephen Perry, William Gunn.

Suddenly, Last Summer (Columbia). Producer, Sam Spiegel; director, Joseph L. Mankiewicz; screenplay by Gore Vidal and Tennessee Williams, from the play by Tennessee Williams. With Katharine Hepburn, Elizabeth Taylor, Montgomery Clift, Albert Dekker, Mercedes McCambridge, Gary Raymond.

A Summer Place (Warners). Producer-director-writer, Delmer Daves. Based on the novel by Sloan Wilson. With Richard Egan, Dorothy McGuire, Arthur Kennedy, Sandra Dee, Troy Donahue, Constance Ford, Beulah Bondi.

Take a Giant Step (United Artists). Producer, Julius J. Epstein; director, Philip Leacock; screenplay by Louis S. Peterson and Julius J. Epstein, from the stage play by Louis S. Peterson. With Johnny Nash, Estelle Hemsley, Ruby Dee, Frederick O'Neal, Beah Richards.

Tarzan's Greatest Adventure (Paramount). Producer, Sy Weintraub; director, John Guillermin; screenplay by Bernie Giler and John Guillermin, based on a story by Les Crutchfield and characters created by Edgar Rice Burroughs. With Gordon Scott, Anthony Quayle, Sara Shane, Niall MacGinnis.

Ten Seconds to Hell (United Artists). Producer, Michael Carreras; director, Robert Aldrich; screenplay by Robert Aldrich and Teddi Sherman, based on Lawrence P. Bachmann's *The Phoenix*. With Jeff Chandler, Jack Palance, Martine Carol.

That Kind of Woman (Paramount). Producers, Carlo Ponti and Marcello Girosi; director, Sidney Lumet; screenplay by Walter Bernstein, from a story by Robert Lowry. With Sophia Loren, Tab Hunter, George Sanders, Jack Warden, Barbara Nichols, Keenan Wynn.

They Came to Cordura (Columbia). Producer, William Goetz; director, Robert Rossen; screenplay by Ivan Moffat and Robert Rossen, based on the novel by Glendon Swarthout. With Gary Cooper, Rita Hayworth, Van Heflin, Tab Hunter, Richard Conte, Dick York, Michael Callan, Robert Keith.

Third Man on the Mountain (Buena Vista). Presented by Walt Disney; producer, William H. Anderson; director, Ken Annakin; screenplay by Eleanore Griffin; based on James Ramsey Ullman's *Banner in the Sky*. With James MacArthur, Michael Rennie, Janet Munro, James Donald, Herbert Lom, Nora Swinburne, Laurence Naismith.

The Thirty Foot Bride of Candy Rock (Columbia). Producer, Lewis J. Rachmil; director, Sidney Miller. With Lou Costello, Dorothy Provine, Gale Gordon.

This Earth Is Mine (Universal). Producers, Casey Robinson and Claude Heilman; director, Henry King; screenplay by Casey Robinson, from Alice Tisdale Hobart's *The Cup and the Sword*. With Rock Hudson, Jean Simmons, Dorothy McGuire, Claude Rains, Kent Smith, Anna Lee, Cindy Robbins.

The Tingler (Columbia). Producer-director, William Castle; screenplay by Robb White. With Vincent Price, Judith Evelyn, Darryl Hickman.

Tonka (Buena Vista). Presented by Walt Disney; producer, James Pratt; director, Lewis R. Foster; screenplay by Lewis R. Foster and Lillie Hayward, from David Appel's *Comanche*. With Sal Mineo, Philip Carey, Rafael Campos, Jerome Courtland, Joy Page, H. M. Wynant, Britt Lomond, Herbert Rudley.

Up Periscope (Warners). Producer, Aubrey Schenck; director, Gordon Douglas; screenplay by Richard Landau, from the novel by Robb White. With James Garner, Edmond O'Brien, Andra Martin, Alan Hale, Carleton Carpenter, Edward Byrnes.

Warlock (20th Century-Fox). Producer-director, Edward Dmytryk; screenplay by Robert Alan Aurthur, from the novel by Oakley Hall. With Richard Widmark, Henry Fonda, Anthony Quinn, Dorothy Malone, Dolores Michaels, Tom Drake, Wallace Ford, Richard Arlen.

The Wild and the Innocent (Universal). Producer, Sy Gomberg; director, Jack Sher. With Audie Murphy, Joanne Dru, Gilbert Roland, Sandra Dee, Jim Backus.

Woman Obsessed (20th Century-Fox). Producer-writer, Sydney Boehm; director, Henry Hathaway. With Susan Hayward, Stephen Boyd, Dennis Holmes, Theodore Bikel, Barbara Nichols.

The World, the Flesh and the Devil (MGM). Producer, George Englund; director-writer, Ranald MacDougall. With Harry Belafonte, Inger Stevens, Mel Ferrer.

The Wreck of the Mary Deare (MGM). Producer, Julian Blaustein; director, Michael Anderson; screenplay by Eric Ambler, from the novel by Hammond Innes. With Gary Cooper, Charlton Heston, Michael Redgrave, Emlyn Williams, Virginia McKenna, Richard Harris, Ben Wright.

Yellowstone Kelly (Warners). Director, Gordon Douglas; screenplay by Burt Kennedy. With Clint Walker, Edward Byrnes, John Russell, Ray Danton, Andra Martin, Rhodes Reason.

The Young Land (Columbia). Presented by C. V. Whitney; producer, Patrick Ford; director, Ted Tetzlaff; screenplay by Norman Shannon Hall, from a story by John Reese. With Pat Wayne, Dennis Hopper, Dan O'Herlihy, Yvonne Craig, Pedro Gonzalez-Gonzalez.

The Young Philadelphians (Warners). Director, Vincent Sherman; screenplay by James Gunn, from Richard Powell's *The Philadelphian*. With Paul Newman, Barbara Rush, Alexis Smith, Brian Keith, Diane Brewster, Billie Burke, John Williams, Paul Picerni, Robert Vaughn, Otto Kruger.

Films from Abroad

The Anatomy of Love (Kassler). Italian film. A Lux Film production; director, Alessandro Blasetti; a five-part film with screenplays by Suso Cecchi D'Amico, G. Bassani, Alessandro Blasetti, Ennio, Alessandro Continenza. With Vittorio De Sica, Sophia Loren, Toto, Michel Simon, Lea Padovani, Marcello Mastroianni, Sylvie, Eduardo De Filippo, Maria Fiore, Elisa Cegani.

Aparajito—The Unvanquished (Harrison). Indian film. Director-writer, Satyajit Ray. Part II of the three-part film adapted from the novel by Bibhutibhushan Bandopadyaya. With Pinaki Sen Gupta, Smaran Ghosal, Karuna Banerji, Kanu Banerji, Ramani Sen Gupta.

Aren't We Wonderful? (I. G. Goldsmith). German film. Director, Kurt Hoffmann; screenplay by Heinz Pauck and Gunther Neumann, from a novel by Hugo Hartung. With Johanna Von Koszian, Hansjorg Felmy, Wera Frydtberg, Robert Graf, Wolfgang Neuss, Wolfgang Muller.

Back to the Wall (Ellis). French film. Producers, Francois Chavane and the Societe Nouvelle des Etablissements Gaumont; director, Edouard Molinaro. Based on Frederic Dard's novel. With Gerard Oury, Jeanne Moreau, Philippe Nicaud, Claire Maurier, Jean Lefebvre.

Black Orpheus (Lopert). French film. Producer, Sacha Gordine; director, Marcel Camus; screenplay by Jacques Viot, stemming from the Orpheus-Eurydice myth. With Marpessa Dawn, Breno Mello, Lourdes de Oliveira, Lea Garcia, Waldetar de Souza.

Brink of Life (Ajay). Swedish film. Producer, Nordisk Tonefilm; director, Ingmar Bergman; screenplay by Ulla Isaksson. With Eva Dahlbeck, Ingrid Thulin, Bibi Andersson, Barbro Hiort af Ornas, Erland Josephson, Max von Sydow, Gunnar Sjoberg, Ann-Marie Gyllenspetz.

Cine Ballets de Paris (Hermes Films). French film. Director, Louis Cuny. A ballet film with Maurice Bejart, Michele Seigneuret, Tessa Beaumont, Tania Bari and other artists of Ballets of Etoile.

The Cousins (Films-Around-the-World). French film. Producer-director-writer, Claude Chabrol. With Gerard Blain, Jean-Claude Brialy, Juliette Mayniel, Claude Cerval, Genevieve Cluny.

The Cranes Are Flying (Warners). Russian film. A Mosfilm production; director, Mikhail Kalatozov; screenplay by Victor Rozov. With Tatyana Samoilova, Alexei Batalov, A. Shvorin, Vasily Merkuryev, S. Kharitonova, V. Zubov.

A Cry from the Streets (Tudor Pictures). English film. Producer, Ian Dalrymple; director, Lewis Gilbert; screenplay by Vernon Harris, from Elizabeth Coxhead's novel *The Friend in Need*. With Max Bygraves, Barbara

Murray, Colin Petersen, Dana Wilson, Kathleen Harrison, Sean Barrett, Mona Washbourne.

The Devil Strikes at Night (Zenith International). German film. Producer, Werner Fisher; director, Robert Siodmak. With Mario Adorf, Claus Holm, Peter Carsten, Annemarie Duringer, Hannes Messemer.

The Eighth Day of the Week (Continental). Polish-German film. Producer, Artur Brauner; director, Alexander Ford; screenplay by Marek Hlasko and Alexander Ford, from the novel by Marek Hlasko. With Sonja Ziemann, Zbigniew Cybulski, Tadeusz Lomnicki, Emil Karewicz, Jan Swiderski, Ilse Steppat.

Embezzled Heaven (Louis de Rochemont Associates). Austrian film. Director-writer, Ernst Marischka. Based on the novel by Franz Werfel. With Annie Rosar, Hans Holt, Victor de Kowa, Kurt Meisel.

Floods of Fear (Universal). English film. Producer, Sydney Box; director-writer, Charles Crichton. With Howard Keel, Anne Heywood, Cyril Cusack, Harry H. Corbett.

The 400 Blows (Zenith International). French film. Producer-director, Francois Truffaut; screenplay by Francois Truffaut and Marcel Moussy. With Jean-Pierre Leaud, Patrick Auffay, Claire Maurier, Albert Remy, Guy Decomble.

A Handful of Grain (Film Associates). Indian film. Presented by Albert T. Brod and Rishi D. Purie; director, Mehboob. With Margis, Sunil Dutt, Rajendra Kumar, Raaj Kumar, Kumkum, Chanchal.

Hercules (Warners). Italian film. Producer, Federico Teti; director, Pietro Francisci; screenplay by Pietro Francisci, Ennio De Concini, Gaio Frattini. With Steve Reeves, Sylva Koscina, Fabrizio Mioni, Ivo Garrani.

Heroes and Sinners (Janus). French film. Director, Yves Ciampi; screenplay by Yves Ciampi and J. L. Bost, from the story by Christine Garnier. With Yves Montand, Curt Jurgens, Maria Felix, Jean Servais, Elisabeth Manet, Gerard Oury, Gert Froebe.

The Hound of Baskervilles (United Artists). English film. Producer, Anthony Hinds; director, Terence Fisher; screenplay by Peter Bryan, from the novel by Arthur Conan Doyle. With Peter Cushing, Andre Morell, Christopher Lee, Maria Landi, Miles Malleson, Francis De Wolff, Ewen Solon.

The House I Live In (Sovexportfilm). Russian film. A Gorky Film Studio production; directors, Lev Kulijanov and Yakov Segel; screenplay by Peter Zharov. With Valentina Telegina, Eva Myshkova, Zhanna Bolotova, Vladimir Zemlyankin, Yascha Zolnikov, Pavel Shalnov, Rimma Shorokhova, Klavdia Elanskaya.

I Was Monty's Double (NTA). English film. Producer, Maxwell Setton; director, John Guillermin; screenplay by Bryan Forbes, based on the book by M. E. Clifton James. With M. E. Clifton James, John Mills, Cecil Parker, Marius Goring, Michael Hordern, Patrick Allen, Patrick Holt.

Ivan the Terrible, Part II (Janus). Russian film. Director-writer, Sergei Eisenstein; music by Sergei Prokofiev. With Nikolai Cherkassov, Serafima Birman, Piotr Kadochnikov, Andrei Abrikosov.

Lady Chatterley's Lover (Kingsley-International). French film. Producer, Gilbert Cohn-Seat; director-writer, Marc Allegret, from the novel by D. H. Lawrence and the play by Gaston Bonheur and Philippe de Rothschild. With Danielle Darrieux, Erno Crisa, Leo Genn, Berthe Tissen, Janine Crispin.

The Law Is the Law (Continental). French film. Producers, A. Mnouchkine and G. Danciger; director, Christian-Jaque; screenplay by Jacques Emmanuel and Jean-Charles Tacchella. With Fernandel, Toto, Noel Roquevert, Mario Besozzi, Nathalie Nerval, Leda Gloria.

Libel (MGM). English film. Producer, Anatole de Grunwald; director, Anthony Asquith; screenplay by Anatole de Grunwald and Karl Tunberg, from the stage play by Edward Wooll. With Dirk Bogarde, Olivia de Havilland, Robert Morley, Wilfrid Hyde-White, Paul Massie, Richard Wattis.

Look Back in Anger (Warners). English film. Producer, Harry Saltzman; director, Tony Richardson; screenplay by Nigel Kneale, from the stage play by John Osborne. With Richard Burton, Claire Bloom, Mary Ure, Edith Evans, Gary Raymond, Glen Byam Shaw, Donald Pleasence.

Love Is My Profession (Kingsley-International). French film. Producer, Raoul J. Levy; director, Claude Autant-Lara; screenplay by Jean Aurenche and Pierre Bost, based on Georges Simenon's novel *In Case of Emergency*. With Jean Gabin, Brigitte Bardot, Edwige Feuillere, Franco Interlenghi, Nicole Berger.

The Lovers (Zenith International). French film. Director-writer, Louis Malle. Based on *Point de Lendemain* by Dominique-Vivant. With Jeanne Moreau, Alain Cuny, Jose-Luis de Villalonga, Jean-Marc Bory, Judith Magre.

Mad Little Island (Rank). English film. Producer, Basil Dearden; director, Michael Relph; screenplay by Monja Danischewsky, from Compton Mackenzie's *Rockets Galore*. With Jeannie Carson, Donald Sinden, Roland Culver, Noel Purcell, Ian Hunter, Duncan Macrae.

The Magician (Janus). Swedish film. Producer, Carl-Henry Cagarp; director-writer, Ingmar Bergman; director of photography, Gunnar Fischer. With Max von Sydow, Ingrid Thulin, Gunnar Bjornstrand, Naima Wifstrand, Bengt Ekerot, Bibi Andersson.

The Man Upstairs (Lion International). English film. Producer, Robert Dunbar under auspices of Association of Cinema Technicians; director, Don Chaffey; screenplay by Alun Falconer. With Richard Attenborough, Donald Houston, Bernard Lee, Dorothy Alison, Patricia Jessel, Virginia Maskell, Kenneth Griffith.

Masters of the Congo Jungle (20th Century-Fox). Belgian documentary film made in Africa by the Belgian International Scientific Foundation. Producer, Henri Storck; directors, Heinz Sielmann and Henry Brandt; English commentary by Joe Wills, from the narration by Max-Pol Fouchet, and read by Orson Welles and William Warfield.

The Mirror Has Two Faces (Continental). French film. Producer, Alain Poire; director, Andre Cayatte; screenplay by Andre Cayatte and Gerard Oury. With Michele Morgan, Bourvil, Gerard Oury, Ivan Desny, Elisabeth Manet, Sylvie.

The Mistress (Harrison). Japanese film. Producers, Yuji Hirao and Kenji Kuroiwa; director, Shiro Toyoda; screenplay by Masashige Narusawa, from Ogai Mori's novel *Gan*. With Hideko Takamine, Hiroshi Akutagawa, Eijiro Tono, Jukichi Uno, Choko Iida.

The Mouse That Roared (Columbia). English film. Producer, Walter Shenson; director, Jack Arnold; screenplay by Roger MacDougall and Stanley Mann, from the novel by Leonard Wibberley. With Peter Sellers, Jean Seberg, David Kossoff, Leo McKern.

The Mysterians (MGM). Japanese film. Producer, Tomoyuki Tanaka; director, Inoshiro Honda; screenplay by Takeshi Kimura. With Kenji Sahara, Yumi Shirakawa, Momoko Kochi, Akihiko Hirata, Takashi Shimura.

Nine Lives (Louis de Rochemont Associates). Norwegian film. Producer, Nord Films; director-writer, Arne Skouen, based on *We Die Alone* by David Howarth. With Jack Fjeldstad, Henny Moan, Alf Malland, J. Holst-Jensen, Lydia Opoien, Edvard Drablos.

The Possessors (Lopert). French film. Producer, Filmsonor Intermondia Films (J. P. Guibert); director, Denys De La Patelliere; screenplay by Michel Audiard and Denys De La Patelliere, from Maurice Druon's novel *Les Grandes Familles*. With Jean Gabin, Pierre Brasseur, Jean Desailly, Francoise Christophe, Bernard Blier, Jean Murat, Annie Ducaux.

Power Among Men (Louis de Rochemont Associates). International documentary film presented by the United Nations Film Board. Producers, Film Services of the United Nations Office of Public Information, under Thorold Dickinson and J. C. Sheers; directors, Alexander Hammid and Gian-Luigi Polidoro; screenplay and commentary by Thorold Dickinson, J. C. Sheers and V. R. Sarma, read by Laurence Harvey. Music composed and conducted by Virgil Thomson.

A Question of Adultery (NTA). English film. Producer, Raymond Stross; director, Don Chaffey; screenplay by Anne Edwards. With Julie London, Anthony Steel, Basil Sydney, Donald Houston, Anton Diffring, Andrew Cruickshank.

The Rikisha-Man (Cory Corp.). Japanese film. Producer, Toho Co., Ltd; associate producer, Tomoyuki Tanaka; director, Hiroshi Inagaki; screenplay by Mansaku Itami and Hiroshi Inagaki. With Toshiro Mifune, Hideko Takamine, Hiroshi Akutagawa, Chishu Ryu.

The Roof (Trans-Lux). Italian film. Producer-director, Vittorio De Sica; screenplay by Cesare Zavattini. With Gabriella Pallotti, Giorgio Listuzzi, Gastone Renzelli, Maria Di Rollo, Maria Di Fiori.

Room at the Top (Continental). English film. Producers, John and James Woolf; director, Jack Clayton; screenplay by Neil Paterson, from the novel by John Braine. With Laurence Harvey, Simone Signoret, Heather Sears, Donald Wolfit, Donald Houston, Hermione Baddeley, Raymond Huntley, John Westbrook.

Rosemary (Films-Around-the-World). German film. Producer, Luggi Waldleitner; director, Rolf Thiele; screenplay by Erich Kuby and Rolf Thiele. With Nadja Tiller, Peter Van Eyck, Mario Adorf, Carl Raddatz, Jo Herbst, Gert Froebe, Horst Frank, Hanne Wieder.

Sapphire (Universal). English film. Producer, Michael Relph; director, Basil Dearden; screenplay by Janet Green. With Nigel Patrick, Yvonne Mitchell, Michael Craig, Paul Massie, Bernard Miles, Earl Cameron, Gordon Heath, Olga Lindo, Harry Baird.

The Scapegoat (MGM). English film. Producer, Michael Balcon; director, Robert Hamer; screenplay by Gore Vidal and Robert Hamer, from the novel by Daphne du Maurier. With Alec Guinness, Bette Davis, Nicole Maurey, Irene Worth, Pamela Brown, Geoffrey Keen, Peter Bull, Annabel Bartlett.

The Silent Enemy (Universal). English film. Producer, Bertram Ostrer; director-writer, William Fairchild. Based on *Commander Crabb* by Marshall Pugh. With Laurence Harvey, Dawn Adams, John Clements, Michael Craig, Gianna Maria Canale, Arnoldo Foa, Massimo Serato.

The Sins of Rose Bernd (President Films). German film. Producer, Hans Abich; director, Wolfgang Staudte; screenplay by Walter Ulbricht, from the play by Gerhart Hauptmann. With Maria Schell, Raf Vallone, Kathe Gold, Hannes Messemer, Leopold Biberti.

Sisters (Artkino). Russian film. A Mosfilm production; director, Grigory Roshal; screenplay by Boris Chirskov, based on Alexei Tolstoy's novel *Ordeal*. With Rufina

Nifontova, Nina Veselovskaya, Vadim Medvedev, Nikolai Gritsenko, Victor Sharlakhov.

Smiley Gets a Gun (20th Century-Fox). Australian film. Producer-director-writer, Anthony Kimmins. With Keith Calvert, Sybil Thorndike, Chips Rafferty, Bruce Archer.

The Tailor's Maid (Trans-Lux). Italian film. Producer, Guido Giambartolomei; director, Mario Monicelli. With Vittorio De Sica, Lorella De Luca, Marcello Mastroianni, Marisa Merlini, Fiorella Mari.

Tempest (Paramount). Italian-French film. Producer, Dino DeLaurentiis; director, Alberto Lattuada; screenplay by Louis Peterson and Alberto Lattuada, based on two stories by Alexander Pushkin, *The Captain's Daughter* and *The Revolt of Pugachov*. With Van Heflin, Viveca Lindfors, Silvana Mangano, Geoffrey Horne, Oscar Homolka, Robert Keith, Agnes Moorehead, Helmut Dantine, Finlay Currie.

Tiger Bay (Continental). English film. Producer, John Hawkesworth; director, J. Lee Thompson. With John Mills, Horst Buchholz, Hayley Mills, Yvonne Mitchell, Megs Jenkins.

Wild Strawberries (Janus). Swedish film. Producer, Allan Ekelund; director-writer, Ingmar Bergman; director of photography, Gunnar Fischer. With Victor Sjostrom, Ingrid Thulin, Gunnar Bjornstrand, Jullan Kindahl, Bibi Andersson, Naima Wifstrand.

The Woman in the Painting (Lopert). Italian film. Producer, Carlo Civallero; director, Franco Rossi. With Andrea Scire, Geronimo Meynier, Luigi Tosi, Carlo Tamberlani.

Yevgeni Onegin (Artkino). Russian film. Producer-director, Roman Tikhomirov; screenplay by Alexander Ivanovsky and Roman Tikhomirov, from the novel by Alexander Pushkin. Film version of the opera by Pyotr Tchaikovsky. With Ariadne Shengelaya, Svetlana Nemolyaeva, Vadim Medvedev, Igor Ozerov, Ivan Petrov.

PHILIP T. HARTUNG,
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MOTOR TRANSPORTATION. The year 1959 was expected to be a record year for intercity truck transportation in the United States, but commercial bus volume declined slightly due to an increase in private passenger car use.

Trucking.—The continued climb of trucking was marked by an approximate 15% increase over the $6.2 billion total operating revenues posted by the 18,000 Class I, II, and III motor carriers of property in 1957 and 1958. In addition, billions of dollars worth of service was performed by a large number of private and for-hire carriers not under regulation by the Interstate Commerce Commission (q.v.). Continued tight control over costs and recovery from the recession of 1958 resulted in the best earnings in several years. Reports of Class I and II carriers showed operating ratios (the percentage relationship of expenses to gross revenues) of 95.7 and 93.4, respectively, for the first and second quarters of 1959. The trucking industry as a whole provided employment for more than 7 million persons in 1959.

It is estimated that trucks haul more intercity freight than any other means of transportation—42% of the total tons moved and well over half in terms of total value of service. In addition, trucks haul virtually all goods moving in local service.

Truck registrations kept pace with the general growth of the industry. In 1959, 11 million private and commercial trucks were registered—up 3.5% from the 1958 record.

Higher truck registrations, additional mileage, and the one-cent-a-gallon increase in the federal fuel tax appeared to be raising the amount of federal, state, and local highway user charges paid by the motor carrier industry beyond the $2.5 billion paid in 1958.

Trucking industry spokesmen continued to voice opposition to railroad efforts to obtain congressional authorization to own and operate other forms of transportation without restriction. Congressional consideration was postponed until the 1960 session.

Bus Operations.—The National Association of Motor Bus Operators reported that there were more than 260,000 buses in the United States in 1959. Less than 20,000 were engaged in intercity service, and these accounted for more than 1.1 billion vehicle miles during the year, providing nearly half a billion rides to passengers who traveled an estimated 23.5 billion passenger miles. Intercity buses also carried more express packages than ever before, as well as an increasing amount of mail. Buses provide the only form of public intercity passenger service to an estimated 40,000 communities in the United States.

Local and suburban buses numbered fewer than 60,000 in 1959 but provided more than 5 billion rides. The nation's 150,000 school buses carried about 11 million children to and from their classes at an annual average cost of $36 per pupil.

Employment of companies engaged primarily in providing intercity bus service exceeded 50,000 during 1959, not including the services of many commission agents who sold tickets and provided other services in small communities. Local transit systems employed more than 110,000 persons.

The problem of adequate service, hampered by declining travel volume and rising costs, has been receiving increasing recognition, with the result that some state and federal tax relief has been granted.

(See also AUTOMOBILES; HIGHWAYS; URBAN TRANSIT.)

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MOTOR VEHICLES. See AUTOMOBILES.

MOTORBOAT RACING. See SPORTS, GAMES, AND SHOWS.

MOTORCYCLING. See SPORTS, GAMES, AND SHOWS.

MOUNTAIN CLIMBING. See GEOGRAPHY AND EXPLORATION.

MOZAMBIQUE. See PORTUGUESE TERRITORIES.

MUELLER, Frederick Henry, U.S. secretary of commerce: b. Grand Rapids, Mich., Nov. 22, 1893. He was appointed secretary of commerce by President Eisenhower on July 21, 1959 (sworn in, August 10), after serving as acting secretary following the resignation on June 30 of his controversial predecessor, Lewis Strauss (see UNITED STATES—*The United States in 1959*). Previously, Mueller had been in the Department of Commerce as assistant secretary for domestic affairs (1955–58) and as under secretary (1958–59).

Mueller was graduated from Michigan State College in 1914 with a degree in mechanical engineering. He immediately joined the Mueller Furniture Company (Grand Rapids), which his father had founded. From then until his entry into government service in 1955 he was a general partner in the business. Combined with his business duties was a variety of other professional and civic activities, including the presidency of the National Association of Furniture Manufacturers (1934–35), the presidency of the United Hospital Fund, Inc. (1948–55), and 12 years of service on the governing board of Michigan State College (later University).

In late November 1959 Secretary Mueller led a United States delegation on a 10-day goodwill tour of Poland.

MUNICIPAL PLANNING. See CITY PLANNING.

MUNITIONS. See the Index entry, *Weapons.*

MUSCAT AND OMAN. Occupying the southeastern corner of the Arabian Peninsula, the sultanate of Muscat and Oman has an area of 82,000 square miles and a population of about 550,000. The capital is Muscat (est. pop., 5,500), which has a fine

harbor on the Gulf of Oman, but the main market center is Matrah (est. pop., 8,500), three miles to the north.

The state is governed very loosely by Sayyid Sa'id ibn Taymur ibn Faysal, the sultan since 1932. In 1939 and 1951, Muscat and Oman signed treaties of commerce and navigation with Great Britain, confirming the long friendly relationship between the two states and unofficially placing the sultan's foreign affairs in the hands of the British.

The state remains tied to Great Britain commercially, and is a part of the sterling bloc. Indian rupees are the local currency, although Muscat issues small fractional coins. Dates, pomegranates, limes, and fish are the chief exports. The country is underdeveloped and its natural resources are largely unexplored.

In the interior, near Fahud, the Iraq Petroleum Co. continued drilling for oil in 1959. In the province of Dhofar in the southwest, adjacent to Eastern Aden Protectorate, the principal ports are Salalah and Marbat. The Dhofar-Cities Service Petroleum Corp. has discovered oil in this province, and has several producing wells (2,000 barrels a day).

According to the 1920 Treaty of Sib, the central interior of the state, known as Oman Proper or Independent Oman, was to be governed by an elected imam (leader), who would have political and religious authority. In 1954, Ghalib ibn Ali was elected imam of Oman, although the sultan had opposed his election, and late in 1955 sporadic warfare broke out between the sultan and the imam. The British gave aid to the sultan, who had requested their support, while the imam received supplies and encouragement from the Arab states (principally Saudi Arabia). In 1957, Muscat forces, aided by British troops, captured Nazwa in Oman Proper. Fleeing his headquarters, Ghalib ibn Ali, along with his brother Talih and his principal adviser, Sheik Salih ibn Isa al-Harithi, sought refuge among the tribes of Beni Riyam under Sulayman ibn Himyar in the Jebel Akhdar (Green Mountains) of the interior.

Early in 1959, Muscati and British forces so thoroughly routed the imam's supporters in the mountainous areas of Oman that the imam and his close friends crossed over to Dammam in Saudi Arabia and proceeded to Cairo, where exile headquarters were established. British forces were withdrawn from Oman in April 1959. Although Oman leaders and refugee parties were feted in Riyadh by King Saud and honored by Nasser in the United Arab Republic, British relations with these two states so improved in 1959 that the question of Muscat and Oman was not discussed officially by the Arab League Council at its meetings during the year. Ghalib ibn Ali declared that he was the president of the independent republic of Oman, but no Arab state has recognized him.

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MUSEUMS. See Index entries on specific names of museums.

MUSIC.[1] George Frederick Handel having died in 1759, the year 1959 was marked by bicentennial celebrations everywhere in his honor. Most notably in England, Germany, the United States, and Italy, Handel's oratorios, operas, and instrumental music were very widely revived both in the course of regular concert seasons and, as in New York City, during special Handel festivals. On a smaller scale, Felix Mendelssohn-Bartholdy was honored by special performances during the sesquicentennial of his birth (1809). Similar celebratory performances of music by Frédéric Chopin and Robert Schumann were planned for the 1960 sesquicentennials of their births (1810).

[1] This article deals chiefly with developments related to the concert and operatic stages and to new music. For information on the year's activities in recorded music, see RECORDS, PHONOGRAPH; for music of the legitimate theater and ballet, see THEATER and DANCE, respectively; and for music in television programs, see RADIO AND TELEVISION.)

The violinist Mischa Elman marked the completion of fifty years before the public by giving a concert at Carnegie Hall, in New York City on Dec. 8, 1958. Other anniversaries were signalized by the Worcester (Mass.) Music Festival (100 years); the Battle Creek (Mich.) Symphony Orchestra (60 years); the Wheeling (W.Va.) Symphony Orchestra (30 years); the Glyndebourne (England) Festival Opera (25 years); and the Aspen (Colo.) Music Festival (10 years).

Among individuals who made musical news during the year were, again, Van Cliburn (Harvey Lavan Cliburn, Jr.) and Maria Callas; they appeared as soloists at the 102d anniversary concert of the Philadelphia Academy of Music, on Jan. 24, 1959, before a capacity audience that had paid up to $100 a person for orchestra seats. The renowned Russian mezzo-soprano Zara Doloukhanova made her United States debut at Town Hall, New York City, on March 13, 1959, and filled Carnegie Hall for a second recital ten days later. At the end of the year, on December 18, the musical world was

Birgit Nilsson, Swedish soprano, made her historic Metropolitan Opera debut on Dec. 18, 1959.

ANGEL RECORDS

thrilled by the Metropolitan Opera debut of Swedish soprano Birgit Nilsson in Wagner's *Tristan und Isolde*.

In music's academic news in 1959, it was announced that the violinist Jascha Heifetz had been appointed Regents' professor of music and artist in residence at the University of California, Los Angeles; that the Italian composer Luigi Dallapiccola had been added to the faculty of Queens College in New York City; and that the Italian composer Mario Castelnuovo-Tedesco had become visiting professor at Michigan State University in Lansing.

The young Minneapolis-born baritone Cornell MacNeil, who had been heard with the Cosmopolitan Opera (San Francisco) and the Chicago Lyric Opera in October 1958, made sensational debuts both at La Scala, Milan, and, unexpectedly on March 21, 1959, at the Metropolitan Opera, New York. The noted symphonic and operatic conductor Dimitri Mitropoulos suffered a heart attack on Jan. 22, 1959, during the Metropolitan Opera season, necessitating the division of his assignments among other conductors. The 1959 Queen Elisabeth of Belgium International Music Competition was won by a 17-year-old Bolivian violinist, Jaime Laredo, who later made a successful Carnegie Hall debut on October 19, and was booked to play as soloist with the Philadelphia Orchestra on December 7. After serving for 27 years as chief of the Music Division of the New York Public Library, Carleton Sprague Smith resigned on Feb. 28, 1959; he was succeeded by Philip L. Miller.

On Oct. 22, 1959, a Russian musical delegation consisting of Dmitri Shostakovich, Tikhon Khrenikov, Dmitri Kabalevsky, Konstantin Dankevich, Fikret Amirov, and the critic Boris Yarustovsky arrived in New York for a month's tour of the

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(*Left*) Maria Callas, singing in Kansas City on October 28, meets former President Harry Truman. (*Right*) Conductor Leonard Bernstein (l.) chats with Soviet novelist Boris Pasternak after New York Philharmonic's Moscow concert, September 11.

United States, returning the visit to the USSR made in 1958 by the American composers Roy Harris, Ulysses Kay, Peter Mennin, and Roger Sessions. The German pianist Hans Richter-Haaser made his United States debut with the Cincinnati Symphony Orchestra, playing Robert Schumann's Piano Concerto on Oct. 16, 1959; and 12 days later gave a highly praised recital at New York's Town Hall.

In New York City, the long-discussed Lincoln Center for the Performing Arts moved nearer to realization. Planned to provide permanent homes for the New York Philharmonic Orchestra, the Metropolitan Opera, and related organizations, the center was soliciting funds to total $75 million, its estimated cost. Late in 1958 the Carnegie Corporation of New York granted the center $500,000 "for scholarships and other assistance to young artists in launching their professional careers," and by May 1959 the pledged funds totaled more than 60% of the center's goal. On May 14, 1959, President Eisenhower, taking part in the center's ground-breaking ceremonies, turned the first shovel of dirt; shortly thereafter, work began on Philharmonic Hall, to seat 2,400 people, scheduled to be completed by the summer of 1961.

Other aid to American music during 1959 came from the Ford Foundation. Its grants included $950,000 to the Metropolitan, New York City, Chicago Lyric, and San Francisco opera companies to provide for the production of up to 18 new American operas during the 1960's; $200,000 to provide for 25 "composers in residence" at secondary schools, with no teaching requirements; and $130,000 to enable 10 leading artists to have 10 composers of their choice write works for them.

Orchestras.—The Baltimore Symphony lost its conductor when Massimo Freccia resigned to become director of the Orchestra of the Rome Radio (RAI) as of Dec. 1, 1959; he was succeeded by Peter Herman Adler. Hans Rosbaud made his United States debut conducting the Chicago Symphony on Jan. 2, 1959. Paul Kletzki opened his first season (the orchestra's 58th) as musical director of the Dallas Symphony with a concert on Nov. 17, 1958. The American debut of Eugen Jochum, conductor of the Munich Radio Orchestra, was made with the Los Angeles Philharmonic on Nov. 13, 1958. Sir John Barbirolli, conductor of the Hallé Orchestra of Manchester (England) and onetime conductor of the New York Philharmonic (1937–43), returned to New York for the first time, as a guest conductor, on Jan. 3, 1959. Skitch Henderson, musical director of the National Broadcasting Company, was appointed musical director of the Scranton (Pa.) Philharmonic on June 1, 1959. On December 15, Antal Dorati, director of the Minneapolis Symphony Orchestra for 11 years, announced his resignation effective at the end of the 1959–60 season.

The Israel Philharmonic of Tel Aviv appointed the French conductor Jean Martinon to be its music director for two years beginning in October 1959. The orchestra of the Concerts Lamoureux, Paris (with which Leonard Bernstein had made his Paris debut as guest conductor a short time earlier), had a new chief conductor, Igor Markevitch, under whom it was scheduled to make its first United States tour in 1960. In Vienna and Cologne it was announced that Wolfgang Sawallisch, present musical director at Wiesbaden, Germany, would also become general music director of the Cologne Opera and chief conductor of the Vienna Symphony on Sept. 1, 1960.

Foreign tours by American orchestras continued in 1959. The Little Orchestra Society of New York (Thomas Scherman, conductor) under the auspices of President Eisenhower's Special International Program for Cultural Presentations, as administered by the American National Theatre and Academy (ANTA), played 38 concerts in 20 cities in India, Ceylon, Thailand, South Vietnam, Hong Kong, Taiwan, Korea, and Japan in the spring of 1959. Under the same auspices, and with Leonard Bernstein and Thomas Schippers as joint conductors, the New York Philharmonic was heard in some 50 concerts in Greece, Lebanon, Turkey, Austria, Poland, the USSR, Netherlands, Germany, Luxembourg, France, Switzerland, Yugoslavia,

Visiting the U.S., Tikhon Khrenikov (l.), secretary of the Union of Soviet Composers; Boris Yarustovsky (center), professor at the Moscow Conservatory; and composer Dmitri Shostakovich (r.) take part in a radio program on November 23.

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Italy, Norway, Finland, Sweden, and England in the late summer and early fall of 1959. The National Symphony of Washington, D.C., under the same auspices, toured Central and South America during the summer of 1959 under the direction of Howard Mitchell, visiting 19 countries in 12 weeks.

Musical America's annual survey of the repertoires of United States symphony orchestras showed (June 1959) that 35 orchestras had, in their subscription seasons of 1958–59, played 903 different works at 3,666 performances. Of the 257 composers represented, 113 were classified as "foreign, standard," 73 as "American," and 71 as "contemporary foreign." Beethoven, Mozart, Brahms, J. S. Bach, Wagner, Tchaikovsky, and Ravel led the first category in number of performances; Copland, Creston, Gershwin, Barber, Riegger, and Harris led the second; and Stravinsky, Walton, Shostakovich, Hindemith, Britten, and Kodály led the third.

Opera.—The 1958–59 season at New York's Metropolitan Opera opened on Oct. 27, 1958, with a performance of Puccini's *Tosca;* Dimitri Mitropoulos conducted, and the cast included Renata Tebaldi, Mario Del Monaco, and George London. The company gave 238 performances, 63 of them outside of New York City, and ended the season, during which attendance was at 97.2% of capacity, with its lowest operating deficit ($528,873) of recent years. *Tosca,* Musorgski's *Boris Godunov,* and Puccini's *La Bohème* were sung most often. Highlights of the season were first Metropolitan stagings of Verdi's *Macbeth* and Alban Berg's *Wozzeck.* Verdi (43 singings of 7 operas) and Puccini (44 of 4, during the centennial of his birth) were heard most. On March 2, 1959, the Metropolitan presented for the first time a complete evening of ballet by its own dancers.

The 1959–60 season, marking the company's 75th anniversary and scheduled to be the longest in Metropolitan history (25 weeks), opened on Oct. 26, 1959, with a new staging of Verdi's *Il Trovatore,* presenting Giulietta Simionato in her belated Metropolitan debut, Antonietta Stella, Carlo Bergonzi, and Leonard Warren. Birgit Nilsson, after her stunning debut on December 18 as Isolde, followed with a dramatic repeat performance on December 29 in which she sang to a relay of three Tristans. Each of the company's three tenors for this part being indisposed and incapable of doing the entire opera, Miss Nilsson sang to the Tristan of Ramon Vinay in Act I, Karl Liebl in Act II, and Albert Da Costa in Act III. Other new productions scheduled for the season included Mozart's *Le Nozze di Figaro,* Verdi's *Simon Boccanegra,* Beethoven's *Fidelio,* and Johann Strauss, Jr.'s *The Gypsy Baron,* the last in a new English translation, and with Broadway's Walter Slezak (son of the renowned operatic tenor Leo Slezak) in a leading role. Martha Moedl, Jussi Bjoerling, and Ettore Bastianini were scheduled to return to the Metropolitan after brief absences; announced as added to the roster were sopranos Anna Moffo, Maria Luisa Nache, Birgit Nilsson, Elisabeth Soederstroem, and Teresa Stratas; mezzo-sopranos Christa Ludwig, Giulietta Simionato, and Joan Wall; tenor Jon Vickers; baritones Cornell MacNeil and Roald Reitan; bass-baritone Kim Borg; and basso-buffo Oskar Czerwenka. In October 1959 it was announced that the American dramatic soprano Eileen Farrell would at last join the Metropolitan company, to sing the title role in Gluck's *Alceste* during the 1960–61 season.

The New York City Opera Company, assisted by a further grant from the Ford Foundation, gave 12 American operas and musical comedies during the spring of 1959 at the City Center: Gian-Carlo Menotti's *Maria Golovin* and *The Medium;* Kurt Weill's *Street Scene;* Douglas Moore's *The Ballad of Baby Doe* and *The Devil and Daniel Webster;* Lee Hoiby's *The Scarf;* Carlisle Floyd's *Wuthering Heights* and *Susannah;* Robert Ward's *He Who Gets Slapped;* Norman Dello Joio's *The Triumph of St. Joan;* Marc Blitzstein's *Regina;* and Hugo Weisgall's *Six Characters in Search of an Author.* Returning to international opera in the fall, the company opened its season on Sept. 24, 1959, with Leopold Stokowski conducting a double bill of Stravinsky's *Oedipus Rex* and Carl Orff's *Carmina Burana.* Its performance of Mozart's *Così fan tutte* in English translation, first heard on October 8, was greatly praised.

The Chicago Lyric Opera opened its 1959 fall season on October 12 with *Carmen;* other operas billed for the seven-week season were Rossini's *La Cenerentola;* Verdi's *Simon Boccanegra* and *Un Ballo in Maschera;* Puccini's *Turandot;* Janáček's *Jenufa;* Mozart's *Così fan tutte;* Ponchielli's *La Gioconda;* and Massenet's *Thaïs.* Leading singers announced included Jean Madeira, Margherita Roberti, Gré Brouwenstijn, Birgit Nilsson, Elisabeth Schwarzkopf, Eileen Farrell, and Leontyne Price; Giuseppe di Stefano, Fernando Corena, Richard Tucker, Tito Gobbi, Leopold Simoneau, and Giuseppe Taddei.

In San Francisco on Sept. 18, 1959, Richard Strauss' complex *Die Frau ohne Schatten* was given its first United States staging by the San Francisco Opera. The company's repertoire also listed Bizet's *Carmen;* Montemezzi's *L'Amore dei Tre Re;* Wagner's *Die Meistersinger;* Verdi's *Aïda* and *Otello;* Puccini's *Madama Butterfly* (in which Sena Jurinac made her United States debut on September 22) and *La Bohème;* Giordano's *Andrea Chénier;* Donizetti's *Lucia di Lammermoor;* Richard Strauss' *Ariadne auf Naxos;* Mozart's *Don Giovanni;* Leoncavallo's *I Pagliacci;* and Carl Orff's *Carmina Burana.*

The Dallas Civic Opera presented Maria Callas in Donizetti's *Lucia di Lammermoor* on Nov. 6 and 9, 1959, and in Cherubini's *Medea* on November 19 and 21. (Miss Callas had given her first recital of the 1959–60 season in the United States at Kansas City, Mo., on October 28.)

In Paris, a much-needed reform of the two state-subsidized opera houses seemed to have begun under the hand of their new administrator, A. M. Julien, the aim in part being to present standard works at the Opéra, more modern works at the Opéra-Comique.

Summer Music and Festivals.—The now-familiar music festivals, summer concert series, and special opera seasons were held at Ann Arbor (Mich.), Aspen (Colo.), Tanglewood (Lenox, Mass.), Bethlehem (Pa.), Grant Park and Ravinia (Chicago, Ill.), Cincinnati (Ohio), Hollywood Bowl (Los Angeles, Calif.), Lewisohn Stadium (New York City, with a total attendance of 198,000 at 24 concerts), Ojai (Calif.), Redlands (Calif., with a total attendance of 80,300), Fish Creek (Wis.), Robin Hood Dell (Philadelphia, Pa.), Vancouver (British Columbia), Worcester (Mass.), and elsewhere in North America. Notable events in these categories were also held at Baalbek (Lebanon), Bergen (Norway), Bayreuth (Germany), Copenhagen (Denmark), Edinburgh (Scotland), Glyndebourne (England), at several cities in Holland, and at Osaka (Japan), San Juan (Puerto Rico), Prades (France), Salzburg (Austria), and Spoleto (Italy). A new festival was announced for London in September and October 1960.

New Music.—Much-discussed new compositions

heard for the first time during the 1958–59 season included Pierre Boulez' *Deux improvisations sur Mallarmé,* heard at the first concert in the hall of the new UNESCO Headquarters building in Paris; Lukas Foss' *Symphony of Chorales;* Leoš Janáček's 1904 opera *Osud* (*Fate*); Rolf Liebermann's *Capriccio* for Soprano, Violin, and Orchestra; Bohuslav Martinů's *Estampes* and *The Parables;* Francis Poulenc's one-act, one-character operatic setting of Jean Cocteau's play *La voix humaine,* to be heard in New York for the first time under the auspices of the American Opera Society on Feb. 23, 1960; Wallingford Riegger's Variations for Violin and Orchestra; Bernard Rogers' two-movement symphony entitled *Africa;* Harald Saeverud's *Minnesota Symphony;* and Dmitri Shostakovich's first operetta, *Moscow Cheremushki.* Also new were Aaron Copland's orchestra-accompanied second set of *Old American Songs;* Paul Hindemith's *Pittsburgh Symphony;* Darius Milhaud's *Tristesses;* Ned Rorem's Symphony No. 3; William Russo's Symphony No. 2, subtitled *Titans;* Alexander Tcherepnin's Symphony No. 4; and Virgil Thomson's score for the United Nations Film Board's *Power Among Men.*

Heard in the United States for the first time were Paul Ben-Haim's *The Sweet Psalmist of Israel;* Alban Berg's *Altenburg Lieder;* Benjamin Britten's *Nocturnes* for Tenor and Small Orchestra and miracle play for children, *Noye's Fludde;* Carlos Chávez' extended piano piece, *Invención;* Karl Hartmann's Symphony No. 6; Paul Hindemith's *Octette* and *Six Madrigals on Texts by Joseph Weinheber;* Alan Hovhaness' *Magnificat,* opus 157; André Jolivet's *Symphonie de Danses;* Rolf Liebermann's *Symphony 1949;* Richard Strauss' opera *Die Frau ohne Schatten;* Igor Stravinsky's *Threni, id est Lamentationes Jeremiae Prophetae;* and Hugo Wolf's opera *Der Corregidor.* The world première of Stravinsky's *Movement* for Piano and Orchestra was scheduled for a December–January series of New York concerts during which Stravinsky has invited four American composers (Barber, Copland, Foss, Sessions) to play the piano parts in a performance of his *Les Noces* to be conducted by him.

Jazz.—Jazz festivals continued to gain in popularity during 1959. The Newport Jazz Festival sponsored related activities in French Lick (Ind.), Boston, and Toronto. New York City heard a festival on Randalls Island; the annual event at Monterey (Calif.) was repeated. *Playboy* magazine sponsored a three-day Chicago festival that broke attendance records. The Newport Festival also sponsored tours by jazz groups, one through the United States, another—with Dave Brubeck, Buck Clayton, and Dizzy Gillespie—to Europe.

Foreign tours of American jazz groups became so numerous that 1959 was referred to as "the year that everybody went everywhere." One event of special interest was an informal jam session given in the USSR by Dwike Mitchell and Willie Ruff of the traveling Yale Choral Group. Despite previous Soviet hostility to jazz, the session was officially sanctioned for public attendance and aroused highly favorable reactions.

Jazz reached film soundtracks in unprecedented quantity both in the United States and in Europe. John Lewis and the Modern Jazz Quartet and Art Blakey and his Jazz Messengers furnished the tracks for films on both sides of the Atlantic, and Lewis composed incidental music for the film *Odds Against Tomorrow.* Duke Ellington and his orchestra played the track for the popular *Anatomy of a Murder.*

Necrology, 1959.—Notable figures in the musical world who died during the year included the conductor F. Charles Adler (Feb. 16); the composer George Antheil (Feb. 12); the composer Ernest Bloch (q.v., July 15); the English musicologist Eric Blom (April 11); the Austrian atonal composer and theorist Josef Matthias Hauer (Sept. 22); the tenor and former general manager of the Metropolitan Opera, Edward Johnson (April 20); the Finnish song composer Yrjö Kilpinen (March 2); the harpsichordist Wanda Landowska (q.v., Aug. 16); the Italian tenor Mario Lanza (Oct. 7); the Czech composer Bohuslav Martinů (Aug. 28); the English critic and biographer of Wagner, Ernest Newman (pseudonym of William Roberts, July 7); the musicologist Curt Sachs (Feb. 5); the composer Lazare Saminsky (June 30); the composer Lamar E. Stringfield (Jan. 21); the conductor Eduard Van Beinum (April 13); the composer Heitor Villa-Lobos (q.v., Nov. 17); and David Mannes, conductor and co-founder of New York City's Mannes College of Music (April 24).

There were also several important deaths in the jazz world during the year: Omer Simeon (Sept. 17), whose playing with Jelly Roll Morton and Earl Hines is historic; Sidney Bechet (May 14), whose career had reached its climax in recent years in France; Lester "Prez" Young (March 15), an initiator of the "cool" style of the 1940's; and Billy "Lady Day" Holiday (July 17), a model for many of today's jazz singers in ballads and blues.

HERBERT WEINSTOCK,
Music Editor and Reviewer, Author of "Music as an Art" and other works.

MUSLIMS. See the Index entry, *Islam.*

MUTUAL SECURITY PROGRAM. See FOREIGN AID PROGRAMS, U.S.

NARCOTICS. International control measures discussed at the 14th session of the United Nations Commission on Narcotic Drugs at Geneva, Switzerland, April 27 to May 15, 1959, included the following four recommendations:

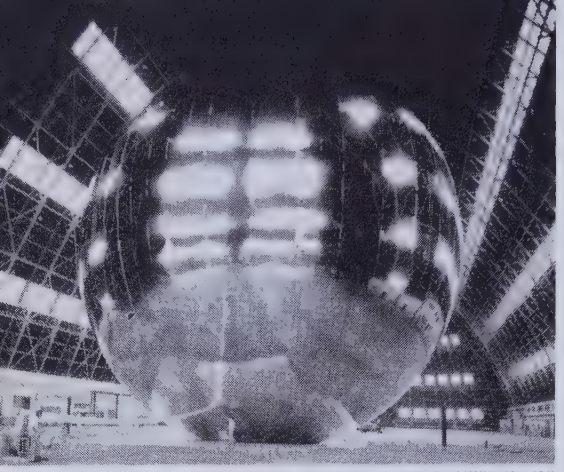
(1) That all governments which have not yet done so adhere to the Protocol of 1948, and that governments of opium-producing countries adhere to the International Opium Protocol of 1953 as soon as possible.

(2) That governments exercise prompt provisional control of narcotic drugs having powerful analgesic or antitussive properties, pending World Health Organization findings regarding their addiction-producing liabilities.

(3) That the World Health Organization prepare a report on the use of cannabis for extraction of useful drugs as a basis for permitting extraction of those drugs under the Single Convention on Narcotic Drugs.

(4) That the United Nations secretary-general, in cooperation with the International Civil Aviation Organization, World Health Organization, and International Criminal Police Organization, prepare essential standards for control of narcotic drugs in first-aid kits on board aircraft engaged in international flight.

Illicit International Traffic.—Morphine and heroin were the most common drugs in illicit traffic in 1959. The United States was the chief recipient of illicit heroin, and Iran was the main target of traffic in opium. Cannabis traffic, present throughout



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Space balloon developed by NASA for use as a communications satellite was test-fired from Virginia to height of 250 miles on Oct. 28, 1959, and Jan. 16, 1960. The 100-foot aluminum-coated plastic sphere is designed to permit visual tracking while in orbit and to reflect radio and radar signals over wide areas of the earth. Radio signals were successfully bounced off the sphere in the January test. The balloon, sent aloft by a rocket booster, is inflated in space.

the world, was heaviest in the United States, Mexico, Brazil, Morocco, and several other parts of South Africa, the Far East, and the Middle East. Considerable cocaine traffic existed in several South American countries, with indications of persistent use of cocaine in other parts of the world.

Opium.—The largest seizures of raw and prepared opium were made in the Far and Middle East, chiefly in Burma-China-Thailand border areas of illicit cultivation, including Laos and South Korea.

Morphine and Heroin.—Traffic in crude morphine from illicit sources near northern Thailand through Bangkok to Hong Kong, Malaya, and Macao was reported, with much clandestine manufacture of heroin in Hong Kong and Macao. Japan, South Korea, and Taiwan reported traffic in opiates from Hong Kong. The United States seized much heroin smuggled from Hong Kong and Japan. Clandestine manufacture and smuggling of morphine and heroin from the Far and Middle East continued to other parts of the world.

Cocaine.—The U.N. Commission on Narcotic Drugs requested the secretary-general to report on the cocaine discussion at the commission's 14th session to the governments of several South American countries, urging full cooperation of all countries to reduce this traffic. Heavy transit traffic continued through Cuba to the United States. Governments were asked to abolish the dangerous habit of coca chewing.

Cannabis.—Traffic much the same as in 1957 occurred largely in the Far East, Africa, and Central and South America. Vigorous enforcement measures in several countries resulted in large seizures. Mexico and the United States cooperated closely to check illicit traffic.

Khat.—Information received from Aden, Ethiopia, Israel, Saudi Arabia, and Yemen on medical and social problems involved in the use of khat was reviewed. Action was deferred pending completion of a report by the World Health Organization.

Barbiturates and Tranquilizers.—National control of these drugs was advised. If international control should become necessary, they could be included in the Single Convention on Narcotic Drugs.

Addiction.—Heroin addiction continued in many areas, particularly in Hong Kong, Japan, the United States, and Canada. Greece reported decreased addiction to heroin, but increased abuse of cannabis. Iran, through vigorous enforcement, reduced the number of opium addicts by two thirds. Much opium addiction exists in the Far and Middle East, but its extent is unknown because of incomplete reporting from some areas.

Addiction in the medical profession caused concern. More thorough education of medical students on the dangers of addiction was considered necessary to insure adequate precautions in medical practice.

United States.—Continued rigid enforcement of the minimum mandatory penalties for unlawful sale of narcotic drugs provided by the Narcotic Control Act of 1956, where supported by adequate state laws, has materially reduced illicit traffic and addiction. On Dec. 31, 1958, a total of 46,266 addicts was reported in the United States, of whom 20,595 were in New York, 6,323 in Illinois, and 6,214 in California. New York and California lack strong penalty laws, but Illinois enacted a law in 1957 which provides a 10-year minimum mandatory prison sentence for unlawful sale of narcotic drugs, with effective enforcement under the newly established Division of Narcotic Control.

(For additional references, see the Index entry, *Narcotics.*)

H. J. Anslinger,
U.S. Commissioner of Narcotics.

NASSER, Gamal Abdel. See Index entry.

NATIONAL ACADEMIES AND ASSOCIATIONS. For private organizations whose titles begin with the word National (excepting National Geographic Society, which is reviewed below), see the article Societies and Organizations.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. The close of the first operating year of the National Aeronautics and Space Administration (NASA) was marked on Sept. 30, 1959. NASA, formally created on July 29, 1958, has responsibility for the civilian-oriented astronautical and space program of the United States.

Project Mercury.—A notable development during the year was Project Mercury. Scientific objectives of Project Mercury are: (1) to place a manned capsule in orbital flight around the earth; (2) to investigate man's reaction to and capabilities in this environment; and (3) to recover the capsule and astronaut safely.

Selection and training of the human occupant of the capsule, and the development of a spaceworthy capsule, are of equal importance. Therefore, NASA established a Special Advisory Committee on Life Sciences, which gave advice on the human aspects of Project Mercury and made suggestions on human engineering and equipment design. The committee also established the qualifications and attributes required of the pioneer United States astronauts. To qualify, candidates were required: (1) to have a degree or equivalent in physical sciences or engineering; (2) to be a graduate of a military test-pilot school; (3) to have at least 1,500 hours flying time, including a substantial amount in high performance jets; (4) to be younger than 40; (5) to be no taller than 5 feet 11 inches; (6) to be in superb physical condition; and (7) to possess psychological attributes specified by the Life Sciences Committee.

In January 1959, NASA screened the records of 473 Air Force, Navy, and Marine Corps officers, selecting 110 of them as potential candidates. The candidates were brought to NASA headquarters in Washington for preliminary briefing and personal interviews. Of those interviewed in February, 63 met basic requirements. On the basis of technical

and psychiatric interviews and psychological and aptitude tests, the number of candidates was narrowed to 32, who were given intensive physical examinations and subjected to stress, heat, cold, altitude, and other tests. On April 9, names of the seven astronauts, one of whom will be the first American in space, were announced.[1]

Assigned to NASA by their military services, the astronauts took up their duties with the Space Task Group at Langley Research Center, Hampton, Va. Their intensive training program includes lectures in basic astronautics, Mercury systems, and high-altitude physiology plus experiences in withstanding weightlessness and high-gravity forces. For example, taken aloft in a C-131 transport, the astronauts have undergone the weightlessness of zero gravity for as long as 15 seconds. At the Naval Air Development Laboratory, Johnsville, Pa., the astronauts practiced take-off, orbital flight, and landing in a centrifuge chamber rotated at great speeds—the acceleration on the pilot mounting at times to 16 g. (16 times the pull of gravity).

On Jan. 12, 1959, NASA selected the McDonnell Aircraft Corp., St. Louis, Mo., to design, develop, and build the Mercury capsule. NASA's Space Task Group is engaged in various developmental programs involving capsule models and mock-ups. These programs include: air-drop tests, escape-system studies, free-flight and wind-tunnel investigations, impact tests, parachute tests, and tests of the life-support system.

On May 28, 1959, an Army Jupiter IRBM carrying two live monkeys as part of a biological payload in its nose cone was launched from the Atlantic Missile Range, Cape Canaveral, Fla. After a 15-minute flight during which it reached a 360-mile altitude and speeds up to 10,000 miles per hour, the nose cone and its passengers landed in the South Atlantic, 40 miles north of Antigua. A Navy tug recovered the nose cone.

Chief purposes of the experiment were to recover the nose cone and obtain physiological and psychophysiological data on animals of primate level subjected to space flight conditions. Subjects of the medical phase of the experiment were Able, a seven-pound rhesus monkey, and Baker, a one-pound squirrel monkey. Able died four days later while undergoing general anesthesia for removal of implanted electrodes. An autopsy indicated that death was in no way attributable to the space flight. Medical portions of this experiment were carried out by the Army with the cooperation of the Air Force and Navy.[2]

On Sept. 9, 1959, an Atlas bearing a full-scale developmental "boilerplate" version of the Mercury capsule was fired 100 miles above the earth downrange from Cape Canaveral. Purpose of the launching was to test re-entry capabilities, chiefly performance of the heat shield, flight characteristics of the capsule and its instruments, and capsule recovery. After having withstood very severe re-entry conditions, the capsule was retrieved by a Navy destroyer in the Atlantic north of Puerto Rico. The ablation heat shield had successfully survived the fierce heat of re-entry. The capsule also proved stable, and its instruments operated properly.

[1] The seven astronauts are: Navy Lt. Malcolm S. Carpenter (33), Garden Grove, Calif.; Air Force Capt. Leroy G. Cooper (32), Carbondale, Colo.; Marine Lt. Col. John H. Glenn, Jr. (37), New Concord, Ohio; Air Force Capt. Virgil I. Grissom (33), Mitchell, Ind.; Navy Lt. Comdr. Walter M. Schirra, Jr. (36), Hackensack, N.J.; Navy Lt. Comdr. Alan B. Shepard, Jr. (35), East Derry, N.H.; and Air Force Capt. Donald K. Slayton (35), Sparta, Wis.

[2] The experiment is continuing, with Baker, the surviving monkey, still under observation.

UPI

Model of the Project Mercury capsule which will carry first American into orbit is positioned in wind tunnel of NASA's research center, Langley Field, Va., for tests to determine its lift, drag, and static stability characteristics in flight.

Successful launchings in the "Little Joe" test series were conducted in late 1959. Purpose of the "Little Joe" is to test Mercury flight characteristics, re-entry, capsule recovery, escape systems, the capsule-booster combination, and behavior of primates during flight. The booster and launching system were successfully tested on October 4. The booster and capsule model were launched on November 4, and a firing on December 4 tested the Mercury escape system at high altitude, recovery

As part of the Project Mercury man-in-space program, a model of the capsule in which first astronaut will ride is prepared for test launching on October 4 with a "Little Joe" booster rocket at Wallops Island, Va. Atop the capsule is an escape rocket system which will parachute the capsule safely back to earth if trouble develops during launching.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

system, and biological response to space flight of a monkey named Sam, an American-born rhesus, which was recovered alive and well from the capsule in which it rode.

Western Electric Company, Inc., was selected to construct the worldwide tracking and communications network for Project Mercury. This network, using both radar and telemetry, will track the earth-orbiting capsule and monitor its equipment. It will make possible almost continuous communication with the Mercury pilot. Late in 1959, negotiations were under way to acquire sites for Project Mercury tracking stations in several countries in the projected path of the Mercury capsule.

Other Activities.—Between Oct. 11, 1958, and Oct. 13, 1959, NASA successfully launched four earth satellites and three space probes to conduct further investigations of the space environment.

Pioneer I, a probe launched Oct. 11, 1958, gave first information on oscillations in magnetic fields of the earth and interplanetary space, determined the radial extent of the zone of radiation surrounding the earth, and measured density of micrometeors in space.

Pioneer III, a probe launched Dec. 6, 1958, discovered that the radiation zone was composed of at least two bands (the Van Allen belts).

Vanguard II, a satellite launched Feb. 17, 1959, proved the feasibility of the weather satellite concept.

Pioneer IV, a probe launched March 3, 1959, which went into permanent orbit around the sun, provided NASA scientists with an advanced tracking exercise and transmitted excellent radiation data.

Explorer VI, a satellite launched Aug. 7, 1959, indicated that the Van Allen belts may consist of many layers.

Vanguard III, a satellite launched Sept. 18, 1959, contained instruments to measure the earth's magnetic field and X-ray emissions from the sun.

Explorer VII, a satellite launched Oct. 13, 1959, contained instruments to transmit information on radiation balance, Lyman-alpha X-rays, heavy primary cosmic rays, micrometeor density, cosmic rays, temperature, and effects on exposed solar cells.

NASA also fired numerous sounding rockets during its first year to test winds and radiation in the upper atmosphere, including five sodium flare experiments, two of which were successful.

On Oct. 28, 1959, NASA launched a 100-foot diameter inflatable sphere of aluminized Mylar plastic from the Wallops Space Flight Station at Wallops Island, Va. The 130-pound sphere, inflated 250 miles above the Atlantic, was visible for hundreds of miles. Purpose of the launching was to test the feasibility of a communications satellite.

The rocket-powered X-15 research airplane, which is being tested at NASA's Flight Research Center, Edwards Air Force Base, Calif. completed its first captive flight on March 10, 1959, its first glide flight on June 8, and its first powered flight on September 17. On November 5, during another power test, the fuel in the tail section exploded. Pilot Scott Crossfield brought the experimental aircraft safely to earth, however.

The X-15 project has three principal objectives: (1) determining the intensity and effect of aerodynamic heating; (2) obtaining stability and control data in the very thin air of the upper atmosphere; and (3) observing the effects of weightlessness on the pilot. A final engine for the X-15 was ground-tested Sept. 1, 1959 at the Flight Research Center. The new engine, known as the XLR-99, burns a liquid-oxygen liquid-ammonia propellant and has quadruple the thrust of the interim engines used in the X-15.[3]

NASA research centers currently are engaged also in research and development work on ground-cushion vehicles, vertical takeoff and landing (VTOL) and short takeoff and landing (STOL) aircraft, supersonic high-altitude transport aircraft, and the B-70 chemical-fueled bomber. NASA centers are concentrating on such aeronautical research as gas dynamics, combustion, high-impulse fuels, high-temperature and high-stress materials, and strong lightweight fuselages.

Looking toward the future of space exploration, NASA has embarked upon a program of developing progressively more powerful boosters. The vehicles, in order, are called Scout, Delta, Agena, Centaur, and Saturn.[4] The Scout, with anticipated capability for placing a 150-pound payload into orbit, is due to be fired in 1960.

Other promising projects include the development of a nickel-base high-temperature alloy; research concerning an ion rocket engine; and development of a 1.5 million-pound-thrust single-chamber rocket engine.

The new alloy has shown greater strength and impact resistance at 1800° and 1900° Fahrenheit than any other oxidation-resistant alloys currently available. The alloy is suitable for turbine blades and, possibly, for chemical rockets.

It is believed that once other boosters have enabled a vehicle to reach deep space, an ion rocket engine will provide certain advantages of long-life operation for missions into the far reaches of space. On July 9, 1959, the Lewis Research Center operated a research model of an ion rocket.

On Dec. 12, 1958, NASA selected the Rocketdyne Division of North American Aviation, Inc., to develop a 1.5 million-pound-thrust single-chamber rocket engine. The development contract, signed Jan. 19, 1959, involved total costs of $102 million over a period of three to four years. According to the development schedule, preliminary flight-rating tests should be completed in about 46 months from the date of contract. The program will provide a booster of great size that will be used to launch payloads weighing several tons. Full advantage was taken of an Air Force study of the project's feasibility. Cooperative arrangements were worked out with the Air Force for engine test stands at Edwards Air Force Base.

(See also AERONAUTICS; SPACE FLIGHT.)

(The foregoing article was furnished by the National Aeronautics and Space Administration.)

NATIONAL ARCHIVES AND RECORDS SERVICE. This branch of the General Services Administration includes the National Archives, the Office of Records Management, the Office of the Federal Register, the Franklin D. Roosevelt Library at Hyde Park, N.Y., and the Harry S Truman Library at Independence, Mo. The service is headed by the archivist of the United States, who also serves as chairman of the National Historical Publications Commission.

Responsibilities of the service include promoting improved current records management and paperwork practices of federal agencies; preserving and making available for use by the government and the public the permanently valuable noncurrent records of the federal government; publishing the laws, constitutional amendments, presidential documents, and administrative regulations having general applicability and legal effect; and preserving, publishing, and administering the papers and other historical materials in the presidential libraries.

The parchment originals of the Declaration of

[3] The X-15 research airplane is a joint Air Force-Navy-NASA project. The Air Force and Navy furnish most of the funds for the project, while NASA provides technical direction. North American Aviation, Inc., is the contractor.

[4] In October 1959, an executive order of the president transferred the Development Operations Division of the Army Ballistic Missile Agency, Huntsville, Ala., and the division's Saturn project to NASA, subject to congressional approval. NASA's Vega project was cancelled on Dec. 11, 1959.

Independence, the Constitution of the United States, and the Bill of Rights are on permanent exhibit in the National Archives. Facsimiles of these documents, suitable for display in schools and offices, are now available to the public.

There are more than 900,000 cubic feet of records in the National Archives. Dating from the American Revolution through World War II, these records include some 35,000 sound recordings, 1,150,000 maps and charts, 3,000,000 still pictures, and 40,000 reels of motion picture film. More than 500,000 reference requests are handled annually.

To help federal agencies reduce the number and improve the quality of their records, the National Archives and Records Service is promoting government-wide workshops on the techniques of correspondence and forms management. The most popular of these, the "plain letters" workshop, was attended by some 84,000 government officials and employees between 1957, the year of its inception, and 1959.

The General Services Administration operates 15 federal records centers, in 10 regions, plus a specialized personnel records center in St. Louis and an annex in Hawaii. The holdings of these centers occupy 5,134,000 cubic feet, and consist chiefly of records not yet ready for disposal or for transfer to the National Archives for permanent preservation.

The Harry S Truman Library is now in full operation, with about 1.5 million papers available for research.

Volumes in the series entitled *Public Papers of the Presidents of the United States*, begun in 1957, are available for the years 1956 and 1958.

WAYNE C. GROVER,
Archivist of the United States.

NATIONAL BUDGET. See TREASURY DEPARTMENT.

NATIONAL BUREAU OF STANDARDS. Established by an act of Congress in 1901, the National Bureau of Standards serves the federal government as a scientific laboratory and provides basic standards of physical measurement for science and industry. In carrying out these related functions, it conducts research, development, calibration, and testing programs in physics, mathematics, chemistry, and engineering.

At the close of 1959 the total staff numbered approximately 3,500 persons, most of whom were stationed at the bureau's principal laboratories in Washington, D.C., and Boulder, Colo. The bureau also maintained 19 field stations in the United States and abroad.

Standards of Measurement.—In 1959, precise interferometric measurements on nine lines of the helium spectrum led to an independent confirmation of the Rydberg constant, which since 1952 has been based on the work of a single set of observers. Three devices were developed which provide very precise standards of length based on the wavelength of radiation from mercury atoms. A technique was worked out for measuring ball bearings used in high-speed gyroscopes for guided missiles to an accuracy of about 5 millionths of an inch.

In continuing research on atomic standards of frequency and time, a precision of 2 parts in 10 billion was achieved with an atomic clock using a beam of cesium atoms. Two rubidium-vapor atomic clocks were under construction.

Marked progress was made in devising apparatus for measuring the properties of materials at very high temperatures. For example, the range over which optical pyrometers can be calibrated was extended from 2,400° to 3,800°C.; a high-current arc capable of producing controlled temperatures was constructed as a temperature source; and a special type of high-temperature resistance thermometer was designed for interpolating between fixed points on the international temperature scale.

Apparatus was devised for special measurements of the heat conductivity of explosives and solid propellants for rockets. An improved method was developed for the precise measurement of shock-wave properties, important in the design of missiles and high-speed aircraft. For the calibration of instruments used to measure high transient pressures, apparatus was devised that generates pressure in steps of accurately known amplitudes up to 50,000 pounds per square inch.

On July 1, 1959, the bureau began making all its calibrations of length and mass (except those for the U.S. Coast and Geodetic Survey and those expressed in metric units) in terms of the International Yard and the International Pound. To secure identical values for the yard and pound in precise measurements, these international units were adopted by agreement between the directors of the national standards laboratories of six English-speaking nations: Canada, New Zealand, United States, United Kingdom, South Africa, and Australia. According to the agreement, the international yard equals 0.9144 meter and the international pound equals 0.45359237 kilogram.

Properties of Materials.—Much of the work on materials was directed toward the accumulation of basic data on their general properties, constants, structure, and behavior at very high temperatures. Because of the increasing need for such data in aircraft and missile development, special efforts were made in 1959 to extend these investigations into higher temperatures. Extensive studies were made of the solid-state reactions that occur in alloys of chromium, iron, nickel, and molybdenum.

For the Wright Air Development Center, a fundamental investigation was conducted to clarify the mechanisms of the processes used to apply refractory oxide coatings to missiles and rockets. Another program undertaken for the center was to obtain high-temperature thermodynamic data on the light elements—lithium, magnesium, aluminum, and beryllium—and their compounds. For use in high-temperature strain gauges, a cement composition was developed which has higher electrical resistivity in the range from 425° to 1,000°C. than any such material now available. As part of a program to determine the strength of ceramics at elevated temperatures, the elastic constants of aluminum oxide single crystals (sapphire) were determined to high precision.

Basic research during 1959 provided information on the reaction mechanisms involved in the degradation of synthetic resins and collagen (the parent substance of leather) when exposed to high temperatures or to nuclear radiation. Evacuated laminates were developed that give greatly improved insulation at very low temperatures. In an investigation of the behavior of solids under pressure, spectroscopic evidence was found which showed changes in molecular structures under pressures of 30,000 atmospheres.

Radio Propagation.—An active program in radio propagation research was carried on by the Central Radio Propagation Laboratory at Boulder. Through application of special radar scatter techniques, a promising method was developed for studying the physics of the upper reaches of the ionosphere. The method permits studies of ionization at levels of the atmosphere well above the reflecting layers reached by conventional sounding techniques and into the region now associated with satellite explo-

ration. Further improvements were made in methods for predicting the tropospheric bending of radio waves in terms of the radio refractive index at the surface of the earth.

Under the sponsorship of the Air Force's Air Research and Development Command, the laboratory completed a three-year investigation to determine the feasibility of a long-distance radio communication system based on reflections from meteor trails. The results indicate that communication by this means can compete effectively with other long-distance systems, and that it is relatively free from ionospheric disturbances. (See also ATMOSPHERE RESEARCH.)

Data Processing.—A Research Information Center and Advisory Service on Information Processing, to be operated jointly by the National Bureau of Standards and the National Science Foundation, was established at the bureau. The new service is designed to bring together research and development data on methods and equipment for the automatic processing of scientific information.

A study was made of the logical problems arising when several high-speed electronic computers are connected together to work on a common large-scale task. The use of an existing computer to work out the design details for a new and more advanced computer was successfully demonstrated. In a study conducted for the Veterans Administration, a method was developed for using a high-speed electronic computer to analyze data on human heartbeats.

Publications.—Results of the bureau's work are available through three periodicals (*Journal of Research, Technical News Bulletin,* and *Basic Radio Propagation Predictions*) and a series of nonperiodical publications. From July 1, 1959, the bureau published its *Journal of Research* in four separate sections (corresponding to subject matter), which may be subscribed for individually. An indexed list of publications (*Publications of the National Bureau of Standards,* Circular 460 and Supplement, $2.75) is available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

ALLEN V. ASTIN,
Director, National Bureau of Standards.

NATIONAL DEBT. See DEBT, PUBLIC AND PRIVATE; TREASURY DEPARTMENT.

NATIONAL DEFENSE. See OFFICE OF CIVIL AND DEFENSE MOBILIZATION; NATIONAL SECURITY.

NATIONAL EDUCATION ASSOCIATION. See EDUCATION; SOCIETIES AND ORGANIZATIONS.

NATIONAL FORESTS. See FORESTRY.

NATIONAL GEOGRAPHIC SOCIETY. This society, organized in January 1888 "for the increase and diffusion of geographic knowledge," numbered 2,400,000 members at the end of 1959. From its headquarters at 16th and M Streets, N.W., Washington 6, D.C., it continued in 1959 to send its staff writers and photographers to all parts of the world to gather material for its monthly illustrated *National Geographic Magazine.* Through its Committee for Research and Exploration it sponsored a wide range of expeditions and other scientific projects.

Research, 1959.—A survey crew, two field excavation teams, and a laboratory staff comprised the force of the National Park Service–National Geographic Society Wetherill Mesa Project, which late in 1958 began studying and restoring long-vanished cliff dwellings in the southwest portion of Mesa Verde National Park, Colorado. The group, under National Park Service staff archaeologist Douglas Osborne, charted more than 100 cliff and cave dwelling sites. It began excavation on Long House, one of three large cliff ruins whose fortresslike dwellings and ceremonial kivas were abandoned by their Indian builders 700 years ago.

Previously unrecorded varieties of pygmy parrot, spiny-tailed babbler, leaf warbler, and other birds were among 492 bird study-skins collected on New Britain Island by E. Thomas Gilliard of the American Museum of Natural History. His 10-man group also collected 215 small mammal specimens in an unprecedented penetration of the island's mountainous jungles. The museum, the National Geographic Society, and the Explorers Club were joint sponsors.

A two-man, steel-hulled "diving saucer," 6½ feet in diameter, 5 feet high, and propelled by two water jets, was added to the arsenal of specialized equipment of the National Geographic Society–*Calypso* Oceanographic Expeditions in July. Designed for exploring continental shelves to depths of 900 feet, it was first used in the subsequent five-month exploration and exhibition tour of the research ship *Calypso,* led by Capt. Jacques-Yves Cousteau. The ship visited the Canary Islands, Bermuda, New York City (during the First International Oceanographic Congress), Washington, D.C., Puerto Rico, and the Cape Verde Islands.

The National Geographic Society–Tulane University archaeological program directed by E. Wyllys Andrews entered its third season at the great ruined Mayan city of Dzibilchaltun, near present-day Mérida in Mexico's Yucatán State. Scientists completed restoration of the Temple of the Seven Dolls and related structures, and uncovered several inscribed stelae of the Early Period. Aqualung-equipped divers brought up some 15,000 pieces of pottery and wooden and bone artifacts from the depths of the cenote (natural well) in the city's ceremonial plaza.

The society, the Smithsonian Institution, and the U.S. Navy participated in a month's survey and underwater exploration of old Port Royal, Jamaica, which was submerged by earthquake in 1692. Edwin A. Link, the project's leader, supplied his 91-foot exploration ship, *Sea Diver II,* as the base for operations.

The society joined with the Montana Cooperative Wildlife Research Unit in a projected five-year study, directed by ecologists John and Frank Craighead, of the West's dwindling grizzly bears. The society continued participation for the tenth consecutive year in the University of Miami Marine Laboratory study of life stages of pelagic fishes. National Geographic grants enabled J. Lear Grimmer, associate director of the Smithsonian's National Zoological Park, to study the little-known hoatzin in its British Guiana habitat, and helped Miss Jocelyn Crane of the New York Zoological Society carry out European phases of her world-wide study of fiddler crabs.

Publications.—In 1959, as in 1958, the society issued seven 25-by-19-inch, 10-color maps of the new Atlas Series as supplements to its magazine. A total of 17 million individual maps were issued in each of the two years. The society's cartographers also produced five large 10-color wall maps recording recent changes, and 50 maps and diagrams illustrating specific articles. The society continued publication of the long-established *National Geographic News Bulletins* and *Geographic School Bulletins.* In October it published a 512-page, color-illustrated book, *America's Wonderlands—The National Parks,* describing 82 scenic and historic national park areas.

Awards.—Sir Vivian Fuchs, leader of the British Trans-Antarctic Expedition 1955–58, became the 18th recipient of the society's Hubbard Gold Medal in ceremonies at the White House on Feb. 4, 1959. A 19th bestowal was made at the same time by President Eisenhower, on behalf of the society, to the U.S. Navy Antarctic Expeditions of 1955–59.

Officers.—Society officers in 1959 were: Melville Bell Grosvenor, president and editor; Thomas W. McKnew, executive vice president and secretary; Robert V. Fleming, vice president and treasurer; Melvin M. Payne, vice president and associate secretary; and Frederick G. Vosburgh, vice president and associate editor. Gilbert Grosvenor was chairman, and John Oliver La Gorce, vice chairman, of the Board of Trustees, and Lyman J. Briggs was chairman, and

Alexander Wetmore, vice chairman, of the Committee for Research and Exploration. (John Oliver La Gorce died on Dec. 23, 1959.)

MELVILLE BELL GROSVENOR,
President and Editor.

NATIONAL GUARD. Army.—The federally recognized strength of the Army National Guard was 394,272 officers and enlisted men on Aug. 31, 1959. During 1959, the Army National Guard was reorganized to provide the type of forces required to augment the active Army if mobilized in a national emergency. In addition to the revision of the tactical organization structure, the reorganization included a Combat Arms Regimental System, a nontactical, flexible framework of permanent "parent regiments" for all armor, artillery, and infantry Guardsmen. This system preserves the Army National Guard's most renowned regiments and permits each Army Guardsman to become a member of a distinguished "home outfit" with a tradition of accomplishment. Under the reorganization the Guard's more than 5,300 units were cut to 4,497, organized into 21 infantry and 6 armored divisions, 34 missile battalions, 56 field artillery battalions, 11 separate infantry battle groups, 8 armored cavalry regiments, and other combat and support units.

During the fiscal year 1959, 49,841 Army Guardsmen without prior military service entered training for six months with the active Army. A total of 85,529 Army Guardsmen have completed this training. Agreement to enter the program was made a condition of enlistment in 1957.

In the year ending June 30, 1959, all Army National Guard units conducted 48 paid training assemblies. More than 331,700 Army Guardsmen attended 15 days of annual active duty for training, and more than 7,572 were enrolled in courses at Army service schools.

By July 20, 1959, 28 air defense batteries of the Army National Guard had taken over or were about to take over from the active Army the full-time operation of Nike-Ajax installations. Four of these batteries had assumed an active role in the nation's surface-to-air missile defense in 1958. In January 1959 two battalions of the Hawaii National Guard began training for round-the-clock operation of Nike-Hercules installations.

Air National Guard.—On Aug. 31, 1959, the Air National Guard was composed of 70,641 federally recognized officers and airmen. Its 567 units were organized into 24 combat wings and additional support units operating from 94 flying fields and 42 nonflying installations.

The last of the Air National Guard's 82 combat squadrons to convert from propeller-driven to jet aircraft made the change-over during the fiscal year 1959. On June 30, 1959, the aircraft inventory totaled 2,425. During the year, fighter squadrons continued to learn the techniques of delivering nuclear weapons, and four squadrons received F-89H aircraft capable of carrying Falcon missiles. This made a total of five squadrons equipped to use the radar-guided, air-to-air weapon. In addition, the Air National Guard began to equip three fighter squadrons with the Sidewinder, a solid-propellant missile guided by heat from the target aircraft.

During the fiscal year 1959, Air Force schools graduated 191 National Guard pilots and navigators and provided technical training for more than 3,400 officers and airmen. The Air National Guard's Jet Instrument School graduated 351 pilots. A total of 8,001 airmen completed basic training with the active Air Force, and 1,284 of these extended this training up to six months. More than 64,300 Air Guardsmen attended 15 days of annual active duty for training, and all units held 48 paid training assemblies.

MAJ. GEN. DONALD W. MCGOWAN,
Chief, National Guard Bureau.

NATIONAL INCOME AND PRODUCT. See INCOME.

NATIONAL LABOR RELATIONS BOARD. In its 12th year of administering Title I of the Labor-Management Relations (Taft-Hartley) Act of 1947, the National Labor Relations Board, as of June 30, 1959, was composed of Chairman Boyd Leedom and members Philip Ray Rodgers, Stephen S. Bean, Joseph Alton Jenkins, and John H. Fanning. On March 26, 1959, President Dwight D. Eisenhower appointed Stuart Rothman, formerly solicitor of the U.S. Department of Labor, as the board's new general counsel.

Jurisdiction in the Hotel Industry.—During the year the board began to exercise jurisdiction over hotels, motels, and similar establishments, pursuant to a Supreme Court decision which held that the board could not continue its 22-year-old policy of declining to assert jurisdiction in this industry. The new jurisdiction, to take immediate effect, applies to cases pending before the agency and to all future cases involving hotels and motels which do a gross annual business of $500,000 or more.[1]

The board estimated that on the basis of 1954 Census Bureau figures the new standard would bring more than 60% of the hotel industry's 377,000 employees within board jurisdiction. No such estimate was possible as to how many of the nation's 15,070 motels or their 43,000 employees would be included under the new jurisdictional standard.

Taft-Hartley Act Amendments.—The Labor-Management Reporting and Disclosure (or Landrum-Griffin) Act, which was signed into law by President Eisenhower on Sept. 14, 1959, contains certain amendments to the Taft-Hartley Act affecting the National Labor Relations Board's administration of that law. Most of the amendments became effective Nov. 13, 1959.

One amendment is designed to eliminate the "no man's land" existing between the board's jurisdiction over labor-management conflicts and that of state courts and agencies by permitting the states to take cases which the board would decline. In order to make clear what cases it will take, the board has established procedure for advisory opinions on jurisdiction; these are made available only to state courts or agencies, or parties to state proceedings. Another amendment limits picketing or threats of picketing by a union in certain circumstances to organize employees or to compel an employer to grant bargaining recognition, but the limitations apply only to those unions not currently certified as bargaining agents by the NLRB.

In the new act, Congress undertook to plug what it regarded as "loopholes" in the Taft-Hartley ban on secondary boycotts, and it adopted a broadly worded prohibition (with certain exceptions) against so-called "hot cargo" agreements and other express or implied contracts requiring an employer to cease or refrain from doing business with any other person. Another provision gives employees on strike for economic reasons (such as for wages or working conditions) the right to vote in representation elections supervised by the NLRB, and subject to the board's regulation, if elections are held within 12 months after the start of the strike. The new law also repealed the requirement under the Taft-Hartley Act that a union must file non-Communist affidavits and financial reports with the board in order to bring a case before it.

Case Activity.—During fiscal year 1959, the board received a record number of cases of all types. There were 21,632 cases filed, representing an increase of 29% over the 16,748 cases filed during the preceding year.

The number of charges filed against either employers or unions reached a new high. Charges filed against employers numbered 8,266, an increase of about 36% over the 6,068 charges filed

[1] Excepted are residential hotels, which the board defines as hotels in which at least 75% of the guests were in residence for a month or more during the preceding year.

in fiscal year 1958; 3,973 were filed against labor organizations, an increase of about 24% over the previous year's 3,192.

For the second year, charges filed by individuals (7,176) constituted a majority (59%) of all charges of unfair labor practices. More unfair labor practice cases were brought to a conclusion by the agency than ever before. A total of 11,465 unfair practice cases were closed, an increase of 57% over the 7,289 cases closed in the preceding year.

The general counsel issued more complaints in unfair labor practice cases than in any other year in the board's history. A total of 976 complaints were issued: 601 against employers, 241 against labor organizations, and 134 against both employers and unions.

The number of petitions for injunctions filed by the general counsel also reached an all-time high. Petitions for injunctive relief were filed in 135 cases (134 in the preceding year). The courts granted relief in 57 instances.

The 291 decisions issued by the board in contested unfair labor practice cases was the third highest since 1953. In fiscal year 1958, the board issued 222 such decisions.

Petitions for representation elections totaled 9,346, the greatest number filed since 1952. In the 1958 fiscal year, 7,399 such petitions were filed.

During fiscal year 1959, the board conducted a total of 5,660 representation elections, as compared with 4,524 in fiscal year 1958. In these elections, 447,322 employees were eligible to vote, as compared with 363,672 in 1958. (About 90% of those eligible to vote cast valid ballots. This equaled the participation in fiscal year 1958, which was the highest percentage in the history of government-conducted elections.)

Most of the elections conducted by the board were held pursuant to agreement by the parties. In the 1959 fiscal year, 73% of all elections were based on all-party agreements, as compared with 72% in 1958. Labor organizations won majority designations in 62% of the elections, as compared with 60% in 1958.

JAY E. SHANKLIN,
Associate Director of Information.

NATIONAL PARKS AND MONUMENTS. The dynamic Mission 66 park conservation and development program, in its fourth year in 1959, continued to improve and expand the facilities and services of the scenic, scientific, and historic units of the National Park System. Mission 66, so designated because its completion is scheduled to coincide with the 50th anniversary of the National Park Service in 1966, has as its primary objective a National Park System equipped and staffed to serve 80 million or more visitors each year. There were 62 million visitors in 1959, an increase of 4 million over the 1958 total, and 30 million more than ten years ago.

Since the start of the Mission 66 program, some $100 million in federal capital has been invested to provide new and better roads, trails, parkways, utility systems, campgrounds, trailer courts, visitor centers, and other public-use facilities and interpretive services. Park concessioners have invested approximately $17 million in private capital for new hotels, lodges, cabins, restaurants, stores, and other accommodations.

Significant progress has also been made under Mission 66 toward providing, with the cooperation of other federal agencies and state and local governments, a nationwide inventory of existing and potential park and recreation areas and facilities. Nationwide surveys of historic sites and buildings are also under way.

Three new areas were added to the National Park System in 1959. A proclamation, signed by President Dwight D. Eisenhower, established the Horseshoe Bend National Military Park, in Alabama, thus preserving the site of the Battle of Horseshoe Bend, fought in 1814, in which General Andrew Jackson's forces were victorious over the Creek Indians. An eight-acre tract in Lincoln, Mass., was designated as the Minute Man National Historic Site. This site contains the original stone walls, boulders, and other features of the natural setting where on the opening day of the American Revolution (April 19, 1775), Colonial Minute Men fired on British troops retreating from Concord to Lexington. In New York City, Grant's Tomb, the imposing granite structure in Riverside Park, where General Ulysses S. Grant and his wife, Julia Dent Grant, are buried, was established as the General Grant National Memorial.

Glenmont, in West Orange, N.J., for many years the home of the famed inventor, Thomas A. Edison, was made a part of the Edison Laboratory National Monument. Mikveh Israel Cemetery in Philadelphia, Pa., containing the graves of a number of outstanding patriots of the American Revolution, was added to the Independence National Historical Park, as was also the Old Philadelphia Custom House, previously a national historic site.

AREAS ADMINISTERED BY THE NATIONAL PARK SERVICE
(As of Sept. 1, 1959)

Type of area	Number	Federal land (acres)
National parks	29	13,103,529
National historical parks	8	31,968
National monuments	83	8,988,409
National military parks	12	26,538
National memorial parks	1	68,708
National battlefield parks	3	5,530
National battlefield sites	5	189
National historic sites	10	1,362
National memorials	13	4,437
National cemeteries	10	215
National seashore recreation areas	1	24,705
National parkways	3	89,814
National capital parks	1[1]	38,528
National recreation areas	3	2,013,768
Total	182	24,399,700

[1] Includes Catoctin Mountain Park, Chesapeake and Ohio Canal, Prince William Forest Park, Baltimore-Washington Parkway, Suitland Parkway, among the 781 units administered.

The new 49-star flag of the United States was raised officially for the first time at Fort McHenry National Monument, Baltimore, Md., at exactly one minute after midnight, July 4, 1959, by Secretary of the Interior Fred A. Seaton.

On the afternoon of July 4, Secretary Seaton delivered the main speech at ceremonies dedicating the Cumberland Gap National Historical Park, which lies in Kentucky, Virginia, and Tennessee. Two other units of the National Park System—Fort Union National Monument, New Mexico, and Badlands National Monument, South Dakota—also were dedicated in 1959.

CONRAD L. WIRTH,
Director, National Park Service.

NATIONAL SCIENCE FOUNDATION. The National Science Foundation is an independent agency of the federal government created by Congress in 1950 to promote scientific progress by supporting fundamental investigations in the mathematical, basic research and education in the sciences. Its grants to institutions of higher learning finance fundamental investigations in the mathematical, physical, engineering, biological, and social sciences, and its fellowships to scientists, teachers, graduate students, and special projects in science education help to increase the nation's reservoir of scientific manpower. Other programs provide data on scientific personnel, with estimates of future

national needs; support a continuing Antarctic research program; promote dissemination of scientific information; and develop policy proposals for the promotion of basic research.

During the fiscal year 1959, the foundation made 1,809 grants to 333 institutions in 50 states, the District of Columbia, Puerto Rico, Argentina, Bermuda, Canada, France, Israel, and Turkey. Expenditures for research totaled $64,686,329, including $15,564,800 for facilities. The average research grant during this period was about $25,000 for roughly two years. The amount of the average grant has increased by 40 per cent during the past year.

Included in the foundation's research assistance in the past year were $3 million in 15 grants for biological research facilities, including $1.5 million for a controlled environment laboratory for the study of plants and animals at the University of Wisconsin; $1.1 million for a research program on weather modification; $4.7 million for studies related to Antarctica; a feasibility study of a project to orbit an astronomical telescope in an earth satellite; $4 million for the construction of a solar telescope at Kitt Peak National Observatory; Project Stratoscope, to photograph the sun using a high-altitude balloon (see ASTRONOMY); and a project to record high-energy cosmic particles on photographic film suspended from balloons at extreme altitudes.

The foundation awarded 3,937 fellowships for the 1959–60 academic year, with a total value of $13.1 million. These included 1,100 predoctoral, 194 postdoctoral, 83 senior postdoctoral, 302 science faculty, 1,050 cooperative graduate, and 20 NATO science fellowships, and 580 summer fellowships for graduate teaching assistants. During the 1958–59 academic year, the foundation supported 32 institutes for high school teachers of science and mathematics, and 162 in-service institutes offering after-hour courses. Total support of institutes in the past fiscal year was $33.6 million.

Major publications of the past year include: *Providing U.S. Scientists with Soviet Scientific Information; Funds for Research and Development Performance in American Industry, 1957 (Preliminary Report); Research and Development and Economic Growth; Recent Legislative and Executive Actions on the Federal Budget for Scientific Research and Development, Fiscal Years 1958 and 1959; Current Research and Development in Scientific Documentation; Proceedings of a Conference on Research and Development and Its Impact on the Economy; NSF Programs for Education in the Sciences; NSF Program Activities;* and the *NSF Annual Report.*

ALAN T. WATERMAN,
Director.

NATIONAL SECURITY—U.S. MILITARY POLICY. Early assessments of the visit by Soviet Premier Nikita Khrushchev to the United States in September 1959 included speculation that a gradual thaw in the cold war might be possible. His broad proposals for general disarmament and his agreement to negotiate some outstanding conflicts were welcomed cautiously by the United States and its allies. Pending more concrete evidence of Communist intentions, however, the United States continued its reliance on powerful military forces to preserve peace and security.

As in previous years, the level of defense efforts and the apportionment of funds between general war and limited war forces remained subjects of public controversy. President Eisenhower announced that he was determined not to indulge in the "feverish building of vast armaments to meet glibly predicted moments of so-called 'maximum peril,' because the threat we face is not sporadic or dated; it is continuous." In general, this view prevailed with the Congress, although several Democratic members had urged higher appropriations. Some adjustments, however, were made in the president's budget by Congress to increase funds available for modernization of the Army and for defense against ballistic missiles.

Mutual Security.—Collective security continued to be the cornerstone of United States defense policy. Through bilateral defense agreements and regional treaty organizations, including the North Atlantic Treaty Organization (NATO) and the Southeast Asia Treaty Organization (SEATO), the United States was allied with over 40 nations. Believing that Communist threats could be met by local forces, aided if necessary by reinforcements from other free nations, the United States strengthened its allies and neutral nations through military and economic aid. New foreign aid appropriations for the fiscal year 1960 totaled $3.226 billion, including $1.3 billion of military aid. In November 1959, Gen. Williston B. Palmer, previously deputy commander of the United States forces in Europe, was appointed to the newly created post of chief of staff in charge of military foreign aid. (See also FOREIGN AID PROGRAMS, U.S.)

The Berlin Ultimatum.—Potentially, the most dangerous situation in 1959 revolved about the status of Berlin. Although the United States, Great Britain, and France were firmly committed to protecting the 2 million people of West Berlin against the Communists, the Soviet Union asked on Nov. 27, 1958, that the three powers withdraw their forces within six months to end the occupation. Berlin was only part of the larger question of the unification of Germany, and the Russians apparently hoped that the application of pressure against the exposed outpost at Berlin might secure favorable consideration of their plans for safeguarding East Germany's interests and for establishing a zone of military disengagement in central Europe.

While talks at the diplomatic level dragged on, the deadline passed without incident; but the threat remained. A Soviet miscalculation in Berlin might well have sparked the outbreak of a general war. Following Premier Khrushchev's consultation with President Eisenhower in September, the strain subsided with the announcement that further negotiations would be initiated to work out a solution to the German problem without any fixed time limit. (See also GERMANY; SUMMIT CONFERENCE.)

NATO and CENTO.—Concern over Berlin could not obscure other clouds in Europe. Under President Charles de Gaulle, France was eager to play a more important role in NATO affairs and to secure equality with the United States and Great Britain in atomic capabilities. In view of lack of progress in negotiating a mutually satisfactory agreement over atomic weapons stockpiling, the United States shifted 200 fighter-bombers from France to other NATO countries in July. The triumphal tour of President Eisenhower to Bonn, London, and Paris in August, and his subsequent return to Paris in December, along with other developments, have helped to relieve some of the tensions among the chief partners in the NATO alliance, but the role of France in the organization will surely come up again. (See also FRANCE; NORTH ATLANTIC TREATY ORGANIZATION.)

Following the defection of Iraq from the Baghdad Pact in March 1959, this alliance was renamed the Central Treaty Organization (CENTO). Although not a member, the United States assisted in the work of the organization and signed new bilateral executive agreements with the three Middle Eastern CENTO states, Iran, Pakistan, and Turkey. Described by some observers as an extension of the Eisenhower Doctrine, the agreements committed the United States to aid the three sig-

UPI

Resembling missiles ready for launching, these giant "stays" support a huge radar antenna somewhere in the Arctic Circle. Part of the Ballistic Missile Early Warning System, the structure is designed to withstand winds of 185 mph.

natories in preserving peace and security. The United States had terminated deliveries of military equipment to Iraq after the 1958 revolt, and in May 1959 the new Iraq government formally ended its military assistance agreement with the United States. (See also MIDDLE EAST.)

Chinese Communist aggressiveness in Asia caused especially grave concern in India and throughout Southeast Asia. After military intervention in Tibet, Chinese forces moved into disputed frontier positions along the Indian border. In July, fighting broke out in Northern Laos between Royal Lao government forces and North Vietnamese-backed guerrillas. As the government troops were forced back in August, the Lao government appealed to the United States for assistance. Joint United States–French teams were set up to improve the quality of the Laotian Army, and additional small weapons were flown in. In September a United Nations fact-finding committee was sent to Laos, and the Communists diminished their attacks. The subcommittee report to the United Nations documented considerable evidence of Viet-Minh involvement, support, and assistance to the Communist forces in Laos, but could not substantiate that there had been an invasion of Laos by regular units of North Vietnamese forces. The secretary general of the United Nations, Dag Hammarskjöld, visited Laos in November in a further effort to dampen the military activities of the Communists.

Progress in Disarmament.—In the field of disarmament, the outlook brightened during 1959. Some progress had been made during 1958 at the Geneva talks on the banning of nuclear explosions, but these were broken off in December 1958 when a deadlock developed about the system of inspection to detect violations. Negotiations resumed in January 1959, and gradually the Soviet and Western differences on controls narrowed. The USSR agreed that a limited number of inspections might be permitted, and that part of the detection staffs based in the USSR might be provided by Great Britain and the United States. It also consented to a joint technical study of the problem of detecting nuclear explosions at high altitudes and in space. In August the United States, Great Britain, and the Soviet Union announced that they would not conduct atomic tests during the rest of 1959. August also marked the establishment of a new 10-nation council on disarmament with five Western members (United States, Great Britain, France, Italy, and Canada) and five Communist representatives (USSR, Poland, Czechoslovakia, Rumania, and Bulgaria).

But the outstanding development in disarmament came during Premier Khrushchev's address to the United Nations on September 18. He proposed complete and general disarmament of all nations within a four-year period as the answer to the nuclear arms race. There was little doubt that his suggestion, which was similar to one made by the Soviet Union in 1932, would receive careful attention; but the means and methods of accomplishing equitably such a massive undertaking remained to be discovered and discussed. (See also DISARMAMENT.)

Space and Missiles.—The Air Force was designated as the official military space force in September 1959, and given sole responsibility for space transportation. The Army and Navy will be restricted to satellites for navigation and communications. The Advanced Research Projects Agency (q.v.) is to continue its work on defense against ballistic missiles and on solid rocket fuels.

Research programs in 1959 laid heaviest stress on the development of guided missiles. Deliveries of Thor IRBM's (intermediate-range missiles) were made to the United Kingdom, and Italy agreed to accept Jupiter IRBM's from the United States. Four nuclear submarines to be equipped with the Polaris missile were launched in 1959. Progress on the missile itself continued, and there was hope that the complete Polaris weapon system would become operational in late 1960. With the first operational firings of the Atlas ICBM (intercontinental ballistic missile) at Vandenberg Air Force Base, Calif., in September 1959, the 6,000-mile missile began to take its place beside the Strategic Air Command bombers. At the end of 1959, construction of 11 more ICBM bases in the United States was under way—six for the Atlas and five for the improved Titan. A third ICBM, the second-generation, solid-propellant Minuteman, was also under development.

Missiles have almost completely supplanted antiaircraft artillery and machine guns for defense against aerial attack. Surface-to-air Nike missiles have been deployed by the Army, and Terrier and Talos missiles by the Navy, for ground and ship defense; while air-to-air Falcons, Sidewinders, and nuclear-armed Genies are becoming the principal armament of fighter-interceptor aircraft.

Ground forces of the United States and its allies also have turned increasingly to missiles for added firepower. Matador, Mace, Corporal, and Redstone missiles and Honest John rockets, all of which can be fitted with atomic warheads, were deployed in additional numbers at home and overseas in 1959 to strengthen the capability of land forces to counter aggression. (For details of the United States missile program, see MISSILES; and for a discussion of progress in space exploration, see SPACE FLIGHT.)

Continental Defense.—Congressional opposition to the level of appropriations proposed by the Department of Defense for air defense missiles led to the adoption of a "master air defense plan" in June 1959. This plan called for three concentric defense rings against manned enemy aircraft: the Nike-Hercules, with a range of about 80 miles, as the inner ring; the 200-mile-range Bomarc and the 400-mile-range Bomarc B (when it becomes operational) as the second line of defense; and manned interceptors at the outer edge, to engage enemy intruders as far from target areas as possible. Additional funds were provided by Congress in 1959 to permit acceleration in fiscal 1960 of the Nike-Zeus program for developing defenses against long-range missiles.

Command and coordination of the air defense efforts of the United States and Canada in 1959

remained the responsibility of the North American Air Defense Command, with headquarters at Colorado Springs, Colo. During 1959, Canada began to provide a majority of the personnel manning the Distant Early Warning (DEW) line along the Arctic Circle. The DEW line was extended in April 1959 with the opening of six stations in the Aleutian Islands. Construction work was also progressing on schedule on three far northern stations for early warning against ballistic missiles.

Armed Forces Strength.—During late 1958 and early 1959 the number of military personnel on active duty was reduced by about 96,000, reaching a point slightly below the strength programed for June 30, 1960. The adjustment in the size of the military services began after the conclusion of the Korean War.

Personnel strengths in the armed forces were as follows:

	Actual		Planned
	June 30, 1958	June 30, 1959	June 30, 1960[1]
Army	898,925	861,964	870,000
Navy	641,005	626,340	630,000
Marine Corps	189,495	175,571	175,000
Air Force	871,156	840,435	845,000
Total, armed forces	2,600,581	2,504,310	2,520,000

[1] Some reductions were under study at the end of 1959.

On June 30, 1959, about 63% of military personnel were serving in the operating forces, about 17% in supporting forces, 17% in training forces, and the remaining 3% were patients or in transit. Personnel assigned to duty outside continental United States and to sea duty, together with troops stationed in Alaska, amounted to 40% of United States armed forces manpower.

Personnel Policies.—Emphasis in the manpower programs of the armed forces has shifted in the past few years from filling requirements for large numbers of men to meeting the acute need for highly qualified personnel that can man and service modern weapons systems. To improve the appeal of military life, 11,994 men had been promoted by June 30, 1959, to the two new senior enlisted grades authorized in 1958 by Congress. In addition, about 47,000 enlisted personnel, primarily in critical technical assignments, began drawing an extra $30 per month in proficiency pay without an increase in rank.

On June 30, 1959, the Department of Defense was using 1,078,000 direct-hire civilian employees (a reduction of 19,000 during the year), and 188,000 foreign nationals were employed overseas under contractual arrangements with foreign governments (28,000 fewer than on June 30, 1958).

Reserve Forces.—Ready Reserve units were streamlined during 1959 to meet the requirements of modern warfare. The Army National Guard and the Army Reserve made substantial progress in converting their divisions to the new pentomic organization recently adopted in regular Army units. The Navy greatly expanded its selected reserve program through which reservists are trained on the ships or in the aircraft which they would man immediately on the outbreak of hostilities. The Air Force completed the reorganization of its 15 Air Reserve wings for troop carrier operations and its 24 Air National Guard wings for fighter-interceptor and tactical ground support missions.

In addition to training men for emergency service, the Ready Reserve has also assumed important peacetime missions in support of the active forces. Some 22 Air National Guard squadrons regularly participate as active air defense forces, while Army National Guard units have begun to man operational Nike-Ajax guided-missile air defense sites.

In June 1959 the Ready Reserves of the Army, Navy, Marine Corps, and Air Force totaled 2,456,000, excluding 247,000 Ready Reservists on extended active duty. The Standby Reserve, which could be recalled to duty only in the event of war, numbered 1,770,000, an increase of 291,000 in the past year, and the Retired Reserve numbered 128,000.

Defense Budget.—Expansion of research and development programs, increased procurement of modern weapons, and higher personnel costs made the major contribution to the 5% rise in defense expenditures during fiscal 1959. With this increase, expenditures by the Department of Defense for military functions totaled $41.3 billion, as compared with $39.1 billion the preceding year. In addition, $2.4 billion was expended in providing military assistance to allied forces.

In January 1959 the president requested $39.248 billion to support the regular military functions of the Defense Department in fiscal 1960. An additional $1.6 billion for military construction was requested in March. Congress reduced the president's requests by only $20 million in regular military funds and $200 million in military construction funds.

New funds made available by Congress for the Department of Defense in the regular and construction appropriation acts were as follows:

WIDE WORLD

Members of the Joint Chiefs of Staff are (from left) Gen. Lyman L. Lemnitzer (Army), who was sworn in on July 1 to succeed Gen. Maxwell D. Taylor; Adm. Arleigh A. Burke (Navy); Gen. Nathan F. Twining (chairman); Gen. Thomas D. White (Air Force); and Gen. Randolph McC. Pate (Marines), who was succeeded on Jan. 1, 1960, by Gen. David M. Shoup.

	Fiscal 1958	Fiscal 1959	Fiscal 1960
	(billions of dollars)		
Army	7.7	9.3	9.7
Navy	10.5	11.8	11.2
Air Force	17.8	18.8	18.3
Secretary of Defense and interservice activities	0.7	1.4	1.4
Total	36.7	41.3	40.6

Administration.—Secretary of Defense Neil H. McElroy resigned on Dec. 1, 1959, and was succeeded by Deputy Secretary Thomas S. Gates, Jr. On December 10, James H. Douglas, secretary of the air force, was named deputy secretary of defense; and Air Under Secretary Dudley C. Sharp was appointed to succeed Douglas as secretary of the air force. Secretary Gates, the former secretary of the navy, had become deputy secretary of defense after the death of Donald A. Quarles in May 1959. At the same time, William B. Franke, previously under secretary of the navy, succeeded Gates as secretary of the navy, and Dr. Herbert F. York was named to the new post of director of defense research and engineering. Gen. Lyman L. Lemnitzer succeeded Gen. Maxwell D. Taylor as army chief of staff on July 1, 1959; and Maj. Gen. David M. Shoup was selected to replace Gen. Randolph McCall Pate, when the latter retired as commandant of the Marine Corps at the end of 1959.

On Aug. 6, 1959, the Department of Defense completed its first year of operations under the Defense Reorganization Act of 1958. This legislation established a direct line of authority from the president through the secretary of defense and the Joint Chiefs of Staff to major operating forces in the field. The Continental Air Defense Command and regional commands in Alaska, the Atlantic, the Caribbean, Europe, and the Pacific are unified commands, composed of units from all the services, while the Strategic Air Command and the naval forces in the Eastern Atlantic and Mediterranean are composed of forces from a single service, responsible directly to the secretary of defense. Commanders of these forces have been given full operational control over all units assigned to them.

(See also articles on each of the armed services, and the Index entries *Military* and *National Security.*)

WALTER G. HERMES,
Office of the Chief of Military History, Department of the Army.

NATURAL GAS. See GAS; PETROLEUM.

NATURALIZATION. See IMMIGRATION AND NATURALIZATION.

NAURU. Annexed by Germany in 1888 and surrendered to Australian forces early in World War I, this coral island (area, 8.22 square miles) lies close to the equator some 2,200 miles northeast of Sydney, Australia. After 1920 it was a League of Nations mandate, and since 1947 it has been a United Nations trust territory for which

Australia, New Zealand, and the United Kingdom are jointly responsible. Australia appoints the administrator (in 1959, J. Preston White). The population on June 30, 1959, totaled 4,258, comprising 2,196 Nauruans (a mixture of Polynesian, Micronesian, and Melanesian types), 975 other Pacific Islanders, 375 Europeans, and 712 Chinese.

A 9-member elected Local Government Council advises the administrator on Nauruan affairs. In 1957–58, revenue totaled £A352,686; expenditure, £A357,396 (the Australian pound equals U.S.$2.24). Primary and secondary school pupils numbered 871 on June 30, 1959. Of the island's 5,263 acres, 5,049 are owned by individual Nauruans. The British Phosphate Commission, appointed by the trusteeship powers, employs most of the male Nauruans and also works the deposits on Ocean Island, Gilbert and Ellice Islands Colony (see WESTERN PACIFIC ISLANDS, BRITISH), and Christmas Island (q.v.).

Medical, social, and educational services are the responsibility of the administration, and are financed by the British Phosphate Commission from phosphate production (1,167,180 tons, valued at £A3,358,894, exported in 1957–58). An airfield capable of accommodating large transport aircraft has been constructed, but there is not as yet a regular air service.

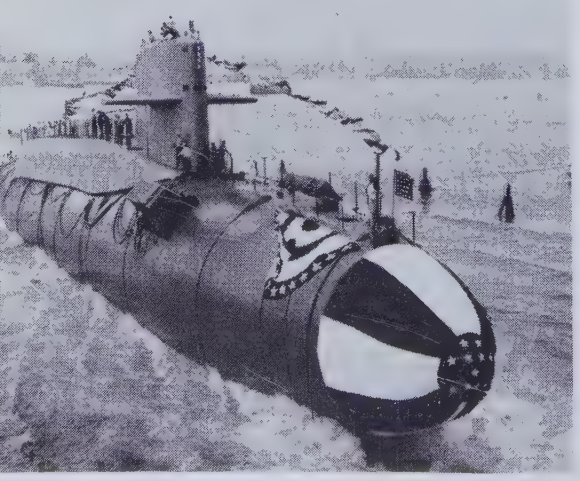
NAVIES, World. See articles on major countries.

NAVY, U.S. The new secretary of the Navy, William B. Franke, has expressed the role of the Navy in these words: "The role of the Navy is still—and always will be—the control of the seas during periods of conflict and maintaining the freedom of the seas in time of peace."

Chief of Naval Operations Arleigh Burke, who received in 1959 a nonroutine reappointment for an additional two-year term, elaborated the role, in a Navy Day (Oct. 27, 1959) open letter, as follows: ". . . Yet, the ways, means and forces which are now on station to discharge these responsibilities have changed greatly over the past few years. Nuclear ships with almost unlimited cruising range are coming into the forces afloat in ever-increasing numbers. Guided missile ships are now accepted parts of the naval task force. The first ballistic missile-carrying submarine, the *George Washington,* should be at sea about the time another Navy Day rolls by. The Anti Submarine Task Groups have proved to be a tremendous aid in the rapidly developing ASW [antisubmarine warfare] techniques. The task forces that roam the oceans of the world today pack more punch in fewer ships than the entire Navy did just a few short years ago . . . There is one thing, though, that has remained constant—the fiber of the men who man the ships and planes."

The nuclear submarine U.S.S. *George Washington* is launched at Groton, Conn., June 9. First submarine equipped to fire the Polaris missile, she was commissioned on December 30.

GENERAL DYNAMICS CORPORATION



Administration and Personnel.—On June 8, 1959, William B. Franke took office as secretary of the Navy, succeeding Thomas S. Gates, Jr., who became secretary of defense. Officers assigned to new positions in 1959 include the following: Admiral Robert W. Dennison, commander of the U.S. Atlantic Fleet and of NATO Atlantic Forces; Admiral Herbert G. Hopwood, commander of the U.S. Pacific Fleet; Admiral Harold P. Smith, commander of the U.S. Navy's Eastern Atlantic and Mediterranean forces; and Gen. Daniel M. Shoup, commandant of the Marine Corps (q.v.). The Navy's manpower at the beginning of 1959 totaled 641,000 officers and men; this force was reduced by 11,000 during the year, and is expected to remain constant at 630,000 in 1960.

Ships.—The Navy began the year 1959 with 393 combat ships and 10,654 aircraft, of which 41% were jets. Of the 393 combat ships, 26 were aircraft carriers, including 15 attack, 9 antisubmarine, and 2 helicopter carriers; 15 were cruisers, of which 3 were equipped with guided missiles; 240 were destroyers, including one fitted with guided missiles; and 112 were submarines, of which 6 were nuclear-powered and 4 were capable of launching guided missiles. Some 2,987 other ships, including 85 patrol craft, 77 mine sweepers, 124 amphibious vessels, 212 auxiliaries, and 2,499 landing craft, rounded out the fleet. The reserve fleet totaled 1,511 vessels.

The construction program in 1959 included 3 Forrestal-type carriers; 20 guided-missile frigates; 21 destroyers, of which 18 will carry missiles; 18 nuclear submarines, of which 9 can launch guided or ballistic missiles; and 3 nonatomic submarines. By the end of the fiscal year 1960, the naval forces will include 479 combat ships—comprising 14 attack carriers, 14 cruisers, 238 destroyer types, 113 submarines, and 385 other auxiliaries—and will comprise 864 ships of all types, not including landing craft and small vessels. Operational aircraft will decline to 7,200.

Of the ships in commission in 1959, 81% were constructed during World War II. In the postwar period through 1959, an average of only 20 new ships per year has been maintained. As the effective life of naval ships is about 20 years, the World War II ships will become obsolescent between 1961 and 1965. A modern fleet of 864 ships requires 43 new ships per year. An accelerated fleet rehabilitation and modernization program is in effect for 255 units, including 6 antisubmarine carriers, 35 submarines, 163 destroyer types, and 51 amphibious ships. Full overhaul of a ship's hull, machinery, and weapons should prolong its effective life by eight years, and partial overhaul, by five years.

No nuclear-powered surface ship was in commission during 1959. The U.S.S. *Long Beach,* the guided-missile cruiser launched July 14, will probably be the first ship in this category. Other significant launchings in 1959 include those of the nuclear ballistic-missile submarines *George Washington, Patrick Henry, Theodore Roosevelt,* and *Robert E. Lee,* four of nine authorized submarines of this type; the nuclear attack submarine *Scorpion;* the submarine *Blueback,* the last nonnuclear submarine planned; and, though not a naval vessel, the nuclear-powered merchant ship *Savan-*

U.S. NAVY; UPI

(*Above*) Photograph made from a Navy balloon as it ascended to a height of 81,000 feet on November 28. Launched near Rapid City, S. Dak., the craft carried Cmdr. Malcolm Ross (*left*) and Charles Moore (*right*, with gondola). The two scientists made upper atmosphere observations of Venus which provided the first evidence of the presence of water vapor in the planet's atmosphere.

nah, launched July 21. The new carrier *Independence* was commissioned early in the year, and the nuclear radar-picket submarine *Triton* joined the fleet on August 6.

Three new types of ship are in prospect: a hydrofoil patrol craft for coastal use; an aviation transport dock vessel to carry helicopters, seagoing landing craft, and fully equipped troops; and an escort research ship. This latter vessel is intended to determine the best configuration for ocean escort and picket types carrying the latest sonar gear. The keel of the U.S.S. *Iwo Jima*, the first helicopter assault ship, was laid in May.

Skyrocketing costs are of growing concern. Destroyers built during World War II cost about $9 million, but their modern counterparts cost $35 million; and a nuclear-powered frigate will cost $100 million. Missiles cost more than 100 times the amount required for conventional armament.

Aircraft and Missiles.—The decline of operational aircraft is compensated for in part by the addition of new high-performance aircraft. At the same time, work on the X-135 manned-flight research vehicle in the 3,600 mph. range is continuing. The Seamaster program for jet seaplanes was discontinued. Development of atomic-powered aircraft and airships is being investigated.

In 1959 the Navy employed five classes of missiles: sea-to-air (SA), air-to-air (AA); air-to-sea (AS), sea-to-sea (SS), and the fleet ballistic missile (FBM). Progress toward the perfection of the Polaris ballistic missile is noteworthy. It is expected to be operational in 1960, and its potentialities for surface launching, as demonstrated by the ballistic launching ship *Observation Island*, are being increasingly appreciated. On Aug. 1, 1959, the first official missile mail delivery was made of 3,000 envelopes from the submarine *Barbero* to Mayport, Fla.—a distance of 100 miles. The flight in a Regulus missile required 22 minutes.

Research.—The importance the Navy accords to research was strikingly demonstrated by plans made in 1959 to create a new civilian post of asistant secretary for research and development. This will require the elimination of one of the existing three assistant secretary positions.

Meanwhile, the extension of basic and applied scientific and technological research goes rapidly forward. Prime examples are the research studies on a ground proximity vehicle and pump-jet ship propulsion, and the vastly significant Antarctic program which was headed by Admiral George J. Dufek (see ANTARCTICA). Basic oceanographic research is widespread, and with the development of the 72-ton bathyscape *Trieste*, which has been described as a submarine balloon, deep-water exploration seems for the first time to be feasible (see MARINE BIOLOGY; OCEANOGRAPHY). Although the Vanguard satellite program was discontinued, interest and research in outer space and allied matters continues (see SPACE FLIGHT). The Navy is contributing its full share in the field of research, not for war, but in the interest of continuing peace.

(See also AERONAUTICS; ATOMIC ENERGY; MISSILES; and the Index entry, *Navy, U.S.*)

VERNON D. TATE,
Professor and Librarian, U.S. Naval Academy.

NEBRASKA. Central state, United States; admitted to the Union, March 1, 1867. The "Cornhusker State" ranks 15th in area and 34th in population among the 50 states.

Area and Population.—Area: 77,227 square miles (land, 76,663; inland water, 564), divided into 93 counties. Population: (1950) 1,325,510; (est., July 1, 1958) 1,434,000. Urban places with populations above 10,000 (as estimated by the Department of Business Research, University of Nebraska, for 1958) are:

Beatrice	12,498	Lincoln (*capital*)	130,439
Columbus	12,526	Norfolk	14,197
Fremont	19,407	North Platte	18,400
Grand Island	28,001	Omaha	300,192
Hastings	22,154	Scottsbluff	14,253
Kearney	14,576		

Executive.—Chief state officers in 1959:
Governor: Ralph G. Brooks (Democrat)
Lieutenant Governor: Dwight W. Burney
Secretary of State: Frank Marsh
Treasurer: Richard R. Larsen
Attorney General: Clarence S. Beck
Auditor of Public Accounts: Ray C. Johnson
Commissioner of Education: F. B. Decker

Constitution and Judiciary.—The present constitution went into effect in 1875. The Supreme Court comprises seven justices; chief justice in 1959: Robert G. Simmons.

Legislature.—Nebraska is the only state having a unicameral legislature. This nonpartisan body of 43 senators meets in odd-numbered years commencing the first Tuesday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $164,530,337.75 comprised $118,431,940.23 from state sources and $46,098,397.52 from the federal government. Tax revenue consisted of $44,210,740 from motor fuel taxes, $8,704,668 from licensing, and $65,516,532.23 from all other state tax sources. Expenditures of $140,665,652.53 comprised $32,383,352.92 for education, $39,320,429.90 for health, welfare, and safety, $56,264,291.53 for highways, and $12,797,578.18 for other purposes. The state had no long-term indebtedness.

Banking.—As of June 10, 1959, the state's 123 national banks had $1,197,893,000 in assets, $935,511,000 in demand deposits, and $127,223,000 in time deposits. The 295 state banks (June 30, 1959) had assets of $526,906,743, demand deposits of $405,967,852, and time deposits of $65,453,227.

Education.—School attendance is compulsory between the ages of 7 and 15, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $72,749,036 ($299.58 per pupil), comprising $58,925,997 from local school districts, $7,242,598 from the counties, $3,856,309 from the state, and $2,724,132 from the federal government. Outlays for construction and improvements amounted to $16,033,919, and teachers' salaries averaged $3,321.83 (high school, $3,969.18; elementary, $3,020.32).

In the 1957–58 school year there were 3,902 public elementary schools with 9,067 teachers and 191,412 pupils, and 483 public secondary schools with 4,223 teachers and 76,237 pupils. The 291 private and parochial elementary and secondary schools had 1,787 teachers and 45,608 pupils. There were also 4 teachers colleges with 300 instructors and 4,176 students. All college and university enrollment (1958–59) totaled 30,525 students.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $17,637,693.22, including $12,083,888.88 for the aged, $3,505,439.50 for dependent children, and $1,187,356.93 for the permanently and totally disabled. A monthly average of 23,245 persons received assistance. State expenditures for mental health activities totaled $9,579,241.14; for correctional and penal programs, $3,245,912.07.

Labor Force.—The 645,200 persons in the state's labor force in June 1959 included 191,000 agricultural workers. Nonagricultural employment was up slightly to 445,900 from 431,250 in the previous June. Of employed nonfarm workers in June 1959, 24.5% were engaged in wholesale and retail trade, 17.5% in manufacturing, and 20.8% in government employment. Unemployment dropped sharply to 8,300 in June 1959 from 17,400 reported for the previous June, and the state paid $6,281,804 in unemployment compensation during the intervening year.

Manufacturing.—There were approximately 1,600 manufacturing plants in the state in the fiscal year 1958–59, employing an average of 61,800 persons who received $284,700,000 in wages. Value added by manufacture (1957) totaled $548,906,000, and outlays for new plant and equipment amounted to $74,675,000. Production workers averaged $85.03 for an average work-week of 42.6 hours in August 1959.

Leading manufactures (1957) included food and kindred products, with 27,697 employees earning wages of $123,205,000, and with $282,176,000 in value added by manufacture; printing and publishing (5,931; $23,742,000; $47,083,000); and electrical machinery (3,696; $16,785,000; $28,017,000).

Mining.—In 1958 Nebraska ranked 28th among the states in the value of its mineral output, with 0.54% of the national total. The value of all minerals produced was 10% higher than in 1957.

NEBRASKA MINERAL PRODUCTION, 1958
(In short tons except as noted)

Mineral	Quantity	Value
Clays	108,000	$ 110,000
Natural gas (thousand cu. ft.)[1]	11,405,000	1,711,000
Natural gasoline (bbl.)	258,809	727,000
Petroleum (bbl.)[1]	20,368,000	59,882,000
Petroleum gases (bbl.)	742,333	1,565,000
Sand and gravel	10,441,000	7,945,000
Stone	3,555,000	4,747,000
Other minerals	...	14,605,000
Total	...	$90,032,000[2]

[1] Preliminary. [2] Total adjusted to eliminate duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $834,336,000 from $872,103,000 in the corresponding period of 1958. For the full year 1958, income comprised $781,108,000 from livestock and livestock products, $466,636,000 from crops, and $36,941,000 from government payments. Principal income sources in 1958 were cattle, $502,047,000; wheat, $176,643,000; corn, $171,130,000; and hogs, $153,544,000.

NEBRASKA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	4,855	6,710	6,969
Beans, dry edible (1,000 bags)	1,049	1,015	1,188
Corn (1,000 bu.)	204,872	293,055	350,906
Hay (1,000 tons)	5,800	7,716	6,282
Oats (1,000 bu.)	50,518	46,550	29,326
Popcorn (1,000 lb.)	17,990	53,900	29,000
Potatoes (1,000 cwt.)	3,822*	2,675	2,677
Rye (1,000 bu.)	1,800	2,822	1,937
Sorghum grain (1,000 bu.)	12,922	77,952	59,423
Sugar beets (1,000 short tons)	744	902	1,092
Wheat (1,000 bu.)	75,801	113,488	69,700

Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 102,000 farms in 1958. Total acreage (1954) of 47,487,000 included 18,874,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 4,961,000 cattle, 2,453,000 hogs, and 11,372,000 chickens (excluding commercial broilers). Some 141,000 family and hired workers were engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—In 1958, state and federal spending for highways totaled $58,442,885, and 950 miles of new roads were completed.

Highways and roads on Jan. 1, 1959, totaled 102,432 miles (9,021 surfaced). Registered *motor vehicles* numbered 701,144 in July 1959, including 489,260 passenger cars. There were (1958) 6 *railroads* operating 5,762.44 line miles, and (1959) 5 regularly scheduled *airlines* and 254 *airports and airfields* (85 commercial and municipal, 2 military, 29 private, and 138 other).

Communications media (1959) included 33 AM and 3 FM *radio stations;* 7 VHF *television stations;* 22 daily *newspapers* (circulation, 478,606) and 237 other newspapers (371,189); and (January 1) 134,600 business and 402,500 residential *telephones.*

Principal Events, 1959.—The 69th session of the unicameral state legislature met for a record-breaking 120 days in 1959. Considerable time was spent early in the session in working out rules and procedures for a recount of the votes cast for governor in 1958. Victor E. Anderson, Republican, had contested the election by 1,640 votes of Ralph G. Brooks, Democrat. Before the recount was com-

pleted, however, Anderson conceded the election to his opponent.

The legislature set the budget for the biennium at $351,854,965.85, or about $10 million above that of the previous biennium. Among the measures passed during the session were laws outlawing the secondary boycott, legalizing the playing of bingo by nonprofit organizations, imposing a tax on parimutuel betting, redesignating soil conservation districts as soil and water conservation districts and enlarging their powers, and establishing an Oil and Gas Conservation Commission.

Much attention was given to the problem of highway safety: one measure set the speed limit on county dirt and gravel roads at 50 miles per hour, and another authorized the presumption that any licensed motor vehicle operator using public highways has consented to blood and urine tests for alcohol. A concerted effort was made by the State Safety Patrol to reduce highway fatalities, and no lives were lost on Nebraska highways over the Memorial Day and Thanksgiving weekends. In the first 11 months of the year there were 305 highway deaths in the state, as compared with 320 in the same period of 1958.

Precipitation during the first 10 months of 1959 was generally above normal in the corn-growing areas. The rainfall, combined with cool weather in July, favored corn pollination and resulted in an estimated crop of 350.9 million bushels (average production for 1948–57 was about 204.9 million bushels). Sorghum grain production was estimated at 59.4 million bushels, the third largest crop in the state's history, but the winter wheat crop of 69.7 million bushels was about 6 million bushels below the 1948–57 average. Acreage under irrigation increased by about 100,000 acres, to 2,700,000 acres.

Work on the interstate highway was continued, and construction was begun on guided missile bases in the Omaha-Lincoln area. The outstanding sports event of the year was the 25–21 football victory of the University of Nebraska over the University of Oklahoma on October 31.

Principal Events by: DONALD F. DANKER, *Archivist, Nebraska State Historical Society.*

NECROLOGY, 1959. A selected list of prominent persons who died in 1959 may be found at the back of this volume, immediately following the Z articles. Separate biographies of the most prominent persons appear under their own headings throughout the volume; and the names of those who have been given more expansive treatment in the *Necrology* listing appear in the Index at the end of the volume.

NEGROES, American. The courts and legislatures won headline treatment in the press coverage of racial developments in the United States during 1959, with congressional news generally of the negative type. However, there were many nongovernmental developments of great importance that received scant, if any, space in the nation's press.

The tug of war on public school desegregation continued between the federal courts and Southern state governments. Virginia gave ground in its "massive resistance" program against school integration by making it possible for local communities to admit Negro children to previously all-white schools. However, Prince Edward County chose to discontinue its public school system entirely, with 1,090 white children being cared for in inadequate private schools and about 1,700 Negro children being deprived of any school facilities whatsoever. (See also VIRGINIA.)

Voters in Little Rock, Ark., in a dispute over the attempted firing of 44 teachers by three stanch segregationists on the local school board, voted in a recall election on May 25 to oust the three segregationists, who were supported by Governor Faubus, and to retain the three "moderate"-minded board members. The governor offered only token resistance to an extension of desegregation in Little Rock schools, and the local police quickly disposed of a badly organized mob demonstration when Negro children enrolled at a second, previously all-white high school. (See also ARKANSAS.) Florida's Governor Collins promised strong action to prevent mob action in defiance of any school desegregation in that state as the 1959–60 school year began. (See also FLORIDA.)

WIDE WORLD

Secretary of State Herter (right) congratulates John Howard Morrow after the Negro educator was sworn in on June 22 as the first U.S. ambassador to the new state of Guinea.

In Washington, D.C., the federal Civil Rights Commission won from Congress continuance of its powers for another two years, but not until after its first report had been prematurely "leaked" to the Southern press and its recommendations bitterly criticized by its opponents. Most controversial of its recommendations was a proposal that the president be authorized to appoint temporary federal registrars in those Southern communities where voting officials deprive Negro applicants of their right to register and vote. Virginia's former governor John S. Battle opposed the recommendation as a member of the commission and subsequently resigned his post, following approval by the Congress on Sept. 15, 1959, of the commission's continuance. Meanwhile, Congress shelved any additional action on civil rights legislation until 1960.

Sharp point to the commission's proposal was provided in a study published by the Southern Regional Council which showed that repressive tactics in eight Southern states had reduced Negro voter registration from 1,074,672 in 1956 to 1,028,827 in 1958—a loss of 45,845. Without freer political action by Southern Negroes, any legislative or judicial gains would be limited and insecure.

When Mack C. Parker, a Negro, was lynched in Poplarville, Miss., in April 1959, it was the first recorded lynching in four years. Efforts by the Federal Bureau of Investigation to obtain evidence to show a federal crime were thwarted by local opposition; such evidence as was gathered was turned over to a local grand jury, which adjourned on November 3 without taking action. However, the federal Department of Justice announced on the same day that it would convene a federal grand jury to consider the evidence. In Florida, four white men convicted of rape of a woman student at the all-Negro state college at Tallahassee were given prison sentences instead of death sentences. Concurrently, three Florida Negroes

awaiting execution for similar crimes against whites had their death sentences commuted.

In Bessemer, Ala., after Asbury Howard, Sr., a Negro civic leader and union official, had a poster made showing a Negro praying for help in his struggle for human rights, he was sentenced to six months on a chain gang, and the white sign painter who worked on the poster was sentenced to six months in the city jail. When Howard was attacked by a gang of white men inside City Hall and his son came to his rescue, the latter was convicted of "disorderly conduct" and given a one-year sentence.

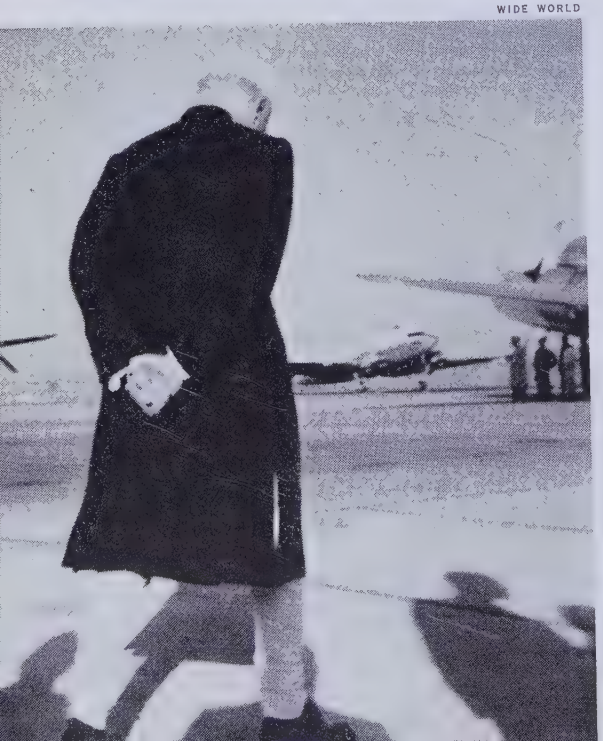
Sporadic bombings of Negro homes continued in a few Northern as well as Southern cities, being aimed in the first instance against Negroes who had purchased homes in previously all-white neighborhoods and in the second instance against those who had been active in the movement to obtain voting rights for Negroes.

Studies of urban migration, principally from rural areas of the South, showed that Negro migration was strongest to the nation's 14 metropolitan areas with populations of more than one million. Nothing happened in 1959 to reverse the ten-year trend during which the total population of these 14 areas increased by 19% while the Negro increase was more than four times as great. Although the better jobs and higher income available in urban areas accentuated the steady development of a true Negro middle class, the tremendous congestion of growing Negro populations in large cities, along with other factors, encouraged the growth of severe social problems such as crime, delinquency, and family disorganization.

Housing problems gave rise to legislative approaches aimed at their solution in Northern states. Four states (Colorado, Massachusetts, Connecticut, and Oregon) passed laws in 1959 forbidding racial discrimination in the sale or leasing of private housing. California passed a similar bill covering publicly assisted housing. Fair employment practice laws were adopted in California and Ohio.

India's Prime Minister Nehru strikes a meditative pose as he walks across airfield near New Delhi. Foremost of his problems was India's border dispute with Communist China.

WIDE WORLD



Racial policies of labor unions were examined at the AFL-CIO convention in San Francisco in September 1959. A strong resolution was passed against the continuance of any racial bar by an international union and against racial segregation in union locals. In contrast, the American Legion's fun and honor society, the Forty and Eight, had voted a few weeks earlier to retain its 40-year ban against Negro memberships. In October, however, the American Legion's Executive Committee voted to authorize the national commander, Martin B. McKneally, to take "any and all measures he may deem necessary" to eliminate the discriminatory ban in the Forty and Eight.

The appointment in 1959 by President Eisenhower of Dr. John Howard Morrow, chairman of the Department of Languages at North Carolina College, as ambassador to the new Republic of Guinea had been preceded in 1958 by the naming of Clifton R. Wharton of Baltimore as minister to Rumania—both appointments exemplifying the State Department's new policy of encouraging more qualified Negroes to enter the Foreign Service.

(See also CIVIL LIBERTIES; EDUCATION; LAW; and the Index entry, *Negroes.*)

LESTER B. GRANGER,
Executive Director, National Urban League.

NEHRU, Jawaharlal, prime minister of India: b. Allahabad, United Provinces, India, Nov. 14, 1889. A political leader of India since his youth, Jawaharlal Nehru became prime minister and minister of external affairs in 1947. Since then he has been Asia's chief exponent of nonalignment with either East or West—a policy that was sorely tried in 1959 when Communist Chinese troops attacked Indian outposts in the disputed border regions between the two countries.

Nehru's concern with Communist Chinese imperialism began early in the year. In March, in connection with the Chinese suppression of the revolt in Tibet (q.v.), Nehru expressed deep sympathy for the plight of his northern neighbor. Speaking in Parliament on March 23, he stated that though India had "no intention of interfering in the internal affairs of China" it could not remain indifferent to the fate of the Dalai Lama. (On March 31 the Dalai Lama crossed into India, where he was granted asylum.) A week later, Nehru implied that China had disregarded its promise to respect Tibetan autonomy. The Tibetan affair also caused the prime minister to speak out sharply against Indian Communists, who, he said, show "a total absence of feelings of decency and nationality."

Of even graver concern were the Chinese attacks against Indian troops in the disputed border areas of the North-East Frontier Agency and the Ladakh section of Kashmir, beginning in August and first disclosed by Nehru on August 28. Here, Nehru, who had consistently expressed his desire to pursue a policy of "peaceful coexistence" with China, was faced by mounting criticism of his neutralist policies. On November 25, speaking out more sharply than is his custom, Nehru declared that "if war is thrust upon us, we shall fight with all our strength. But I shall do my utmost to avoid war." He accused China of committing "territorial aggression" and repeatedly refused to discuss the disputed areas with China until that nation's troops evacuate "posts on the Indian side of the traditional frontier." He further promised to defend Nepal, Bhutan, and Sikkim against Chinese aggression, which, he said, "would be considered by us as aggression against India."

In the midst of the Indian-Chinese dispute,

President Eisenhower visited New Delhi for four days, beginning December 9. The visit, marking a high point in Indian-American relations, was characterized by Nehru as a "pilgrimage of peace." In their joint communiqué (December 14) the two leaders "expressed deep satisfaction at the friendly and cordial relations existing between their countries."

Nehru: A Political Biography by Michael Brecher was published in 1959.

(See also FAR EAST; INDIA.)

NELSON, Donald Marr (70), American business executive and government official: b. Hannibal, Mo., Nov. 17, 1888; d. Los Angeles, Calif., Sept. 29, 1959. As chairman of the War Production Board from the time of its creation by President Franklin D. Roosevelt in January 1942 until 1944, he had the Herculean task of mobilizing, organizing, and directing the American industrial machine in a wartime production schedule of unprecedented proportions.

To this job Nelson brought 29 years of experience with the huge merchandising firm of Sears, Roebuck and Company, to which he had gone in 1912 as a chemical engineer following graduation from the University of Missouri. At Sears he rose to vice president in charge of merchandising in 1930 and executive vice president and chairman of the company's executive committee in 1939.

Before resigning to take the WPB chairmanship in 1942, Nelson had already served for almost two years as a "dollar-a-year man" in Washington, on various defense mobilization programs. As WPB chairman he served as Roosevelt's personal representative on war production to the governments of China and the Soviet Union in 1943–44. After his resignation from the post he published *Arsenal of Democracy: The Story of American War Production* (1946), an account of his wartime experiences.

NEPAL. This Himalayan kingdom (area, 54,362 square miles; 1958 pop. est., 8,473,478) extends for 537 miles along the northern border of India. Between Nepal and Tibet, which lies to the north, a natural barrier is formed by Mt. Everest (29,028 feet) and other great Himalayan peaks. Most of the population is concentrated in a high midlands valley of 20,000 square miles, in which are located the cities of Katmandu, the capital (pop., 195,260 in 1958); Patan (135,230); and Bhatgaon (84,240). The aboriginal stock is Mongolian, admixed with Indian strains, notably of the Gurkhas. Hinduism and, in the north, Buddhism are the principal religions.

Government.—King Mahendra Bir Bikram Shah Deva (acceded March 14, 1955) promulgated his country's first constitution on Feb. 12, 1959. The constitution retains the monarchy (in which is vested command of the armed forces of about 45,000 men, including 25,000 regulars) and provides for a Parliament consisting of a Lower House of 109 members and an Upper House of 36 members. For the Upper House, 18 members are elected by the Lower House and 18 are nominated by the king. A Supreme Court has protective powers over the people's economic, political, and religious rights.

Voting in Nepal's first general elections began on February 18, but was not concluded until April 3 because of the difficulty of distributing ballots in alpine areas. Candidates for the 109 seats in the Lower House totaled 865. Out of a total electorate of 4,120,000, more than 43% went to the polls. The final results (announced May 14) showed an overwhelming victory in Parliament for the Nepali Congress, which returned 74 candidates (including one woman) to win more than two thirds of the seats. However, the party obtained only 37.2% of the total vote. The conservative Gurkha Party won 19 seats; the United Democratic Party, 5; the Communists, 4; the People's Party (Acharya faction), 2; the People's Party (Misra faction), 1; and independents, 4. Nepal's first popular government was inaugurated on July 24, with B. P. Koirala, leader of the Nepali Congress, as prime minister. He heads an 8-member cabinet. Mr. Koirala announced a program of far-reaching reform, including the abolition of tax-free estates and the redistribution of cultivable land. In foreign affairs, Nepal's policy of neutralism between East and West will be continued.

Finance and Foreign Aid.—In 1958 the exchange rate was 150 Nepalese rupees to 100 Indian rupees. The budget for 1958–59 showed revenues of NRs.43,444,000 and expenditures of NRs.58,577,000.

Nepal is currently receiving aid from the United States (Mutual Security Program grants totaled $2,226,400 in 1958), India, China, the Soviet Union, the United Kingdom, certain Commonwealth countries (under the Colombo Plan), and the United Nations. In addition, the Indian government, in close cooperation with the United States, is furnishing extensive technical assistance, notably in communications development. Under a 1959 agreement signed on April 24, the USSR was committed to furnish 30 million rubles in financial aid, along with technical assistance, including road surveying.

Education.—Nepal's literacy rate is about 9%. In 1958 there were 2,443 English schools, 243 Sanskrit and Nepali schools, 54 basic schools, and 21 degree-granting colleges. Under a contract with the University of Oregon, a teacher-training college has been established. In 1958 work began at Lalitpur, near the capital, on Nepal's first university.

Transportation.—Two short lengths of narrow-gauge railway link Nepal with India. In 1959 there were about 500 miles of motorable roads, although 900 miles of additional roads are being built with the cooperation of the United States and India. The kingdom has 8 airstrips. India Airlines connects Katmandu with New Delhi.

Economy.—The economy is nearly 95% agricultural. In the hot lowlands belt (Terai) between three- and four-million acres are cultivated in rice, tea, cotton, and tobacco. The raising of livestock and timber is also important. Industry as yet includes only two jute, one cotton, and a few rice and vegetable-oil mills. Rice, oilseeds, dairy products, timber, and medicinal herbs are exported to India, from which Nepal receives textiles and other manufactures. A limited trade is also carried on with Tibet.

Principal Events, 1959.—Chinese Communist forces were reported to be deployed in increasing numbers on the Tibetan-Nepalese border, and Sherpa tribesmen accused the Chinese of making raids on Nepalese border villages. Nepal announced that in the face of mounting Chinese pressure it would increase its border defenses. However, an improvement in relations between the two nations was in prospect after the announcement on October 28 that Communist China had agreed to negotiate with Nepal concerning the Tibetan frontier. (See also CHINA; FAR EAST.)

A United States embassy was opened during the year at Katmandu (announced August 5). On August 9, Henry E. Stebbins was appointed as ambassador (confirmed September 9). It was also announced (April 24) that the Soviet Union and Nepal would establish diplomatic relations on the ambassadorial level.

The foundation stone of the Kosi River Dam, to be built on the border of India and Nepal, was laid on April 30 by King Mahendra and Indian Prime Minister Nehru. On a later visit to Nepal in June, Nehru lauded the policy of "peaceful coexistence." However, in the communiqué issued on June 14 by the two countries' prime ministers, it was stated that "no country should be dominated by another." Informed circles took this to be a reference to the Communist Chinese subjugation of Tibet (q.v.).

DONOVAN ROWSE,
Author and Publicist.

NERVOUS SYSTEM. The general field of the neurological sciences continued to thrive in 1959 as more and more research funds were made available. Under these conditions, there is inevitable refinement of techniques, and the interests of some investigators have turned to even finer approaches —for example, the use of microelectrodes in studying the function of brain cells by small electrodes which record from a single or only a few cells. Studies of this type are showing the functions not only of the individual cells, but even of parts of the cell and its processes, and this brings more knowl-

edge regarding the way in which the brain responds with finely graded responses to the stimuli that come to it. The developments in electromicroscopy, cytochemistry, and tissue culture indicate that substances may even enter and leave the cell without ever entering the protoplasmic matrix.

The use of permanently implanted electrodes in animals by H. W. Magoun and other investigators continues to reveal the role between the cells of the cerebral cortex and those of the brain stem, particularly those in the reticular substance. These studies have brought a better understanding of disease states with impaired consciousness, of anesthesia, and of the effect of drugs such as the tranquilizers. Neurophysiologists are using this technique to study the conditional reflex of the Pavlovian school.

Neuropathology has been for many years in a state of relative status quo. The parameters have been reasonably well defined, but newer staining techniques have brought about an arousal of interest in this area. This has been due to the cross-fertilizations between neuropathology and neurochemistry, the realization that the staining techniques used in neuropathology are chemical, and the extrapolation of new techniques from the studies of the biochemist. This area is now experiencing the same kind of vigorous growth that is encompassing neurochemistry, and the exact directions and results of this growth cannot be predicted at the present time.

On the clinical side, neurosurgical experiences in the treatment of Parkinsonism have not continued as successfully as was at first hoped. An innovation in the technique of the operation is the use of ultrasound to destroy the substantia nigra, which is a part of the basal ganglia. It is too soon to evaluate critically and finally these procedures. This is also true of aneurysms, which are still under critical survey in a collaborative project by numerous investigators under the auspices of the National Institute of Neurological Diseases and Blindness.

There has been more interest on the part of neurosurgeons recently in the treatment of cerebral vascular disease, particularly that involving the internal carotid artery. Dr. Earl Walker has introduced a technique of recording electrical activity by passing fine wires through tiny holes in the skull so that the recording from deeper structures in the brain is possible without a large major surgical procedure. Much information on the nature and spread of the seizure discharges can be obtained in this way.

In clinical neurology the refinements of diagnostic testing are continuing, as is indicated by studies on the use of sound localization as a method of determining presence of temporal lobe lesions. These studies are now being carried out to determine their validity in children and whether they may give an early indication of brain damage.

Clinical neurochemistry continues to be an attractive field of investigation, and there are numerous studies on amino acids and on enzymes in spinal fluid in various diseases. These show promise of aiding in accurate clinical diagnosis. There is a continuing interest in maple sugar disease, a peculiar disease of metabolic disorder in children leading to death, and in which the urine has a peculiar maple sugar odor. The search for newer drugs in the treatment of Parkinsonism and in epilepsy continues. A number of new preparations in the Parkinson field which have become available include Orphenodrine and Akinotone, both of which are valuable adjuvants but, like other preceding drugs, do not solve the problem. Elipten shows some considerable promise as an adjuvant drug, but it will probably not supplant any of the preparations now in use. No major new anticonvulsant drug evolved in 1959.

(See also ENDOCRINOLOGY; MEDICINE; PSYCHIATRY AND MENTAL HEALTH; SURGERY.)

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NETHERLANDS, The, or **HOLLAND.** This constitutional monarchy of northwestern Europe is bounded by Germany, Belgium, and the North Sea. Land area, 12,529 square miles; population (est. July 1, 1959), 11,346,153. About one quarter of the total area lies below sea level and is protected by some 1,500 miles of dikes. Principal cities and populations (est. Jan. 1, 1958) are: Amsterdam, the constitutional capital, 871,577; Rotterdam, 726,188; The Hague, seat of government, 605,751; Utrecht, 249,324; and Haarlem, 167,950.

Government.—The hereditary constitutional monarch is Queen Juliana of Orange and Nassau (b. 1909; acceded 1948). The bicameral Parliament, or States-General, has a First Chamber, or upper house, with 75 members elected by the provincial councils for a six-year term; and a Second Chamber, or lower house, which is the more important legislative body, with 150 members elected every four years (or after dissolution of Parliament by the sovereign) by proportional representation. The franchise is held by subjects over 23 years of age. Following the general elections of March 12, 1959, party alignment in the Second Chamber was as follows (with seating prior to the elections in parentheses): Catholic People's, 49 (49); Labor, 48 (50); Liberal, 19 (13); Anti-Revolutionary, 14 (13); Christian Historical Union, 12 (13); Political Reform, 3 (3); Communist, 3 (7); and Pacifist Socialist, 2 (0). Premier Jan Eduard de Quay (Catholic People's) heads a coalition cabinet sworn in on May 19, 1959 (see below, *Principal Events*).

Under the Statute of the Realm (effective on Dec. 29, 1954), the Netherlands, Surinam, and the Netherlands Antilles are constituted a single realm under the House of Orange. The three states have autonomy in domestic affairs, with defense and foreign relations the concern of the realm as a whole. Realm affairs are administered by a Council of the Realm consisting of ministers appointed by the Netherlands crown and ministers plenipotentiary appointed by the former colonies.

Education and Religion.—Illiteracy is virtually nonexistent in the Netherlands. In the 1957–58 school year, there were 3,942 infant schools (with 361,936 pupils); 7,832 primary schools (1,519,952 pupils), 1,618 secondary schools (351,188); and 11 universities (32,385). There are also many technical, vocational, teacher-training, and special schools. Private religious schools play a dominant role on the preprimary and primary levels. About 45% of the population is Protestant, and 38% is Roman Catholic. Most Protestants are members of the Dutch Reformed Church.

Finance.—Revised estimates for the 1958 budget are: expenditure, 8,190 million guilders; revenue, 7,357 million. The guilder equals U.S.$0.263. Defense expenditure in 1958 was estimated at 1,686 million guilders. At the end of 1958 the total national debt was 18,591 million guilders.

Transportation and Communications.—At the end of 1958 the state-owned railway system totaled 1,936 miles, of which 50% was electrified. State and other classified roads aggregated 8,483 miles in 1954, and unclassified roads, 15,400 miles (1950). Navigable rivers and canals, comprising Holland's vital inland waterway system, totaled 4,201 miles in 1957. As of Jan. 1, 1959, the Dutch merchant fleet comprised 1,578 vessels, aggregating 4,545,524 gross registered tons. K.L.M., the Dutch national airline, in 1958 operated air routes totaling 168,000 miles and linking 105 cities in 74 countries. As of Jan. 1, 1959, radio receivers numbered 2,489,642, and registered television sets, 391,036. In 1957 there were 375,676 passenger cars; 1,318,269 telephones; and 68 daily newspapers with a combined circulation of nearly 3 million.

Production.—For the Netherlands economy the year 1958 was one of recovery from the general recession begun in late 1957. Gross national product at market prices in 1958 was estimated at 35.91 billion guilders, a real gain of 1% over 1957 (after allowing for price increases). At the end of 1958, there were 11,256 industrial enterprises employing 994,900 workers. Largest industrial sectors are the chemical, metallurgical, and foodstuffs industries. The index of industrial production (1953 = 100) averaged 126 in 1958, the same as in 1957;

it increased from 130 in June 1958 to 146 in June 1959. Production of crude steel in 1958 was estimated at 1,437,600 metric tons (up 21.2% over 1957); crude petroleum, 1,620,000 (up 6.5%); coal, 11,879,963 (up 4.4%); and tin metal, 17,400 (down 41.5%). Electricity output in 1958 totaled 13,854 million kw.-hr., an increase of 3.6% over 1957. The Netherlands, which ranks sixth among the shipbuilding countries (excluding the USSR and China), delivered 162 vessels totaling a record 550,640 gross registered tons in 1958. The important tourist industry registered 2,868,183 nights spent by foreigners in Dutch hotels during 1958 (up 7% over 1957).

Agriculture employs about 12% of the labor force and accounts for about 12% of the gross national product. Output of cereal crops in 1958 totaled 1,731,000 metric tons, down about 2% from the bumper crop in 1957. Sugar production in 1958 was estimated at a record 500,000 metric tons, up 10% over 1957, due chiefly to an increase in area under sugar beet cultivation. Main crops and 1958 yields (in thousands of metric tons) were: wheat, 402.4; oats, 445.9; rye, 427.5; barley, 315.3; potatoes, 3,664; sugar beets, 3,878; mangolds, 3,827.9; and seed onions, 234.4. The Netherlands is one of the world's largest exporters of dairy products. Production of milk in 1958 totaled 6,242,000 metric tons; butter, 91,300; and cheese, 186,000.

Foreign Trade.—The value of Dutch exports in 1958 was 12,226 million guilders (up about 4% over 1957); imports, 13,774 million (down 12%). Principal categories of exported products in 1958 (in order of value) were dairy produce, eggs, and honey; chemical products; yarns, fabrics, and textiles (excepting clothing and footwear); electrical machinery and apparatus; and base metals. Chief imports (in order of value) were mineral fuels and lubricants; base metals; machinery (excepting electrical); transport equipment; chemical products; and other manufactures, foodstuffs, and raw materials. West Germany received an estimated 19% of total Dutch exports in 1958; Belgium-Luxembourg, 15%; and Great Britain, 12%. West Germany supplied about 19.5% of Holland's 1958 imports; Belgium-Luxembourg, 18%; and the United States, 11.2%.

Principal Events, 1959.—General elections held on March 12 resulted in a narrow victory for the Catholic People's Party, which received 1,895,222 votes to Labor's 1,821,677, and secured 49 seats to Labor's 48 in the Second Chamber. The greatest electoral gains were registered by the Liberal Party, which received 732,952 votes—about 230,000 more than in 1956. The Communists suffered the greatest reverses, polling nearly 100,000 fewer votes than in 1956 and losing four seats. A new political group, the Pacifist Socialist Party, received 110,174 votes and two seats in the Second Chamber.

A new coalition cabinet headed by Premier Jan Eduard de Quay of the Catholic People's Party was installed on May 19, after protracted discussions among political leaders. Party composition of the cabinet was as follows: Catholic People's, 6 members; Liberal, 3; Anti-Revolutionary, 2; and Christian Historical Union, 2. The Labor Party was not represented in the government for the first time since World War II.

The new government effected a reduction in the annual budget deficit by abolishing state subsidies for milk and reducing by 15% subsidies for housing construction. It also approved a general increase of 20% on rents, and a 2.5% increase in controlled wages and pensions, effective as of Jan. 1, 1960.

WIDE WORLD

Princess Beatrix of the Netherlands and Gov. Nelson Rockefeller examine a statue from Netherlands New Guinea, at New York City's Museum of Primitive Art on September 15.

In a note to the Indonesian government made public on March 4, the Netherlands protested against what it called "massive violation of the rights of Dutch subjects in Indonesia." The note declared that the Indonesian law nationalizing Dutch businesses in Indonesia (promulgated in December 1958) was not valid. Earlier, Indonesia had announced that the marketing of Indonesian tea and coffee would be shifted from the Netherlands to Belgium and West Germany, respectively. (See also INDONESIA.)

Holland and Norway negotiated a new agreement providing for further cooperation in the field of atomic energy. The agreement, signed on January 27 at the Dutch reactor center under construction at Petten, includes provisions for joint experiments and research, and for exchanges of information.

Princess Beatrix, heiress-presumptive to the Netherlands throne, visited the United States on September 11–21 to help celebrate the 350th anniversary of the landing in America made by the Dutch navigator, Henry Hudson. The princess arrived in New York Harbor on the new liner *Rotterdam*, which made its maiden voyage as the flagship of the Holland-American Line.

In 1959 the Dutch economy continued its recovery from the business recession of 1957–58, as nearly all sectors reported increased activity. Unemployment declined from 116,371 at the end of 1958 to 52,950 by mid-1959. Early in the year the Van Doorne Automobielfabriek at Eindhoven began production of automobiles, with its output goal of 200 cars per 8-hour day expected to be reached by early 1960.

W. R. F.

NETHERLANDS ANTILLES. An autonomous territory under the Netherlands crown, comprising two groups of islands in the Caribbean Sea. Area, 371 square miles; pop. (Dec. 31, 1957), 190,916, chiefly Negroes and persons of mixed descent. Dutch is the official language, although a popular tongue called Papiamento is widely used. Willemstad (est. 46,000), on Curaçao, is the capital.

The three larger islands—Curaçao (172 sq.mi.; pop., 124,340), Aruba (69 sq.mi.; pop., 57,213), and Bonaire (95 sq.mi.; pop., 5,663)—lie off the coast of Venezuela. The three smaller islands—St.

Martin (of which the northern part is French), St. Eustatius, and Saba—are east of Puerto Rico.

Government.—The Netherlands Antilles has internal autonomy, with defense and foreign relations decided by the Netherlands Council of the Realm. A Dutch governor represents the crown in the Antilles. An executive council or council of ministers is responsible to the Staten or Legislative Council, whose 22 members are popularly elected for a 4-year term. Prime Minister E. Jonckheer heads a coalition cabinet led by the Democratic Party.

Education and Religion.—In 1956 the territory had 108 public and private elementary schools (35,522 pupils), 3 secondary (611), 4 technical (799), and a few teacher-training and special schools. The population is predominantly Roman Catholic.

Finance.—The estimate for the central budget for 1958 was: revenue, 50,280,000 Netherlands Antilles guilders; expenditure, 50,156,000. The NA guilder equals U.S.$0.53. In early 1959 the Netherlands granted the Antilles a loan equivalent to $10 million to help meet debts incurred in the financing of development projects in Curaçao and Aruba.

Transportation and Communications.—The territory has no railways. Surfaced roads total about 475 miles. Hato Air Field on Curaçao is a Caribbean air terminal of some importance. Motor vehicles numbered 20,460 in 1958; telephones, 10,706.

Economy.—The petroleum refining industry dominates the economy. Two large refineries on Aruba and one on Curaçao refine crude oil obtained from nearby Venezuela. Output of petroleum products in 1957 totaled 38,381,000 metric tons (down 3% from 1956), including 22,835,000 of residual fuel oil, 4,736,000 of distillate fuel oils, and 3,801,000 of gasoline. Production of phosphatic guano on Curaçao amounted to 92,800 metric tons in 1957. Aloes, sorghum, beans, corn, and tropical fruits are grown, and there is some fishing, but the territory depends on imports for most foodstuffs. Tourism provides an additional source of income. Exports in 1958 totaled 1,525 million Netherlands Antilles guilders; imports, 1,693 million. Petroleum products constitute nearly all of the exports, and crude oil comprises the bulk of imports.

NETHERLANDS EAST INDIES. See INDONESIA.

NETHERLANDS GUIANA. See SURINAM.

NETHERLANDS NEW GUINEA. The western half of the island of New Guinea in the southwestern Pacific, including the Schouten Islands, Japen, Noemfoor, and other nearby islands. (The territory is also termed Western New Guinea, and, by the Indonesians, West Irian or Irian Barat.) Area, 159,375 square miles; pop. (est. 1958), 700,000, including about 14,000 Europeans (mainly Dutch) and 16,000 nonindigenous Asians. The natives are Papuan, Negrito, and Melanesian tribesmen. Hollandia (15,153) is the capital.

Government.—The territory is ruled by a Dutch governor (Pieter J. Platteel) aided by a council of the heads of administrative services. In some areas there are native advisory councils which cooperate with administrators. About half the population has been brought under administrative control; the remainder consists of isolated primitive tribes, many of which have had no contact with whites. In 1958, expenditure totaled 133 million guilders, or 65.9 million in excess of revenue; the deficit was made up by the Netherlands government.

Education and Religion.—In 1956 there were 1,033 primary schools (45,647 pupils), 5 secondary (409), 14 technical (570), and 6 teacher-training (368). Fewer than a third of the natives have been converted to Christianity.

Economy.—The natives grow coconuts, yams, taro, bananas, sago, and other food crops. There is also some stock raising and fishing. Oil deposits yielded 331,725 metric tons of petroleum in 1957. In 1959, concessions were granted to three Dutch firms and an American firm to mine the nickel and cobalt deposits on Waigeu Island and in the Cyclops Mountains area. Exports in 1958 totaled 24.2 million guilders; imports, 85.9 million. Chief exports were petroleum (267,000 metric tons, valued at 16.3 million guilders), copra, copal, nutmeg, mace, and crocodile skins.

Principal Events, 1959.—Sovereignty over Western New Guinea has been in dispute between the Netherlands and Indonesia since 1949. In 1957 Indonesia began a campaign of economic pressure against Dutch interests in Indonesia, and in 1959 continued to press demands for the territory. Following Indonesian Foreign Minister Subandrio's visit to Australia (which administers the eastern part of New Guinea), a joint Indonesian-Australian communiqué was issued on Feb. 15, 1959, in which Australia agreed to recognize any Netherlands-Indonesian agreement on Western New Guinea. Pending such an agreement, however, Australia continued to recognize Netherlands sovereignty. On August 17, Indonesian President Sukarno warned of further economic measures against the Dutch, but declared on December 6 that Indonesia would not resort to force to obtain the territory.

NETHERLANDS WEST INDIES. *See* NETHERLANDS ANTILLES.

NEUROLOGY. See NERVOUS SYSTEM.

NEVADA. Western state, United States; admitted to the Union, Oct. 31, 1864. The "Silver State" ranks 7th in area and 49th in population among the 50 states.

Area and Population.—Area: 110,540 square miles (land, 109,789; inland water, 751), divided into 17 counties. Population: (1950) 160,083; (est., July 1, 1958) 272,000. Populations of the state capital and of urban places with more than 4,000 inhabitants in 1950 (unless another date is given) are: Carson City, *the capital*, 3,082; Elko, 5,393; Las Vegas (special census, 1955), 44,795; North Las Vegas (special census, 1956), 12,902; Reno, 32,497; and Sparks, 8,203.

Executive.—Chief state officers in 1959:
Governor: Grant Sawyer (Democrat)
Lieutenant Governor: Rex Bell
Secretary of State: John Koontz
Treasurer: Dan W. Franks
Attorney General: Roger D. Foley
Supt. of Public Instruction: Byron Stetler

Constitution and Judiciary.—The present constitution went into effect in 1864. The Supreme Court comprises three justices; chief justice in September 1959 was Charles M. Merrill.

Legislature.—The Nevada Legislature comprises a 17-member Senate (in 1959, 10 Republicans and 7 Democrats) and a 47-member Assembly (33 Democrats and 14 Republicans), which meet commencing the third Monday in January.

The 1959 session approved 1959–60 fiscal year appropriation increases for education and new capital construction, authorizing funds from the $15 million surplus in the General Fund and from a $2.7 million balance in the distribution school fund. No new taxation was required. Special appropriations included $50,000 for a study of local and state fiscal affairs; $555,000 for a combined classroom and physical education building at the University of Nevada's Las Vegas campus and $2,572,912 for a library building at the Reno campus; $200,000 for the 1960 Winter Olympic Games Commission; $739,615 for property acquisition for the state capital complex development; and $20,000 for a study of financial and administrative problems in the public schools. School support was increased to $11 million.

Other legislation created a state Gambling Commission and a Colorado River Boundary Commission; ratified the Western Interstate Higher Education and the Western Interstate Corrections compacts; transferred regulation of foods and drugs and of weights and measures from the University of Nevada to the Department of Health and the Board of Stock Commissioners, respectively; established a Desert Research Institute at the University of Nevada; enacted an Installment Loan and Financing Act; stiffened penalties for selling narcotics; and extended real estate licensing coverage.

Finance.—In the 1958–59 fiscal year, state revenue of $86,422,952.03 comprised $21,201,255.12 from the federal government and $65,221,696.91 from state tax and other sources. Tax revenue included $11,057,369.49 from a 2% general sales tax, $9,060,249.41 from motor fuel taxes, and $3,887,162.20 from licensing. Expenditures of $86,779,645.71 consisted of $13,927,155.53 for education, $6,523,445.70 for health, welfare, and safety, $25,878,643.07 for highways, and $40,450,401.41 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $2,856,000.

Banking.—As of June 10, 1959, the state's 3 national banks had $298,129,000 in assets, $168,422,000 in demand deposits, and $108,665,000 in time deposits. The 3 state banks had assets of $125,946,782.90, demand deposits of $51,262,871.70, and time deposits of $42,339,920.20

Education.—School attendance is compulsory between the ages of 7 and 17, inclusive. Operating

expenditures for public elementary and secondary education in the 1958–59 fiscal year totaled $19,677,541.15 ($379.55 per pupil), and revenue comprised $8,707,311.96 from local school districts, $10,318,902.58 from the state, and $665,385.78 from the federal government. Outlays for construction and improvements amounted to $644,109.85, and teachers' salaries averaged $5,314 (high school, $5,333; elementary, $5,042).

In the 1958–59 school year there were 167 public elementary schools with 1,466 teachers and 49,073 pupils, and 45 junior and senior high schools with a combined teaching staff of 780 and enrollment of 20,019. The state's 16 private and parochial elementary and secondary schools enrolled 3,442 pupils. College and university enrollment totaled 3,354.

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from federal and state funds (excluding institutional costs) included $2,135,500 for the aged, $1,036,671 for dependent children, and $194,793 for the needy blind. A monthly average of 5,959 persons received assistance.

Labor Force.—The state's labor force totaled 111,200 persons on June 15, 1959, including 7,600 agricultural workers. Nonagricultural employment was up to 100,800, compared with 92,250 for the previous June 15 and also above the 94,850 average for the 12 intervening months. Of nonfarm employees in 1959, 28.8% were engaged in service industries, 19.74% in wholesale and retail trade, and 17.76% in government. Unemployment was down to 2,800 on June 15, 1959, from 5,350 a year earlier. The state paid $7,785,588 in unemployment compensation during the year ending June 30, 1959.

Manufacturing.—The state's 208 manufacturing plants in 1958 employed an average of 4,990 persons. Wages earned (1957) amounted to $24,134,000, and value added by manufacture totaled $92,172,000. Outlays for new plant and equipment were $8,752,000. Production workers averaged $108.62 for an average workweek of 41.3 hours in August 1959.

MAJOR NEVADA MANUFACTURES, 1957

Product or industry	No. of employees[1]	Salaries and wages	Est. value added by mfr.[2]
Chemicals and products	1,849	$11,163,638	$52,582,000
Iron and steel products	1,007	5,230,876	12,502,000
Printing and publishing	740	3,352,234	9,922,000
Food and kindred products	540	2,545,617	9,064,000
Stone, clay, glass products	357	2,081,606	5,309,000
Lumber and wood products	498	2,361,999	4,700,000

[1] Average per year. [2] For definition see footnote 1 in article *Industrial Production.* (Source: Business and Industry Department, Reno Chamber of Commerce.)

Mining.—In 1958 Nevada ranked 32d among the states in the value of its mineral output, with 0.41% of the national total. The state was the sole producer of brucite in 1958 and was first in manganese output; second in antimony, diatomite, mercury (19% of domestic output), and perlite; fourth in barite and copper; and fifth in silver.

NEVADA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Barite	59,407	$ 405,000
Copper	66,137	34,788,000
Fluorspar	12,338	340,000
Gold (ounces)	105,087	3,678,000
Gypsum	686,000	2,306,000
Iron ore, Usable (long tons)	594,000	3,149,000
Lead	4,150	971,000
Manganese ore	127,322	7,566,000
Mercury (76-pound flasks)	7,336	1,681,000
Sand and gravel	5,503,000	5,311,000
Silver (ounces)	933,000	844,000
Stone	813,000	1,335,000
Other minerals	...	6,257,000
Total	...	$68,293,000*

* Total adjusted to avoid duplication in the value of raw materials used in manufacturing cement or lime. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 totaled $35,250,000 compared with $34,986,000 for the corresponding period of 1958. For the full year 1958, income comprised $46,372,000 from livestock and livestock products (including $35,357,000 from cattle), $6,286,000 from crops, and $640,000 from government payments.

NEVADA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	713	720	720
Hay (1,000 tons)	609	645	472
Oats (1,000 bu.)	241	160	132
Potatoes (1,000 cwt.)	297*	352	260
Wheat (1,000 bu.)	473	754	756

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 3,000 farms in the state in 1958. Total acreage (1954) of 8,231,000 included 360,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 597,000 cattle and 405,000 sheep. There were 7,086 family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1954.

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $24,319,856.68, and 278.8 miles of new construction were completed.

Highways and roads on June 30, 1959, totaled 44,290.6 miles (4,356.9 surfaced). Registered *motor vehicles* numbered 165,293 on the same date, including 115,609 passenger cars. There were (1958) 4 *railroads* operating 1,765.13 main line miles, 5 regularly scheduled *airlines,* and 50 public-use *airports and airfields.*

Communications media (1958) included 1 FM and 17 AM *radio stations;* 4 VHF *television stations;* 8 daily *newspapers* (circulation 73,457) and 23 other newspapers; and (Jan. 1, 1959) 54,700 business and 47,400 residential *telephones.*

Principal Events, 1959.—In the spring legislative session, Gov. Grant Sawyer set a "get tough" policy toward legal licensing of gambling in Nevada. He asked for a new law for stricter control, intended to prevent "hidden interests" in the casinos, or secret ownership by ex-convicts or racketeers. At a considerable political risk, he made this a major issue and won passage of the law by a small margin. In his first year in office the governor appointed two new state Supreme Court justices. Ordinarily the court's three justices are elected; however, this year two vacancies occurred when one justice retired and when Chief Justice Charles Merrill was named to the U.S. Circuit Court in San Francisco by President Eisenhower.

Near Ely, in the eastern part of the state, an effort is being made to expand Lehman Caves National Monument and Wheeler Peak into a 146,000-acre Great Basin national park. The caves have crystal stalactite formations comparable to any in the country, and Wheeler Peak (over 13,000 feet), the second highest mountain in Nevada, has the state's only living glacier. Creating a national park, however, would cancel local rights, which has raised some opposition from fish and game sportsmen, mining interests, and sheep and cattle livestock organizations.

The main highways between Reno and the site of the 1960 Winter Olympics, at Squaw Valley, Calif., near Lake Tahoe, have been widened to four lanes in major part. These roads include both U.S. 40 via Truckee and U.S. 50 via Carson City.

The University of Nevada campus at Reno and that of its Nevada Southern Branch at Las Vagas

both had major construction projects under way during the year. (See also above, *Legislature.*)

Las Vegas has built a $5 million convention hall and municipal auditorium, but it has been little used, partly because of boycotts by large casino-hotels which have their own convention facilities. Meanwhile, Reno has rushed through its plans for a similar auditorium, approving a $4.5 million bond issue.

Principal Events by: AUSTIN E. HUTCHESON, *Professor of History, University of Nevada.*

NEW BRUNSWICK. One of the three Maritime provinces of Canada, New Brunswick has an area of 27,985 square miles, of which 512 square miles are water. Nearly 80% of the land area is forested, mainly by coniferous trees. The population (1956 census) is 554,616 (est. Sept. 1, 1959, 593,000), with 57% of British origin and 38% of French descent. There are some 2,200 native Indians. The urban population represents 45.8% of the total. Chief cities, with 1956 populations, are Fredericton, the capital, 18,303, Saint John, 52,491; Moncton, 36,003; Edmundston, 11,997; and Lancaster, 12,371.

Government.—New Brunswick is represented in the Canadian Parliament by 10 senators (appointed) and 10 members (elected) of the House of Commons. The crown is represented in the province by a lieutenant-governor. The provincial premier presides over a cabinet, or council of ministers, drawn from and responsible to a Legislative Assembly of 52 members who are elected for five-year terms. In 1956 the Hon. Hugh John Flemming, who in 1952 pioneered the recent trend to Conservatism in Canada, was returned as premier. The Progressive Conservative Party, which he heads in New Brunswick, held 34 seats in 1959, while the Liberal opposition had 14 seats and there were four vacancies. In the 1958 federal election New Brunswick sent 7 Progressive Conservatives and 3 Liberals to Ottawa.

Finance.—For the fiscal year ending March 31, 1959, revenues were $76,925,804, and expenditures were $76,746,721. The net debt was reduced by $985,079 to $106,426,000 (over the last eight years the province's net debt has fallen by some $10 million). The increase in revenues of $9.27 million over the previous year is largely attributable to receipt of the first Atlantic Provinces Adjustment Grant of $7.5 million from the federal treasury.

Education.—Primary and secondary education is free and compulsory for all children aged 7 to 16, inclusive. The enrollment for the year ending June 30, 1958, was 129,683, and there were 5,274 teachers. The province has 7 universities and colleges with a combined enrollment of about 3,300. Nearly half of the students attend the provincial nonsecretarian University of New Brunswick at Fredericton; a third attend Mount Allison University at Sackville (sponsored by the United Church of Canada); and the remainder are enrolled in 5 small Roman Catholic universities and colleges.

Transportation and Communications.—New Brunswick is served by both the Canadian National and Canadian Pacific railways, and by Trans-Canada and Maritime Central airlines. Saint John, the principal seaport, is ice-free and contains one of the world's largest dry docks. There is daily ferry service across the Bay of Fundy between Saint John and Digby, Nova Scotia. New Brunswick has 6 daily newspapers, 11 radio stations, and 2 television stations.

Manufacturing and Mining.—Manufacturing, New Brunswick's principal industry, employs approximately 22,000 persons. The chief manufactures are those based on the forest, sea, and farm, although shipbuilding, heating apparatus, footwear, and confectionery products are important. Manufacturing was adversely affected by the 1957–58 recession, and the gross annual value of factory shipments declined from $313.2 million in 1956 to $311.1 million in 1957, and to $304.4 million in 1958.

The province's mineral output was valued at $17 million in 1958, a decline of $6.2 million from the previous year. New Brunswick's share of national mineral production declined from 1.1% in 1957 to 0.8% in 1958. Coal accounts for about half of the province's mineral production. Great activity had been expected in the large, high-grade base-metal deposits in the northeastern section of New Brunswick, but the fall of world base-metal prices and the effects of United States trade policies brought disappointment and a slowing down in exploration and development in this field.

Power Development.—With the completion in 1957 of the first unit (of three) of the hydroelectric plant at Beechwood on the Saint John River, the province was left with a small power surplus. This is expected to disappear when base-metal prices recover and large-scale mining and smelting operations are undertaken. With this in mind, the provincial government, through the New Brunswick Electric Power Commission, began work on a 66,000-hp. thermal unit at Saint John, and purchased the Grand Falls plant from private owners with a view to redevelopment. The government plans further dams on the Saint John River, and looks forward with interest to the decision of the International Joint Commission (IJC) regarding a proposed $500 million tidal power project in Passamaquoddy Bay on the Maine–New Brunswick coast. On Oct. 16, 1959, the IJC released an engineering report which found the plan economically feasible.

Agriculture.—According to the 1956 census, farm area totaled 2,981,419 acres (a decline of 14% since 1951), and farms numbered 22,116 (a decline of 16%). Most farms are small (40–120 acres) and mixed farming is the rule. Net income from farm operations, including farm wood lots, was $48.4 million in 1956 and $43.9 million in 1957; the estimate for 1958 was $46.1 million. Livestock, pulpwood, and field crops, especially potatoes, provide the major part of farm income; but apples, small fruits, and poultry are also important. A recent development has been the establishment of food processing and freezing plants.

Forestry and Fisheries.—New Brunswick's forest industries have an annual output value of some $150 million, two thirds of which is contributed by the 8 pulp and paper mills. The provincial government has virtually eliminated the spruce budworm by means of extensive aerial spraying, and has attempted to encourage greater development and utilization of the forests.

The value of New Brunswick sea fisheries was $22.8 million in 1956, the latest year for which figures are available. Lobsters are the most valuable fish product, followed by sardines, cod, and herring. The inland salmon fishing attracts a large number of fly-fishermen from the United States.

Principal Events, 1959.—Meeting at Fredericton on September 14–15 in their annual conference, the premiers of the four Atlantic provinces (New Brunswick, Nova Scotia, Newfoundland, and Prince Edward Island) decided to engage a financial expert with a worldwide reputation to study the effects of federal credit policy on the Atlantic region.

New Brunswick was honored by the visit of Queen Elizabeth II and Prince Philip on July 28–30. The royal couple received an enthusiastic welcome from this United Empire Loyalist-founded province.

The mile-long Princess Margaret Bridge across the Saint John River at Fredericton was completed late in the year and opened to traffic.

On June 19 the fishing fleet out of Escuminac on Northumberland Strait was virtually destroyed in a storm in which 35 fishermen lost their lives. A relief fund for their families raised more than $400,000, and Queen Elizabeth paid a visit to the stricken families.

The Lord Beaverbrook Art Gallery, on the banks of the Saint John River at Fredericton, was formally opened on September 16 by the donor, a British publisher and financier who spent his boyhood in the province. The gallery, one of the finest in Canada, houses Lord Beaverbrook's $3,000,000 art collection and a few other donations, numbering some 300 paintings in all.

JAMES K. CHAPMAN,
Associate Professor of History, University of New Brunswick.

NEW CALEDONIA. A French overseas territory in the eastern South Pacific. Area (with dependencies), 8,548 square miles; pop. (Dec. 31, 1957), 72,478, including 36,668 Melanesians, 24,882 Europeans (mostly French), and a few thousand workers from Vietnam and Java. Nouméa (22,238) is the capital. The dependencies include the Loyalty Islands, Isle of Pines, Huon Islands, Chesterfield Islands, Walpole Island, Belep Islands, and the distant Wallis Islands and Futuna Islands.

The French-appointed governor is aided by a Council of Government (ministry) chosen by the Territorial Assembly. The assembly has 30 members elected for 5 years by universal suffrage. In the elections of Dec. 7, 1958, the Caledonian Union obtained 18 seats in the assembly. On Dec. 17, 1958, the assembly decided that New Caledonia

would retain its status as a French overseas territory. (Wallis and Futuna islands voted in favor of overseas territorial status on Dec. 27, 1959.) The ordinary budget for 1958 totaled 1,030 million francs CFP; the extraordinary budget, 172.5 million (the franc CFP equals 5.50 metropolitan francs). In 1957, primary schools had 13,060 pupils; secondary, 1,079; technical, 380.

Mining and metallurgy are the chief industries. Production of nickle ore totaled 591,400 metric tons in 1958 (1,799,000 in 1957); chrome ore, 47,400; iron ore, 295,000; and nickle matte, 6,422. Crops include coffee, copra, cotton, manioc, tobacco, and bananas. Cattle and other livestock are raised, and meatpacking is important. Exports in 1958 totaled 2,030 million francs CFP (down more than a third from 1957); imports, 3,438 million. Ores and metals provide the bulk of exports. Trade is mostly with France. The territory has no railways. Roads total 1,739 miles (1957). Nouméa is serviced by international steamship lines and airlines.

NEW GUINEA. This second largest island in the world (area, 342,915 square miles) lies north of Australia in the western Pacific Ocean. It comprises Netherlands New Guinea (q.v.) and two Australian-administered areas: the Territory of Papua; and North Eastern New Guinea, which is a United Nations trust territory (see PAPUA AND NEW GUINEA, TERRITORY OF). In mid-1958 the aggregate population was estimated at 2,528,000 (Papua and New Guinea, 1,828,000; Netherlands New Guinea, 700,000).

NEW HAMPSHIRE. New England state, United States; one of the original 13 states. The "Granite State" ranks 44th in area and 45th in population among the 50 states.

Area and Population.—Area: 9,304 square miles (land, 9,017; inland water, 287), divided into 10 counties. Population: (1950) 533,242; (est., July 1, 1958) 582,000. Urban places with populations above 10,000 (as estimated by the State Planning and Development Commission for 1957) are:

Berlin	18,269	Laconia	15,017
Claremont	14,484	Manchester	84,544
Concord (*capital*)	28,232	Nashua	39,989
Dover	18,667	Portsmouth	18,678
Keene	17,385	Rochester	14,643

Executive.—Chief state officers in 1959:
Governor: Wesley Powell (Republican)
Secretary of State: Harry E. Jackson
Treasurer: Alfred S. Cloues
Attorney General: Louis C. Wyman
Comptroller: Leonard S. Hill
Commissioner of Education: Charles F. Ritch, Jr.

Constitution and Judiciary.—The present constitution went into effect in 1784. The Supreme Court comprises five justices; chief justice in 1959 was Frank R. Kenison.

Legislature.—The New Hampshire General Court comprises a 24-member Senate (in 1959, 18 Republicans and 6 Democrats) and a 400-member House of Representatives (264 Republicans and 136 Democrats) which meet in odd-numbered years commencing the first Wednesday in January.

The 1959 session was notable for being the longest (110 days) and, at times, the most turbulent in the state's history. Despite a serious split in the ranks of the Republican majority and steadily worsening relations with Gov. Wesley Powell, the General Court had many accomplishments to its credit. It approved for the biennium a $47 million budget which provided for substantially higher appropriations for elementary and secondary school building construction, welfare payments to nursing homes, state promotional activities, and faculty salary increases at the University of New Hampshire. It also approved a $31 million accelerated highway program to be completed in two instead of three years, and it approved two $1 million bond issues, one authorizing the state Port Authority to launch self-liquidating projects in Portsmouth Harbor and the other calling for a multiple apartment for graduates and faculty at the state university. The legislature established a program by which the state would provide up to 20% of the cost of setting up plants for pollution abatement. It also adopted a new franchise tax on gas and electric utilities to take the place of that enacted in the 1958 special session, and it increased the tax on gasoline from 6 to 7 cents. To help finance a program to enlarge and modernize the state's airports, a fee of $1 was levied for each passenger boarding a commercial airplane in the state. Workers injured on the job or unemployed were voted higher maximum benefits, and real estate salesmen and brokers were required to be licensed. A new probationary driver's license was authorized for beginners and for drivers regaining their license after revocation. One of the legislature's first acts was to reimburse the legislator who in 1958 paid more than $23,000 for the new seats in Representatives' Hall.

The 1959 session was also notable for what the legislature did not pass. It voted down Governor Powell's proposals to combine two state commissions—Planning and Development, and Forestry and Recreation—into a single Department of Commerce; to abolish the Milk Control Board; and to eliminate the retail price-fixing of milk.

The 1956 Constitutional Convention met for three days in December 1959 to consider amendments to the state constitution. Of the 20 amendments proposed, only four were voted, and these must be approved by the voters in 1960 before they can go into effect. They would: (1) stop mileage payments to legislators after 90 days or July 1, whichever date comes first; (2) give the legislature authority to fill vacancies in the state or local governments caused by emergency attack; (3) boost from $100 to $500 the minimum amount of damage claims in civil suits for which a jury trial can be demanded; and (4) allow the legislature to delete nonresidents from the population census in computing apportionment of seats in the state House of Representatives.

Finance.—In the 1958–59 fiscal year, state revenue of $126,816,704 comprised $35,974,716 from state tax sources, $24,258,617 from the federal government, and $66,583,371 from other sources. Tax revenue consisted of $11,637,055 from motor fuel taxes, $14,791,339 from licensing, and $9,546,322 from other sources. Expenditures of $130,313,386 comprised $60,630,902 from the General Fund, $47,867,174 from the Highway Fund, $5,122,263 from the Capital Fund, and $16,693,047 from other funds. Long-term indebtedness on June 30, 1959, amounted to $71,750,000.

Banking.—As of June 10, 1959, the state's 51 national banks had $295,869,000 in assets, $203,150,000 in demand deposits, and $56,907,000 in time deposits. The 58 state banks on June 30, 1959, had assets of $698,946,091.20, time deposits of $586,895,160.40, and demand deposits of $25,513,762.39.

Education.—In school districts which include a high school, attendance is compulsory between the ages of 6 and 16, inclusive; otherwise, attendance may be terminated at 14. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $29,498,944.85 ($301.62 per pupil); an additional $50,511.03 was spent for veterans training and other adult educa-

NEW HAMPSHIRE SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (k-8)	408	2,454	68,090
Public junior high (7–8)	30	313	5,956
Public senior high (9–12)	81	1,192	23,432
Approved public academies (9–12)	9	83	1,616
Private and parochial elementary and secondary	121	1,117	29,940
Technical institutes	2	27	332
Junior colleges	1	46	528
Teachers colleges	2	95	1,211
Colleges and universities	9	697	8,900

New Hampshire's White Mountains were hit by heavy rains and landslides in October. Here, a police car is trapped by debris washed across the highway in Franconia Notch.

WIDE WORLD

tion programs. Revenue comprised $26,307,920.47 from local school districts, $1,921,799.08 from the state, and $1,319,736.33 from the federal government. Outlays for construction and improvements amounted to $7,087,962.76, and teachers' salaries averaged $3,956 (high school, $4,248; elementary, $3,767).

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $9,038,428.16, including $4,690,106.86 for the aged, $1,969,243.86 for dependent children, and $1,755,728.88 for general relief. A monthly average of 14,902 persons received assistance.

Labor Force.—The state's labor force totaled 236,750 in June 1959, including 14,000 agricultural workers. Nonagricultural employment was up to 199,830 persons from 190,230 reported the previous June and also above the 190,800 average for the 12 intervening months. Major nonfarm employment categories in 1959 were manufacturing, accounting for 43.2% of the total; trade, 16.2%; and government, 15.2%. Unemployment, confined chiefly to nonfarm groups, was down to 8,200 in June 1959 from 11,850 a year earlier.

Manufacturing.—There were 80,083 persons employed in manufacturing plants in the state during 1957 whose wages totaled $285,442,000. Value added by manufacture totaled $515,082,000, and outlays for new plant and equipment amounted to $25,410,000. Production workers averaged $68.57 for an average workweek of 40.1 hours in July 1959.

MAJOR NEW HAMPSHIRE MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Leather and leather goods	20,537	$64,658	$91,608
Nonelectrical machinery	8,497	36,220	79,985
Textile mill products	14,173	47,791	78,187
Pulp, paper, and products	6,330	28,335	61,967
Electrical machinery	7,638	27,578	52,631
Lumber and wood products	6,120	17,748	28,378
Printing and publishing	2,491	10,713	17,745

* For definition, see footnote 1 in the article, *Industrial Production.*
(Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 New Hampshire ranked last among the states in the value of its mineral output, with 0.02% of the national total. The state was second in the production of sheet mica and third in feldspar output.

NEW HAMPSHIRE MINERAL PRODUCTION, 1958

Mineral	Quantity	Value
Clays	26,100	$ 26,000
Mica	38	616,000
Sand and gravel	4,940,000	2,620,000
Other minerals	...	615,000
Total	...	$3,877,000

(Source: U.S. Bureau of Mines and the New Hampshire State Planning and Development Commission.)

Agriculture.—Cash farm income for the first nine months of 1959 was down to $42,319,000 from $46,251,000 in the corresponding period of 1958. For the full year 1958, income comprised $53,389,000 from livestock and livestock products, $9,182,000 from crops, and $552,000 from government payments. Principal income sources in 1958 were eggs, $20,222,000, and dairy products, $19,193,000.

There were 10,100 farms in the state in 1958. Total acreage (1954) of 1,457,000 included 247,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 97,000 cattle and 2,883,000 chickens (excluding commercial broilers). There were 17,768 family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1959.

NEW HAMPSHIRE CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,098	1,600	1,630
Corn (1,000 bu.)	516	539	564
Hay (1,000 tons)	350	310	295
Maple sirup (1,000 gal.)	54	54	43
Oats (1,000 bu.)	78	43	39
Potatoes (1,000 cwt.)	507*	360	340

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $42,550,000, and 61.4 miles of new construction were completed in 1958. (See also below, *Principal Events, 1959.*)

Highways and roads on Jan. 1, 1959, totaled 13,898 miles (7,368 surfaced). Registered *motor vehicles* (April 1, 1958—March 31, 1959) numbered 226,045, including 191,605 passenger cars. There were (1959) 7 *railroads* operating 1,186 line miles; 2 regularly scheduled *airlines;* and 29 *airports and airfields* (24 commercial and municipal, 1 military, and 4 private).

Communications media (1958) included 14 AM and 4 FM *radio stations;* (1959) 2 *television stations;* (1958) 9 daily *newspapers* and 40 other newspapers; and (Jan. 1, 1959) 52,500 business and 150,800 residential *telephones.*

Principal Events, 1959.—Politically, 1959 was a year of controversy and confusion. From early summer, Gov. Wesley Powell was embroiled with many of the old guard leaders of his own Republican Party inside and outside the legislature. It was also a year of watchful waiting and maneuvering for the rival groups supporting the presidential candidacy of Vice President Richard M. Nixon and New York's Gov. Nelson A. Rockefeller, until the latter announced on December 26 that he would not seek the nomination.

In the fall, ground was broken on two badly needed water projects—the $30 million flood control project near Hopkinton which is to be built by Army engineers under an interstate compact between Massachusetts and New Hampshire, and a $2.8 million dam and reservoir to be built on the Bellamy River in Madbury to provide water for Pease Air Force Base and the City of Portsmouth. Two new highways were opened to traffic: the 34-mile Kancamagus Highway between Conway and Lincoln through the heart of the White Mountain National Forest, and a 7-mile extension to the F. E. Everett Turnpike north of Concord.

In July, television station WENH began broadcasting at Durham; it is the only educational station serving northern New England.

Late in October the White Mountain region was lashed by a southeaster. The torrential rains which followed in its wake flooded all major routes into Pinkham, Franconia, and Crawford notches, and set off a landslide on Mount Lafayette which buried U.S. Route 3 under mounds of debris 10 to 23 feet high.

The U.S. Supreme Court affirmed, on June 8, the contempt conviction of Dr. Willard Uphaus, the operator of a summer camp in New Hampshire who had refused to produce guest lists during an investigation by the state attorney general of subversive activities (see also Civil Liberties). He was sentenced on December 14 to a year's imprisonment.

Legislature and Principal Events by:
Robert B. Dishman,
Professor of Government,
University of New Hampshire.

NEW HEBRIDES. See Western Pacific Islands, British.

NEW JERSEY. Middle Atlantic state, United States; one of the original 13 states. The "Garden

State" ranks 46th in area and 8th in population among the 50 states.

Area and Population.—Area: 7,836 square miles (land, 7,522; inland water, 314), divided into 21 counties. Population: (1950) 4,835,329; (est., July 1, 1958) 5,799,000. Urban places with populations above 20,000 (as estimated by the State Department of Conservation and Economic Development for July 1, 1958) are:

Atlantic City	64,060	Montclair	46,642
Bayonne	79,456	New Brunswick	43,121
Belleville	36,420	Newark	467,707
Bergenfield	22,623	North Bergen	43,332
Bloomfield	54,932	Nutley	30,936
Bridgeton	20,918	Orange	41,304
Camden	132,752	Parsippany-Troy Hills	21,133
Clifton	76,919	Passaic	60,689
Cranford	23,630	Paterson	147,353
East Orange	83,678	Pennsauken	29,475
Edison	30,592	Perth Amboy	44,682
Elizabeth	121,929	Phillipsburg	21,208
Englewood	25,929	Plainfield	47,359
Ewing	24,597	Rahway	27,490
Fairlawn	31,455	Ridgewood	21,195
Garfield	31,164	Roselle	21,298
Hackensack	32,959	Rutherford	20,134
Hamilton	56,455	Summit	21,673
Hillside	23,250	Teaneck	40,239
Hoboken	51,693	Trenton (*capital*)	136,450
Irvington	61,841	Union	48,175
Jersey City	306,934	Union City	55,961
Kearny	40,164	Vineland	35,234
Linden	40,565	West New York	38,140
Long Branch	28,782	West Orange	36,391
Lyndhurst	22,442	Westfield	26,449
Maplewood	26,131	Woodbridge	56,351
Middletown	26,870		

Executive.—Chief state officers in 1959:
Governor: Robert B. Meyner (Democrat)
Secretary of State: Edward J. Patten
Teasurer: John A. Kerwick
Attorney General: David D. Furman
Auditor: Frank Durand
Commissioner of Education: Frederick M. Raubinger

Constitution and Judiciary.—The present constitution went into effect in 1948. The Supreme Court comprises seven justices; chief justice in 1959 was Joseph Weintraub, appointed in 1957.

Legislature.—The New Jersey Legislature comprises a 21-member Senate (in 1959, 13 Republicans and 8 Democrats) and a 60-member House of Assembly (42 Democrats and 18 Republicans) which meet annually commencing the second Tuesday in January.

The 1959 session approved a $405,140,800 budget for the 1959–60 fiscal year, including $500,000 for a widened scholarship program and $400,000 for state library aid, and passed a supplemental appropriation of $3,915,257 to meet current and prior obligations. Other legislation increased the salaries of full-time judges in the state by $2,000; insured or guaranteed maximum yearly loans of from $1,000 to $5,000 to a student by a bank; transferred the administration of aid to dependent children from state to county jurisdiction; and set up special educational services for emotionally and socially maladjusted pupils. Life insurance companies were permitted to issue variable annuity contracts; local assessors who fail to comply with the 1959 Supreme Court mandate that real estate be levied at 100% of full value were made immune to prosecution; and the state was given control over highway advertising.

To meet increasingly complex transit and commuter problems, the legislature approved state participation in a New York–New Jersey metropolitan transit district (effective on approval of similar legislation by New York State); created a Division of Railroad Transportation in the Highway Department and appropriated $50,000 for its initial operation; and banned unauthorized rail cuts. (See also below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $713,824,973 comprised $461,465,855 from state tax sources, $172,464,485 from the federal government, and $79,894,633 from other sources. Tax revenue consisted of $18,698,030 from corporate income taxes, $92,467,526 from motor fuel taxes, $68,104,461 from licensing, and $282,195,838 from other state tax sources. Expenditures of $718,946,771 comprised $148,362,204 for education, $269,004,635 for health, welfare, and safety, $142,785,103 for highways, and $158,794,829 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $102,521,000.

Banking.—As of June 10, 1959, the state's 165 national banks had $7,137,546,000 in assets, $2,060,685,000 in demand deposits, and $1,684,935,000 in time deposits. The state's 115 other banks had assets of $4,532,049,000, demand deposits of $1,555,421,000, and time deposits of $2,557,897,000.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $363,644,280.40 ($409.65 per pupil), and revenue included $270,722,625 from local school districts, $70,099,457 from the state, and $1,735,047 from the federal government. Outlays for construction and improvements amounted to $111,320,629.48. The National Education Association estimated teachers' salaries (1959–60) to average $5,740 (high school, $5,950; elementary, $5,625).

RUTGERS UNIVERSITY

In the presence of New Jersey's Gov. Robert Meyner (center), Dr. Mason Gross (r.) is sworn in as president of Rutgers University by Chief Justice Joseph Weintraub, May 6.

NEW JERSEY SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k-6)	1,665	22,012	592,429
Public junior high (7–9)	127	10,719	211,510
Public senior high (10–12)	170	9,252	171,093
Vocational and special	48	948	27,608
Junior colleges	11	192*	2,499*
Teachers colleges	6	744*	16,479*
Colleges and universities	22	4,058*	55,475*
Other higher institutions	21	188*	2,020*

* Includes full- and part-time.

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from local, state, and federal funds (excluding institutional costs) totaled $57,606,119, including $19,370,645 for the aged, $17,617,360 for dependent children, and $6,193,942 for the permanently and totally disabled. A monthly average of 98,000 persons received assistance. State expenditures for mental health activities approximated $47,738,000; for correctional and penal programs, $9,453,000.

Labor Force.—The state's labor force totaled 2,112,500 in July 1959, including 18,500 agricultural workers. Nonagricultural employment was up to 1,931,500 from 1,892,500 in the previous July and above the average of 1,886,900 for the 12 months ending June 1959. Of nonfarm employees in July 1959, 40.3% were employed in manufacturing, 18.5% in trade, and 11.7% in government. Unemployment, which reached a post-1946 peak of 221,000 in January 1959, fell to a 19-month low of 157,400 in May 1959. By July the number of jobless had fallen to 148,000 from 216,000 a year earlier.

Manufacturing.—The 839,666 persons employed in manufacturing plants in the state during 1957 earned $4,052,986,000 in wages. Value added by manufacture totaled $7,719,418,000, and outlays for new plant and equipment amounted to $527,485,000. Production workers in manufacturing averaged $92.87 for an average workweek of 40.5 hours in August 1959.

The state continued in 1959 to acquire new industrial scientific and research facilities, and additional power sources for support of basic in-

MAJOR NEW JERSEY MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Chemicals and products	83,851	$481,289	$1,481,818
Electrical machinery	106,624	531,943	911,021
Food and kindred products	62,191	296,259	722,496
Nonelectrical machinery	75,224	398,381	678,713
Transportation equipment	58,463	321,859	667,113
Fabricated metal products	53,537	267,685	501,914
Apparel and related products	80,877	233,597	368,073
Primary metal industries	38,409	204,994	344,410
Stone, clay, glass products	33,615	140,295	273,971
Instruments and related products	30,684	169,092	264,325

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

dustry. On January 20, for example, a nuclear research reactor, considered the world's largest such privately owned facility, went into operation at Plainsboro; in May the Public Service Electric and Gas Company's $110 million generating station began commercial operation at Ridgefield Park; and on November 5 the Esso Research and Engineering Company dedicated a $7.5 million research center at Florham Park.

Mining.—In 1958 New Jersey ranked 36th among the states in the value of its mineral output, with 0.30% of the national total. Income from mineral production was at its lowest since 1954.

NEW JERSEY MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clay	684,000	$ 2,181,000
Coke	745,362	...[1]
Iron ore, usable (long tons)	...[2]	...[2]
Manganiferous residuum	...[2]	...[2]
Peat	18,397	185,000
Sand and gravel	9,877,000	16,145,000
Stone	8,229,000	19,193,000
Zinc[3]	607	125,000
Other minerals	...	12,551,000
Total	...	$50,380,000

[1] Values for processed minerals are not included in the total. [2] Figure withheld to avoid disclosing confidential data from an individual company. [3] Recoverable content of ore. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in 1958 totaled 250,139,727 pounds valued at $8,888,539. Principal species were menhaden (200,327,077 pounds valued at $2,737,871) and clams (14,791,170; $2,135,286).

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $234,145,000 from $240,436,000 in the corresponding period of 1958. For the full year 1958, income comprised $192,042,000 from livestock and livestock products, $122,020,000 from crops, and $2,733,000 from government payments. Principal income sources in 1958 were eggs, $90,188,000, and dairy products, $63,518,000.

The state had 22,700 farms in 1958. Total acreage (1954) of 1,665,000 included 788,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 213,000 cattle and 14,371,000 chickens (excluding commercial broilers). There were 38,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

NEW JERSEY CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	2,715	2,500	3,400
Corn (1,000 bu.)	8,881	10,608	12,350
Cranberries (bbl.)	85,900	89,000	95,000
Hay (1,000 tons)	449	541	560
Peaches (1,000 bu.)	1,742	2,600	2,400
Potatoes (1,000 cwt.)	4,177*	4,050	3,870
Soybeans (1,000 bu.)	555	1,125	1,144
Strawberries (1,000 lb.)	8,784*	10,260	9,860
Sweet potatoes (1,000 cwt.)	1,379*	1,440	1,360
Tomatoes (1,000 cwt.)	847*	722	760
Wheat (1,000 bu.)	1,778	1,768	1,581

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal spending for highways in 1958 totaled $110,727,679, and 67 miles of new state highways were completed. Under construction in 1959 was a $6 million, 2-mile freeway joining the New Jersey Turnpike to the Bergen-Passaic Expressway, and a $200 million state-federal program of road improvements, especially along the shore routes.

Highways and roads on Dec. 31, 1958, totaled 30,720 miles, all of which were surfaced. Registered *motor vehicles* numbered 2,327,022 on the same date, including 1,940,538 passenger cars. There were (1959) 27 *railroads* operating 2,012 line miles; 11 regularly scheduled *airlines;* and 149 *airports and airfields* (72 commercial and municipal, 2 military, 60 private, and 15 other).

Communications media (1959) included 26 AM and 4 FM *radio stations;* 1 VHF *television station;* 27 daily *newspapers* (circulation, 2,264,087) and 267 other newspapers (865,052); and (January 1) 695,100 business and 1,982,500 residential *telephones.*

Principal Events, 1959.—Concern with the plight of colleges and commuters engaged public interest throughout the year. After prolonged controversy the legislature enacted a college scholarship bill over the governor's veto. The measure would ultimately make available to 5% of the state's high school graduates each year $400 grants for college tuition. One fifth of the awards might go to students attending out-of-state colleges, while the remainder could be used at any public or private college in New Jersey. In order to secure funds for the expansion of physical facilities at eight state-supported institutions of higher education, the legislature authorized a public referendum on a $66.8 million bond issue.

The commuter crisis, involving principally northern New Jersey residents working in New York City, was precipitated by actual and threatened reductions in passenger train service by financially hard-pressed railroads. Many remedial plans were debated by the legislature. Ultimately an administration-sponsored proposal to use surplus funds accumulated by the immensely profitable New Jersey Turnpike to finance a solution to the problem was adopted and placed before the electorate for approval.

On November 3, the voters gave strong endorsement to the $66.8 million college bond issue and were equally decisive in rejecting the turnpike fund diversion proposal. Another public question, giving legal sanction to "amusement games" on boardwalks and in amusement parks, also won approval. A referendum forbidding Sunday sales of most commodities was approved in 12 of the 15 counties in which the question appeared on the ballot. The bond issue was implemented by the legislature on November 23.

The general election revealed little change in the relative strength of the two parties. Although the Democrats added Senate seats in Burlington and Gloucester counties to bring their total to 10, the Republicans retained a 1-vote margin. Democratic strength in the General Assembly was reduced to 34, as against 26 Republicans, because of the loss of 7 seats in Essex County and 1 in Union County. In Jersey City voters approved a proposal to create a commission to study a change in the city's form of government.

Urban renewal programs, already under way in Newark, Jersey City, Trenton, Camden, and other large communities, acquired a new dimension when the state Department of Conservation and Economic Development announced on August 3 the launching of a demonstration regional survey

of 9 northeastern counties to analyze the redevelopment and rehabilitation possibilities in that metropolitan area. Meanwhile, Rutgers University received a $750,000 grant from the Ford Foundation to undertake a program of research and service in the field of urban problems.

A comprehensive reappraisal of the state's welfare and correctional agencies, the first such study in 40 years, resulted in numerous recommendations for changes in policy and administration. The most fundamental were proposals to redefine the authority of lay boards associated with each state institution and to revise parole procedures.

An outbreak in September of Eastern equine encephalitis claimed 21 lives. The sudden appearance of a mysterious virus infection devastated the Delaware Bay oyster crop, and disclosure of contamination, by chemical spraying, of part of the national cranberry crop cut state cranberry sales.

On May 6, Dr. Mason W. Gross was inaugurated as president of Rutgers University. In June, the state opened at Island Beach its first public ocean bathing facility.

Principal Events by: RICHARD P. MCCORMICK, *Professor of History, Rutgers University.*

NEW MEXICO. Southwestern state, United States; admitted to the Union, Jan. 6, 1912. The "Sunshine State" ranks 5th in area and 39th in population among the 50 states.

Area and Population.—Area: 121,666 square miles (land, 121,511; inland water, 155), divided into 32 counties. Population: (1950) 681,187; (est., July 1, 1958) 855,000. Urban places with populations above 10,000 in 1950 (unless another date is given) are: Albuquerque, 98,815; Carlsbad, 17,975; Clovis, 17,318; Farmington (special census, Oct. 16, 1956), 15,115; Hobbs, 13,875; Las Cruces, 12,325; Roswell, 25,738; and Santa Fe, *the capital*, 27,998.

Executive.—Chief state officers in 1959:
Governor: John Burroughs (Democrat)
Lieutenant Governor: Edward V. Mead
Secretary of State: Mrs. Betty Fiorina
Treasurer: Joe Callaway
Attorney General: Hilton A. Dickson
Auditor: Robert D. Castner
Supt. of Public Instruction: Tom Wiley

Constitution and Judiciary.—The present constitution went into effect in 1912. The Supreme Court comprises five justices; chief justice in 1959 was Eugene D. Lujan.

Legislature.—The New Mexico Legislature comprises a 32-member Senate (in 1959, 24 Democrats and 8 Republicans) and a 66-member House of Representatives (60 Democrats and 6 Republicans), which meet in odd-numbered years commencing the second Tuesday in January.

In its 1959 session the legislature increased appropriations to almost $240 million for the 1959–61 biennium, without authorizing any new taxes, although provision was made to base state income tax collections on amounts reported taxable on federal income tax returns.

Legislation included increases in unemployment compensation, a new Workmen's Compensation Act, and authorization given cities to collect a 1% sales tax and to undertake urban renewal projects with federal aid. Other legislation provided for reimbursement to public utilities for facilities dislocated by highway construction; restriction of labor union picketing to matters arising out of employee-management disputes; penalties for violation of the Equal Employment Opportunity Act; revised regulations affecting finance companies; imposition of regulations on the distribution of trading stamps; and establishment of boating safety rules.

In actions affecting the structure of state government the legislature created a Radiation Technical Advisory Council, a Civil and Defense Mobilization Agency, an Archives and Public Records Commission, and a Department of Development which is to coordinate the work of the Economic Development Commission, the Tourist Bureau, and the state magazine.

Constitutional amendments approved for submission to voters provided for: continuity of the state government in the event of emergency caused by enemy attack; annual sessions of the legislature; four-year terms for elected officials; and the staggering of terms for state senators.

Finance.—In the 1958–59 fiscal year, state revenue of $283,435,582.79 comprised $104,962,599.49 from state tax sources, $76,372,624.20 from the federal government, and $102,100,359.10 from all other sources. Tax revenue consisted of $41,524,508.19 from a 2% general sales tax, $6,768,710.74 from individual income taxes, $24,503,792.11 from motor fuel taxes, $15,232,464.71 from licensing, and $16,933,123.74 from other sources. Expenditures of $285,561,963.81 comprised $52,533,571.53 for education, $23,882,855.62 for health, welfare, and safety, $63,443,302.84 for highways, and $145,702,233.82 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $24,668,000.

Banking.—As of June 10, 1959, the state's 27 national banks had $488,872,000 in assets, $345,221,000 in demand deposits, and $109,092,000 in time deposits. The 26 state banks (Dec. 31, 1958) had assets of $210,911,387.89, demand deposits of $114,947,983.62, and time deposits of $42,010,022.18.

Education.—School attendance is compulsory between the ages of 6 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1958–59 fiscal year totaled $66,077,101 ($371.59 per pupil), comprising $4,460,204 from local school districts, $60,103,732 from the state, and $1,513,165 from the federal government. Outlays for construction and improvements amounted to $17,860,627, and teachers' salaries averaged $4,943 (high school, $5,071; elementary, $4,814).

NEW MEXICO SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–6)	527	4,751	124,096
Public junior high (7–9)	60	1,761	45,016
Public senior high (10–12)	107	1,469	32,328
Private and parochial elementary and secondary	109	751	23,604
Vocational and special	29	81	2,828
Junior colleges	1	14	219
Teachers colleges	3	196	3,874
Colleges and universities	3	288	8,618

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from federal and state funds (excluding institutional costs) totaled $19,324,884, including $7,611,491 for the aged, $9,401,492 for dependent children, and $1,668,871 for the permanently and totally disabled. A monthly average of 42,622 persons received assistance.

Labor Force.—The state's insured labor force totaled 163,390 persons on Dec. 31, 1958. Of this number, 159,132 were in nonagricultural employment, compared with 147,939 a year earlier and an average of 150,720 for the 12 intervening months. Some 31% of insured nonfarm employees in 1959 were engaged in trade, 16.6% in service industries, and 14.9% in construction. Insured unemployment totaled 4,258 on Dec. 31, 1958, down slightly from 4,468 at the end of the previous December.

Mining.—In 1958 New Mexico stood 8th among the states in the value of its mineral output, with 3.38% of the national total. It was first in perlite (69% of the domestic output), potash (92%), and uranium; second in helium; third in beryl (6%) and natural gas; fourth in manganese; and sixth in copper.

NEW MEXICO MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Coal	117,000	$ 719,000
Copper	55,540	29,214,000
Helium (1,000 cu. ft.)	29,793	502,000
Lead	1,117	261,000
Manganese ore	24,665	1,996,000
Natural gas (1,000 cu. ft.)[1]	761,446,000	79,190,000
Natural gasoline (bbl.)[2]	17,059,286	32,462,000
Perlite	202,046	1,790,000
Petroleum (bbl.)[1]	98,323,000	293,400,000
Potash (K_2O equivalent)	1,978,000	69,106,000
Pumice	507,000	959,000
Sand and gravel	13,205,000	11,413,000
Silver (fine ounces)	159,000	144,000
Stone	1,730,000	1,507,000
Uranium ore	1,888,499	32,264,000
Zinc	9,034	1,843,000
Other minerals	...	2,157,000
Total	...	$558,866,000[3]

[1] Preliminary. [2] Including petroleum gases. [3] Total adjusted to eliminate duplication in the value of raw materials used in the manufacture of cement and lime. (Source: U.S. Bureau of Mines.)

Manufacturing.—In the fourth quarter of 1958, there were 710 manufacturing plants in the state. In the preceding year 17,075 workers in manufacturing earned $83,641,000 in wages. Value added by manufacture (1957) totaled $166,820,000, and investments in new plant and equipment approximated $20 million. The major manufacture is that of chemicals and chemical products, employing 6,804 persons in 1957, paying wages of $45,636,000, and adding $95,767,000 in value by manufacture. In August 1959, production workers averaged $78.21 for an average workweek of 39.7 hours.

Agriculture.—Cash farm income for the first nine months of 1959 was up substantially to $105,739,000 from $87,079,000 reported for the corresponding period of 1958. For the full year 1958, income comprised $141,295,000 from livestock and livestock products, $83,990,000 from crops, and $13,344,000 from government payments. Principal income sources in 1958 were cattle, $113,969,000, and cotton lint, $42,620,000.

NEW MEXICO CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	564	714	350
Beans, dry edible (1,000 bags)	224	119	87
Broomcorn (tons)	5,370	7,900	7,300
Corn (1,000 bu.)	1,145	1,457	1,425
Cotton lint (1,000 bales)	275	301	327
Cottonseed (1,000 tons)	112	127	134
Hay (1,000 tons)	482	712	656
Peaches (1,000 bu.)	147	160	185
Sorghum grain (1,000 bu.)	4,824	8,085	8,800
Wheat (1,000 bu.)	1,895	3,806	3,849

(Source: U.S. Department of Agriculture.)

The state had 21,600 farms in 1958. Total acreage (1954) of 49,451,000 included 1,135,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,162,000 cattle and 1,233,000 sheep. There were 65,034 family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1954.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $66,092,749, and 441 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 63,151 miles (15,382 surfaced). Registered *motor vehicles* numbered 403,632 on June 30, 1959, including 277,751 passenger cars. There were (1958) 6 *railroads* operating 2,460 line miles; (1959) 4 regularly scheduled *airlines;* and (1959) 71 *airports and airfields* (23 commercial and municipal, 4 military, 27 private, and 17 other).

Communications media (1958) included 32 AM and 2 FM *radio stations;* 7 VHF *television* stations, including one educational station; 18 daily *newspapers* (circulation, 169,923) and 44 other newspapers; and (Jan. 1, 1959) 95,800 business and 157,100 residential *telephones.*

Principal Events, 1959.—After two years of Republican administration, a Democratic governor, John Burroughs, was inaugurated on January 1. The new administration inherited a large treasury surplus and no crises in state affairs. But the turnover brought some internal dissension within Democratic ranks over appointments and policies. A major problem facing the administration involved the powerful Highway Commission and its handling of the acquisition of road-building materials, the construction of the Lordsburg highway, and other matters. Investigations were undertaken by the state attorney general and a special House committee.

The 24th New Mexico Legislature, dominated by Democrats from the five eastern counties, enacted most of the governor's program. It was feared, however, that the state's proposed increased spending would exceed income, despite additional revenue expected as a result of improved income tax collection procedures (see above, *Legislature*).

In May a short-lived system of "voluntary" contributions by state employees of 1% of their salaries to the Democratic Party was halted by the governor. He admitted his mistake "in allowing this plan to be put into effect in spite of . . . personal misgivings."

Water continued to be a serious problem for the state in 1959. A step toward its solution was the awarding in February of a contract for construction, under supervision of the Corps of Engineers, of Abiquiu Dam. The second-highest earth-filled dam to be undertaken by the corps, it is a major part of the Rio Grande flood-control program. In March the governor signed a bill financing construction of the Canadian River Dam in eastern New Mexico, and the U.S. Congress authorized building of the San Juan–Chama transmountain diversion and the Navajo irrigation projects at an estimated cost of $220 million. (See also DAMS.)

In February the U.S. Atomic Energy Commission set off, near Carlsbad, the first test explosion of its Project Gnome series for developing peaceful uses of nuclear energy. The commission reported in December that $357 million had been spent in the state through June 30, 1959.

The state's important mining industry experienced a mixed year. Final figures were expected to reveal declines in potash and copper output and fairly stable uranium ore production. Northwestern New Mexico, however, continued to show production increases, especially of oil, gas and uranium. The state's copper mining operations were seriously affected by walkouts in Kennecott Copper Corporation mines.

Other economic factors were more encouraging. As early as March, nonfarm employment was 16,100 over the previous year's figure for the same month. Ranchers, benefiting from good range conditions and high prices, anticipated a banner year, with cash receipts from livestock and livestock products expected to be $40 million higher than for the previous year. Crop income was also up, with the cotton yield showing a big hike and with winter wheat experiencing its best harvest since 1949.

A record tourist season was indicated for 1959. Highlights of the year included an excellent opera season at Santa Fe, the dedication of a new museum in Roswell, and the opening of a new folklore center in Tucumcari, the Mesilla Design Center near Las Cruces, the Ghost Ranch Nature Museum near Abiquiu, and Pancho Villa State Park, south of Deming.

Principal Events by: DOROTHY WOODWARD, *Professor of History, University of New Mexico.*

NEW YORK. Middle Atlantic state, United States; one of the original 13 states. The "Empire State" ranks 30th in area and first in population among the 50 states.

Area and Population.—Area: 49,576 square miles (land, 47,944; inland water, 1,632), divided into 62 counties. Population: (1950) 14,830,192; (est., July 1, 1958) 16,313,000. Incorporated places with populations above 20,000 (as estimated by the State Department of Health for April 1959) are:

Albany (*capital*)	143,351	Gloversville	24,208
Amsterdam	31,746	Hempstead	33,263
Auburn	37,260	Ithaca	29,017
Binghamton	83,140	Jamestown	42,254
Buffalo	597,097	Kenmore	21,558
Cohoes	21,324	Kingston	31,123
Cortland	20,504	Lackawanna	29,512
Elmira	53,937	Lockport	27,145
Freeport	32,092	Long Beach	24,958
Garden City	23,449	Mineola	20,285
Glen Cove	22,185	Mount Vernon	76,534
Glens Falls	20,683	New Rochelle	76,382

New York City	7,795,471*	Poughkeepsie	40,359
Bronx	1,424,367	Rochester	347,483
Brooklyn	2,602,433	Rockville Centre	25,620
Manhattan	1,794,069	Rome	46,173
Queens	1,762,582	Schenectady	98,467
Richmond	212,020	Syracuse	210,982
Newburgh	32,650	Tonawanda	21,455
Niagara Falls	104,755	Troy	74 332
North Tonawanda	33,791	Utica	102,984
Olean	24,977	Valley Stream	38,293
Oswego	22,568	Watertown	35,977
Port Chester	24,836	White Plains	51,614
		Yonkers	187,271

* Special census, 1957.

Executive.—Chief state officers in 1959:
Governor: Nelson A. Rockefeller (Republican)
Lieutenant Governor: Malcolm Wilson
Secretary of State: Mrs. Caroline K. Simon
Comptroller: Arthur Levitt
Attorney General: Louis J. Lefkowitz
Commissioner of Education: James E. Allen, Jr.

Constitution and Judiciary.—The present constitution went into effect in 1894. The highest tribunal, the Court of Appeals, comprises seven justices; chief justice in 1959 was Albert Conway.

Legislature.—The New York Legislature comprises a 58-member Senate (in 1959, 34 Republicans and 24 Democrats) and a 150-member Assembly (92 Republicans and 58 Democrats), which meet annually commencing the first Wednesday after the first Monday in January. Major enactments of the 1959 session included measures which accomplished the following:

Budget and Taxation.—Approved appropriations of $2,021,000,000 for the fiscal year 1959–60, with 52% of the total assigned as grants to local governments. Established a withholding system for personal income tax collection and revised the exemption and rate structure. Cancelled 1958 income taxes except for capital gains and estate and trust taxes. Increased inheritance taxes and raised taxes on the following: cigarettes, to 5 cents per pack; other tobacco products, by 15% on the wholesale price; and gasoline and diesel fuel, except supplies for buslines and taxis, to 6 cents and 9 cents per gallon, respectively. Hunting and fishing license fees were raised, and harness and thoroughbred racing seasons were extended (with the daily number of races increased) to expand returns from parimutuel betting.

Education.—Appropriated $773 million for education, of which $622 million was for state aid to schools. Authorized the State Dormitory Authority to build facilities in private as well as public colleges. Required school districts with 8 or more mentally retarded children to establish special classes and provide school transportation for these children.

Administration and Judiciary.—Established offices of Local Government and of Transportation in the Executive Department. Set up temporary commissions on Revision and Simplification of the Constitution and on Economic Expansion. Proposed establishment of an independent state Department of Motor Vehicles (the proposal was approved by the voters in November). Increased the salaries of state civil service, legislative, and judicial employees. Passed a constitutional amendment (approved by the voters) which would combine various inferior courts, set up a statewide family court, ban county judges from practicing law, establish a district court system eliminating justices of the peace and police magistrates in upstate counties, and give general policy supervision of the court system to the administrative board of the Judicial Conference.

Labor.—Labor unions were required to submit financial reports; their officials were prohibited from having financial interests in industries with which they negotiate contracts; and management was forbidden to coerce union officials. Extended unemployment insurance coverage and sickness disability and workmen's compensation coverage. Permitted injunctions in labor disputes involving transportation of perishable goods.

New York City.—Authorized new or increased taxing powers for the city (see NEW YORK CITY); created a commission to study possible improvements in city government; authorized sale of subway power plants; approved a code of ethics for city officials; and gave $5 million in new state aid to city, including $2.7 million for city colleges.

Miscellaneous.—Established an Office for Atomic Development, a Municipal Police Training Council, and a Division of Motor Boats. Set up a staggered system for the issuance of motor vehicle and drivers' licenses and authorized permanent license plates with annual tags. Extended narcotics sales convictions to a maximum of 15 years. Enacted immediate and long-range local tax relief for railroads and provided compensating state aid to municipalities covering 50% of their losses from such taxes. Approved a $20 million loan to the Port of New York Authority for the purchase of commuter equipment for the New York Central, Long Island, and New Haven railroads. Authorized (subject to New Jersey concurrence) a bistate agency to plan a solution to commuter problems.

Constitutional amendments approved by the voters in the November elections included the requirement of public officials to testify at pertinent investigations of their conduct in any office held within the past five years; elimination of uncontested primaries; uniform definitions of income in state and federal income tax returns; the borrowing of money or levying of taxes by local governments for projects conducted jointly with other localities; the lease or transfer of the state barge canal system to the federal government; construction of a state highway in the Adirondack forest preserve; and the raising of retired police and firemen's pensions (and those of their widows) by municipalities.

Finance.—State disbursements are made from several funds, chief of which are the General Fund, to which $1,550,350,057.88 was allotted in the 1958–59 fiscal year; and the Capital Construction Fund, for which $257,475,-767.91 was designated. State tax sources (for General Fund revenue) consisted of $565,758,966 from personal income taxes, $386,881,662 from general business taxes, $427,083,765 from excise taxes on consumption, and $175,324,956 from other sources. Construction Fund expenditures totaled $242,745,594. General Fund expenditures included $590,980,527 for state purposes (the chief item being $250,386,636.46 for state institutions) and $928,694,888.74 for local assistance purposes (including $560,668,001.06 for education and $151,250,791.75 for social welfare). Net state indebtedness on March 31, 1959, comprised $867,383,259.27 in bonded debt and $29,625,-325.10 in temporary debt.

Banking.—As of June 10, 1959, the state's 255 national banks had $12,016,749,000 in assets, $7,074,193,-000 in demand deposits, and $3,321,271,000 in time deposits. The 163 state banks (June 30, 1959) had assets of $34,313,427,000, demand deposits of $23,745,275,000, and time deposits of $6,286,638,000.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $1,328,651,873 ($587.49 per pupil), and revenue comprised $773,978,879 from local school districts, $514,753,794 from the state, and $4,237,887 from the federal government. Outlays for construction and improvements amounted to $398,429,705, and teachers' salaries averaged $6,037.

NEW YORK SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (k-6)	3,847[1]	60,958	1,632,792
Public junior high (7–9)	...	...[2]	571,707
Public senior high (10–12)	1,429[1]	51,525	454,370
Private and parochial elementary and secondary	1,823	23,000	805,700
Junior colleges	35	1,579	30,941
Teachers colleges	11	1,361	19,018
Colleges and universities	117	25,937	314,885

[1] Represents number of buildings, including 724 used for both elementary and secondary. [2] Included in senior high.

Public Assistance.—In the calendar year 1958, public assistance expenditures from local, state, and federal funds (excluding institutional costs) totaled $312,088,725, including $101,828,347 for the aged, $121,427,603 for dependent children, and $44,139,320 for the disabled. A monthly average of 505,541 persons received assistance.

Labor Force.—In mid-1959 the state's labor force totaled 7,575,000 persons. Nonagricultural employment of 5,949,200 exceeded the figure of 5,906,500 reported for mid-1958 and the 5,950,600 average for the 12 intervening months. Of employed nonfarm workers in July 1959, 30.9% were engaged in manufacturing, 20.2% in trade, and 15.2% in service and miscellaneous industries.

Active claimants for unemployment insurance in August 1959 numbered 229,445, which was below the 10-year average of 289,518 and well beneath the 324,144 figure for the previous August, at which time temporary unemployment insurance programs were covering an additional 81,640 workers.

Manufacturing.—In 1957 the 2,065,377 persons employed in manufacturing plants in the state received $9,615,521,000 in wages. Value added by manufacture totaled $16,509,025,000, and outlays for new plant and equipment amounted to $728,-400,000. Production workers averaged $87.28 for an average workweek of 29.4 hours in August 1959.

THE NEW YORK TIMES

U.S. Navy vessel, welcomed by fireboat and crowds at Battery Park, sails up New York Harbor, June 11, on opening day of summer-long celebration marking the 350th anniversary of Hudson's discovery of the river named in his honor.

MAJOR NEW YORK MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Apparel and related products	391,027	$1,300,264	$2,297,702
Printing and publishing	167,982	922,514	1,929,133
Food and kindred products	151,326	696,041	1,553,644
Nonelectrical machinery	158,811	867,815	1,516,846
Electrical machinery	139,725	682,664	1,231,110
Chemicals and products	68,201	357,108	1,103,559
Transportation equipment	127,044	704,209	940,430
Instruments and related products	81,907	465,870	895,934
Primary metal industries	85,762	461,282	866,589
Fabricated metal products	103,236	467,467	798,131

* For definition, see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 New York stood 18th among the states in the value of its mineral output, with 1.24% of the national total. It produced the entire domestic output of emery, and ranked first in soapstone and pyrophyllite and second in zinc, calcium, and salt (about 18% of the national total).

NEW YORK MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	...[1]	...[1]
Clays	1,085,000	$ 1,419,000
Coke[2]	2,976,610	49,878,813[2]
Ferroalloys[2]	130,244	39,733,000[2]
Gypsum	834,000	3,869,000
Iron ore, usable (long tons)	1,944,000	25,683,000
Iron, pig	...[1]	...[1]
Lead	579	135,000
Natural gas (1,000 cu. ft.)[3]	2,808,000	859,000
Petroleum (bbl.)[3]	1,664,000	7,039,000
Salt, common	3,896,000	30,609,000
Sand and gravel	24,730,000	27,541,000
Stone	22,598,000	38,219,000
Zinc	53,014	10,815,000
Other minerals	...	62,170,000
Total	...	$204,920,000[4]

[1] Figures withheld to protect individual company's confidential data. [2] Values for processed materials are not included in the total. [3] Preliminary. [4] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 totaled $626,676,000, compared with $631,082,000 for the corresponding period of 1958. For the full year 1958, income comprised $619,803,000 from livestock and livestock products, $229,820,000 from crops, and $9,095,000 from government payments. Principal income sources in 1958 were dairy products, $434,167,000; cattle, $76,624,000, and eggs, $63,684,000. Greenhouse and nursery products yielded $52,934,000.

NEW YORK CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	16,469	22,000	18,500
Beans, dry edible (1,000 bags)	1,412	1,311	837
Buckwheat (1,000 bu.)	1,018	520	391
Cherries (tons)	26,620	28,100	25,600
Corn (1,000 bu.)	31,291	33,400	33,405
Grapes (tons)	74,020	100,600	91,000
Hay (1,000 tons)	5,455	5,855	5,546
Maple sirup (1,000 gal.)	434	401	344
Oats (1,000 bu.)	28,320	31,980	32,886
Peaches (1,000 bu.)	1,122	1,390	1,120
Pears (1,000 bu.)	491	625	570
Potatoes (1,000 cwt.)	18,593*	20,050	15,937
Strawberries (1,000 lb.)	14,232*	16,720	14,280
Wheat (1,000 bu.)	11,032	9,212	7,729

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 100,000 farms in the state in 1958. Total acreage (1954) of 15,071,000 included 5,547,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 2,153,000 cattle and 10,244,000 chickens (excluding commercial broilers). There were 154,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—Progress continued on the New York Thruway in 1959. The final six miles of its $54 million Berkshire section, connecting south of Albany with the Massachusetts Turnpike and including a $17 million bridge at Castleton-on-Hudson, was opened on May 26, and in Buffalo and vicinity, eight miles of the Niagara sector were opened on July 30, leaving several additional miles of the Niagara portion to be completed in 1960 to close out all construction of the 559-mile Thruway project. A $303.7 million highway program for the 1959–60 fiscal year was begun on April 2, 1959.

At the November 1959 state election, voters approved routing the Albany-to-Canada Northway through to Adirondack Forest Preserve.

Total state and federal spending for New York *highways* in 1958 amounted to $488,964,237, and 164 miles of state system highways were completed. Highway and road mileage on Dec. 31, 1958, totaled 105,640 (92,005 surfaced). Registered *motor vehicles* numbered 5,054,678 on the same date, including 3,977,650 passenger cars. There were (1958) 45 *railroads* operating 6,725.99 line miles and (1959) 43 regularly scheduled *airlines.* There was a total of 240 *airports and airfields* (94 commercial, 47 municipal, 11 military and 88 private), 33 seaplane bases, and 7 heliports.

Communications media (1959) included 125 AM and 41 FM *radio stations;* 22 VHF and 2 UHF (including 1 educational unit at Buffalo) *television stations;* 112 daily *newspapers* (1957 circulation, 8,483,239) and 542 other newspapers; and (Jan. 1, 1959) 2,550,600 business and 5,605,800 residential *telephones.*

Principal Events, 1959.—An event affecting an enormous number of residents of New York State in 1959 was the modification of the state's taxation system. Changes effected early in the year included forgiveness of 1958 state income taxes, the imposition of new taxes expected to produce over $277 million during the year, and adoption of a withholding system for collection of state income taxes. Taxes were increased on gasoline, diesel fuel, and cigarettes. Payroll deductions of 1959 income taxes by employers became effective April 1. The withholding system was expected to affect nearly 6 million state inhabitants.

There were, however, a number of more cheering aspects of the state's economic situation in 1959. Before the end of April, the increase in employment greatly exceeded seasonal expectations. Consumer prices at that time, too, had risen only 0.4% above those for the comparable period of 1958. By June, however, prices were 1.2% higher than they had been a year earlier. Although the fairly consistent continuing increase in employment was checked during a part of the third and fourth quarters of 1959 by the effects of the 116-

day steel strike, the generally high level of employment, increasing volume of retail trade, and large expenditures for plant construction and equipment during the final months of the year provided a reassuring prospect for at least the first half of 1960. Of great importance to New York State's future economic development was the opening in June of the St. Lawrence Seaway and Power Project (q.v.).

Early in 1959, Gov. Nelson A. Rockefeller took steps to obtain enactment of legislation to curb the alarming number of crimes being committed throughout New York State. Specific proposals which he made to the legislature—and which produced a favorable response from that body—included the strengthening of investigative and police agencies, closer cooperation of state and local law enforcement officials, more severe penalties for law violators, and improvement of statistical data on crime. During September, major crimes increased 3.6% over the number committed in August, but were slightly fewer than for September 1958.

In the statewide off-year election of November 3, nine proposed amendments to the state constitution were the chief focal points of public interest. The proposed amendment most hotly debated was one which would have permitted New York City to issue $500 million in school construction bonds beyond its existing debt limit. A majority of the upstate as well as New York City electorate voted against this amendment. The remaining proposed amendments (see above, *Legislature*) were approved by varying margins. The large number of proposed amendments stimulated, as some earlier elections had done, a demand for the holding of a state constitutional convention. Defeat of the school construction bond amendment was widely interpreted as resulting from voter concern regarding governmental spending and the increasing of an already heavy burden of taxes.

On January 5, Governor Rockefeller officially proclaimed 1959 as a "Year of History" for New York State. Many communities participated in the ensuing celebration of not only the 350th anniversary of explorations made by Henry Hudson and Samuel de Champlain in what is now New York State, but in commemorating numerous other significant events. One of the most important events commemorated was the founding (1784), 175 years earlier, of the Board of Regents of the University of the State of New York.

(See also NEW YORK CITY.)

Principal Events by: RAY W. IRWIN,
Associate Professor of History,
New York University.

NEW YORK CITY. This seaboard metropolis is the most populous city in the United States and is the nation's leading commercial, industrial, and cultural center. Covering 319.13 square miles, the city contained some 7,795,471 inhabitants in April 1957, compared with a 1950 census population of 7,891,957.

New York City is governed by a mayor (Robert F. Wagner, Jr., Democrat, re-elected on Nov. 5, 1957) and a 25-member New York City Council. Each of the five boroughs of the city (the Bronx, Brooklyn, Manhattan, Queens, and Richmond) has its own president. The Board of Estimate, composed of the mayor, comptroller, president of the City Council, and the five borough presidents, is the city's top governing body.

One of New York City's major problems in 1959 was that of financing the city's many and vast operations. In February Mayor Wagner sought Gov. Nelson A. Rockefeller's help in obtaining permission from the Republican-controlled Legislature for the city to levy $144,500,000 in new taxation. In March legislation was enacted at Albany to permit the city to levy $125 million more in local taxes. Under this permission the city increased its existing taxes on cigarettes, restaurant meals, and gross business receipts, and imposed new taxes on taxicab rides, juke boxes, and real estate sales above $25,000. This additional taxation aroused much opposition.

WIDE WORLD

New York City's Police Commissioner Stephen Kennedy (l.), with Deputy Commissioner Alexander Aldrich, testifies before Senate subcommittee investigating juvenile delinquency, September 23. Young offenders' weapons are on table.

On April 1 Mayor Wagner submitted to the Board of Estimate a record $2,173,113,999 city expense budget for the 1959–60 fiscal year. The budget approved by the Board of Estimate, April 27, was for $2,174,946,957, $182,993,971 more than for the preceding year. On June 25 the City Council approved a 1959–60 basic tax rate of $4.16 for each $100 of assessed valuation of real property, with borough rates to run from 2 to 9 cents higher than for the 1958–59 fiscal year. The total assessed valuation of taxable real property in the city was set at $23,549,007,007 for 1959. This was an increase of $1,098,722,060 over the 1958–59 total. The Citizens Budget Commission announced, March 15, that the city's net debt of $3,225 million was approximately four times larger than that of any other city in the United States. By June 30 the city's gross funded debt was $4,136,564,303; by September 30 it had risen to $4,143,605,919. On Nov. 1, 1959, Comptroller Lawrence E. Gerosa announced that the city's expense budget revenues for the 1958–59 fiscal year were $3,169,787 larger than expenditures.

New York City continued to be the nation's leading port. The volume of steamship traffic in the Port of New York rose markedly during the first six months of 1959, with 682 more oceangoing ships entering and leaving than during the comparable 1958 period. There were 13,713 vessel arrivals and departures during the first half of 1959, compared with 1958's half-year figure of 13,031 and full-year total of 26,281.

That New York City's economy was by mid-1959 making substantial recovery in economic areas which had been hardest hit by the recession of 1958 was indicated in a report by the Department of Commerce and Public Events, July 14. This report showed that more workers were migrating to New York City from Puerto Rico and certain other areas in 1959 than in 1958, that the number of help-wanted advertisements in metropolitan newspapers had greatly increased, and that residential building plans had been expanded. Total wage and salary employment in 1958 had averaged 3,449,000 weekly, of which 937,300 were engaged in manufacturing (including 264,600 in the leading apparel industry), 735,100 in wholesale and retail trade, 565,000 in the service and related occupations, and 401,000 in local, state, and federal government.

The year 1959 opened with a continuation of the building construction boom, especially office structures. In early January, 16 skyscrapers, with a record-breaking total of 5,574,000 square feet of floor space, were scheduled for completion in Manhattan alone in 1959. Nine additional skyscrapers under construction there were expected to be completed in 1960–61. By early November, however, a somewhat tighter money situation and a long-continued nationwide steel strike (see IRON AND STEEL) suggested a lessening of building construction by mid-1960.

Other construction developments of 1959 included the breaking of ground on August 13 for the $320 million Narrows Bridge (see BRIDGES)

and on May 15, with President Eisenhower participating, for the $75 million Lincoln Center for the Performing Arts (see MUSIC). Opened during the year were two huge new passenger terminals at New York International (Idlewild) Airport, the new Brooklyn Pier 1, and the spacious new Aqueduct race track in Queens.

On January 22 the Board of Estimate approved in principle a $1 billion redevelopment plan for lower Manhattan. High-rent apartment house construction also boomed throughout 1959. The state Public Works Department announced, April 3, that, as part of a $303,700,000 state highway program for the fiscal year 1959–60, expressway construction eventually costing $135 million would be started in New York City.

Residential housing conditions in the city underwent no major changes during 1959. While luxury apartment house construction flourished, low-rental apartments remained scarce. The city Housing Authority announced, February 1, proposals for the beginning of three new, low-rental housing developments: two in Brooklyn and one in the Bronx. The city government, in cooperation with settlement houses, was by mid-October engaged in implementing a program of slum reduction in Chelsea, the upper West Side, downtown Brooklyn, and east Harlem.

The year 1959, in contrast to 1958, was marked by numerous crippling strikes in New York City. These included a strike which had been started on Dec. 19, 1958, by American Airlines pilots, and which ended on January 11; a brief National Maritime Union tugboat strike in February; a 46-day strike starting May 8 and ending on June 22 by nonprofessional workers at six (later seven) of New York's 148 nonprofit hospitals; and an 8-day strike in early October by 85,000 members of the International Longshoremen's Association.

The Police Departments' tabulation, near the end of October, on crime complaints in New York City for the first nine months of 1959 presented a gloomy picture. It revealed an increase of 2.2% in total complaints over the comparable portion of 1958. Police Commissioner Stephen P. Kennedy, on October 26, attributed this increase in part to a growing amount of youth violence, especially during the summer months. (See also CRIME.)

On January 4, the Board of Education announced a $72,600,000 school construction program for 1959. This represented a sharp reduction of the board's originally proposed budget of $105,600,000. Much controversy developed later in the year over school construction financing, a subject which became the major political issue in the subsequent general election.

That election was the most important political event of the year in New York City. The primary election was held September 15. In this contest Carmine G. De Sapio, against whom a strong fight was waged by Democratic party insurgents, retained his district leadership by a slight margin. On September 22 he was elected Democratic chairman of New York County. The number of persons in New York City eligible to vote in the general election totaled 2,802,154, compared with 2,665,334 in the 1958 election. The main focal point in the 1959 election in the city was a school bond issue, one of nine proposed amendments to the state constitution. This question was submitted to the voters, and was turned down by them in the November 3 election. The proposed bond amendment would have permitted the city to issue $500 million in school construction bonds beyond its debt limit. The city vote alone on this proposed amendment (No. 4) was 494,544 in favor to 739,884 against. Each of the other eight proposed amendments was approved by the city and upstate voters by varying margins. In a highly publicized contest for Queens Borough president, incumbent John T. Clancy (Democrat) decisively defeated Robert E. Barnes (Republican) and Leo Brown (Liberal). Democratic Party candidates also won in the race for judgeships in the Court of General Sessions, and were generally successful in other city contests.

After the city served as host to the Soviet Exhibition of Science, Technology, and Culture in the summer of 1959, public announcement was made on October 29 that a world's fair would be held in New York City in 1964. That year will be the 300th anniversary of the capture of New Amsterdam by the English and their renaming it New York.

(See also the Index entry, *New York City.*)

RAY W. IRWIN,
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NEW ZEALAND. Defined by the Statute of Westminster (1931) as an autonomous, freely associated member of the Commonwealth of Nations, New Zealand comprises two principal islands lying some 1,200 miles southeast of Australia in the South Pacific Ocean: North Island (44,281 square miles) and South Island (58,093), with adjacent Steward Island (670) and Chatham Islands (372). Minor outlying groups include the Auckland Islands (234 square miles), Campbell Island (44), and the Antipodes Islands (24). New Zealand also administers the island territories of Cook (with associated islands, 90 square miles), Niue (100), Tokelau or Union (4) and Kermadec Islands (13), Western Samoa (see SAMOA), and the Ross Dependency (175,000 square miles) in the Antarctic. Jointly with the United Kingdom and Australia, New Zealand is a trustee of Nauru (q.v.).

Population.—New Zealand's population was 2,326,129 (Maoris, 152,643) on March 31, 1959, compared with a total 12 months earlier of 2,275,515 (Maoris, 147,118). Excluded from the 1959 figures were the populations (Dec. 31, 1958) of Cook Islands (17,654), Tokelau Islands (1,749), Western Samoa (102,860), and of Niue Island (4,719 at March 31, 1959).

Urban areas of principal cities had the following estimated populations (including Maoris) as of April 1, 1959: Wellington, 143,200 (Wellington City, the capital, 123,000); Auckland, 413,100 (city, 141,000); Christchurch, 210,000 (city, 149,400); Dunedin, 102,500 (city, 72,200); and Hutt 93,000 (Lower Hutt City, 52,800). Net immigration added 13,867 to the population in 1958–59, compared with a gain of 18,146 from this source in 1957–58. Immigrants from Commonwealth countries intending permanent residence totaled 21,352 (from the United Kingdom, 13,189) in 1958–59; from all other countries, 3,500 (United States, 694).

Government.—Heading the administration is a governor general (Viscount Cobham, appointed Jan. 2, 1957) representing the crown, assisted by a 16-member Executive Council. The legislature is unicameral, consisting of an 80-member House of Representatives (including 4 Maoris), popularly elected every 3 years. The Labour Party was voted into office by a narrow margin in November 1957, winning 41 seats against 38 for the National Party, which gained one additional seat at a by-election held in the Clutha constituency in 1958. The National Party candidate was returned at a by-election in the Hamilton constituency on May 2, 1959, leaving the relative strength of parties unchanged. Local elections held throughout New Zealand on November 21 showed a pronounced swing away from the Labour Party. Walter Nash, sworn in as prime minister on Dec. 12, 1957, is also minister of external affairs and of Maori affairs.

Finance.—In the budget presented July 9, 1959, for the year ended March 31, consolidated fund revenue amounted to £NZ241,310,000, including £NZ205,574,000 from taxation. For 1959–60, revenue was estimated at £NZ317,370,000 (£NZ280,400,000 from taxation). Expenditures in 1958–59, along with the 1959–60 estimates, were: social services, £NZ95,067,000 (£NZ181,780,000); development of primary and secondary industries, £NZ22,864,000 (£NZ18,545,000); defense, £NZ17,793,000 (£NZ19,377,000); and debt services, £NZ37,421,000 (£NZ39,763,000). In sterling, net overseas assets totaled £NZ100.7 million in June 1959.

Defense.—New Zealand's armed forces comprise 19 different corps, with combined strength of 58,982, including an active territorial force of 30,554 on Sept. 30, 1957. (Compulsory military training was abolished on March 31, 1959 as part of a program of defense reorganization). In 1959, with total personnel of 5,082, the regular army exceeded 5,000 for the first time in its peacetime history. The Royal New Zealand Navy (2,998 officers and ratings on March 31, 1958) has in active commission 2 cruisers, 6 frigates (some of which serve on the Commonwealth Far East station), and numerous research and other fleet auxiliaries. On March 31, 1958, the Royal New Zealand Air Force comprised 3,269 regular personnel.

Education.—New Zealand's educational system imposes no selective restriction with respect to candidates for secondary education; within the state system every child is free to enter the postprimary school of his parents' choice. In 1957, the total of public primary schools was 1,964, with 10,154 teachers and 308,739 pupils; private primary schools numbered 323 (1,338 teachers, 49,644 pupils). Public secondary schools totaled 88 (teachers, 1,993; pupils, 44,268) in 1957; private secondary schools, 102 (16,260 pupils), including 11 Maori schools (834 pupils). Coeducational postprimary schools were opened in 1959 in Napier and Auckland. Technical education is provided at 36 institutions, including Hutt Valley Technical School, which in 1958 was made a central institution to provide national courses. In 1959 there were six teacher-training colleges. University and college enrollments totaling 12,881 at the end of 1958 comprised: the University of Auckland, 3,768; Victoria University of Wellington, 3,079; the University of Canterbury, 2,761; the University of Otago, 2,477; Massey Agricultural College, 450; and Lincoln Agricultural College, 346. An additional 714 students were enrolled for programs of less than one year at the two agricultural colleges.

Transportation and Communications.—In the year ended March 31, 1959, rail passengers on the government system numbered 25,437,000; motor passengers, 20,032,000; and some 10,367,000 tons of freight were carried. Railway revenue totaled £NZ34,373,000; expenditure, £NZ35,137,000. The total road mileage was 56,187 in 1957, when there were 13,088 miles of main highways, including 5,300 miles classed as state highways. Licensed motor vehicles totaled 808,199 (motor cars, 488,462) on March 31, 1959. Domestic services of New Zealand National Airways flew 146,500,000 passenger miles in 1958–59 (year ended March 31); cargo ton-miles totaled 5,517,000; mail ton-miles, 278,600. On overseas flights, 70,500 passengers, 791 tons of freight, and 472 tons of mail were carried. In 1957–58, radio licenses in force numbered 525,049 (amateur and research, 2,756).

Social Services.—An early pioneer in legislation for public welfare, New Zealand provides monetary benefits covering the aged, widows and orphans, invalids, and unemployed, together with medical, dental, and hospital services. All are paid for by a Social Security Fund (a charge on salaries, wages, and other income) which had revenue in 1957 of £NZ75,856,519.

Economy.—A short but intense recession seemed virtually over in 1959 after lasting some 18 months. New Zealand had felt severely the effects of falling overseas prices for primary products and a lack of adequate funds to cover needed imports. Early in 1959, however, the domestic economy, reflecting a reduction of imports and increased taxation imposed in the previous year, became more stable. By June, Lord Cobham was able to forecast an easing of import controls, and an additional £NZ20 million in overseas funds was allocated for import licenses. In 1957–58, the gross national product was provisionally estimated at £NZ1,081 million. Deposits in national savings accounts totaled £NZ61,102,000 in 1958–59; in post office savings accounts, £NZ263,913,000.

Labor Force.—In October 1958, 843,100 persons were engaged in industry, including 145,000 in primary production (farming, 130,500) and 80,300 in building and construction, compared with a total of 832,200 twelve months earlier. Unemployed numbered 1,541 in May 1959—an increase of 953 over May 1958.

Agriculture.—Chief crops in 1958–59 (in thousands of bushels) were: wheat, 6,750; oats, 1,250; and barley, 2,700. Prospective planting in the 1959–60 wheat season was 140,000 acres—the largest since 1950. On Jan. 31, 1958, cattle numbered 5,886,000 (dairy cows, 1,967,000), and breeding ewes, 30,876,000 (an increase of 1,977,000 over the previous year). The number of sheep (42,382,000 in 1957) rose to 46,026,000 in the 1958 season; and 49,643,000 sheep and lambs were shorn, compared with 46,891,000 in 1957. Pigs totaled 628,000 in 1958. Meat production (1958 revised) was 687,700 tons, and totaled 264,200 in the March 1959 quarter. Wool sales in the 1958–59 season totaled 406,261,000 pounds and realized £NZ61,064,000—an increase of 35,854,000 pounds in volume, but a decrease of £NZ2,456,000 in value, as compared with the previous season.

Industry.—The output value of industry (other than farms) totaled £NZ645,100,000 in 1957–58. Factory production, valued at £NZ188,300,000 included automobile assembly, domestic appliances, clothing, tobacco, paints, paper, plywood, building materials, and chemical fertilizers. Electricity distributed by local authorities totaled 5,625 million kw.-hr.; gas, 5,478 cubic feet. In 1958–59, the value of new buildings, including 20,568 new houses and flats, was £NZ101,466,155. In 1958–59 the output of sawed timber was reported at 636.8 million board feet.

Minerals.—Mineral production, valued in 1957–58 at £NZ18,600,000, included gold, pumice, and coal (2,820,000 tons). Cement production rose by 21,000 tons to a total of 552,000 tons.

External Trade.—In the calendar year 1958 the total value of imports was £NZ284,372,000 (machinery and transport equipment, £NZ71,405,000; textiles, clothing, and footwear, £NZ36,836,000). Exports, including re-exports, amounted to £NZ250,022,000 (dairy produce, £NZ58,498,000; meat, £NZ79,424,000; wool, £NZ79,947,000). Of total 1958 exports, £NZ157,294,000 went to British Commonwealth countries (United Kingdom, £NZ139,068,000), and £NZ91,914,000 to countries in the nonsterling area (United States, £NZ36,360,000). Imports in 1958 from the Commonwealth totaled £NZ195,453,000 (United Kingdom, £NZ132,963,000), while those from the nonsterling area were £NZ57,218,000 (United States, £NZ17,200,000).

Principal Events, 1959.—Tax reductions of £NZ17 million in a full year were a striking feature of the 1959–60 budget. Most of the remission is in income tax, reflecting the government's confidence that its policy of import controls would continue to arrest any trend toward inflationary spending by consumers. Regulations governing time payments were abolished.

The naval frigate *Pukaki* joined ships of 5 other Commonwealth countries in exercises of a carrier task force held in August in the Indian Ocean. On November 6 the 2d Battalion, New Zealand Regiment, including a large quota of Maoris, sailed for Malaya for service with other Commonwealth forces.

New Zealand was host to the fifth meeting of the Council of Ministers of the Southeast Asia Treaty Organization (SEATO), held in Wellington on April 8–10. Prime Minister Walter Nash was elected chairman of the meeting.

Declared open by the governor general on May 30, the new Auckland Harbor Bridge attracted the greatest concentration of traffic in the city's history; 51,000 vehicles had crossed the bridge by the following evening.

Notes exchanged between the governments of New Zealand and the United States authorized the increase in 1959 of scientific and logistical operations at stations maintained in the Ross Sea area of Antarctica during the International Geophysical Year (July 1, 1957 to Dec. 31, 1958), including the jointly operated Hallett Station, the U.S. Naval Air Facility in McMurdo Sound, and New Zealand's Scott Station. (See also ANTARCTICA.)

DONOVAN ROWSE,
Author and Publicist.

NEWFOUNDLAND. This most easterly of the Canadian provinces is bounded on the east and south by the Atlantic Ocean and on the west by the Gulf of St. Lawrence and the Province of Quebec. Newfoundland has an area of 156,185 square miles (including Labrador) and a population (1956 census) of 415,074 (est. Sept. 1, 1959, 452,000). Chief urban centers with their 1956 populations are: St. John's, the capital, 77,991; Corner Brook, 23,225; Wabana, 7,873; Grand Falls, 6,064; Gander, 4,929; Windsor, 4,520; Bonavista, 4,078; and Goose Bay, 4,007.

Government.—Newfoundland entered the Canadian confederation on March 31, 1949, and is represented by 6 senators and 7 members of the House of Commons at Ottawa. The province is administered by a lieutenant-governor and a Legislative Assembly of 36 members. Following the elections of Aug. 20, 1959, party alignment in the assembly was as follows: Liberal, 31; Progressive Conservative, 3; and United Newfoundland, 2. The lieutenant-governor in 1959 was the Hon. Campbell Macpherson (appointed in 1957); the premier was the Hon. Joseph R. Smallwood.

Education.—In 1957–58 there were 1,224 schools with an enrollment of 113,250 pupils. The Memorial University at St. John's had 1,160 students in 1959–60.

Finance.—Revenue on current account in 1958–59 was $55,245,000, and expenditure was $50,579,000. Estimated revenue for 1959–60 was $71,587,000, and expenditure, $67,545,000.

Industry.—In addition to agriculture, the three basic industries in 1958 yielded the following estimated gross values: forest products, $75,000,000; mining, $68,750,000; and fishery products, $20,000,000.

Transportation and Communications.—In 1959 there were 934 miles of railway, of which 705 miles were operated by the Canadian National Railway; its main line extends 547 miles from St. John's on the east coast to Port aux Basques on the west coast, with branches to the ports of Argentia, Carbonear, Bonavista, and Lewisporte. Commercial air services include Trans-Canada Air Lines, British Overseas Airways Corporation, and Trans World Airlines; they link Newfoundland with the North American continent and with Europe. There are worldwide cable connections, and the Canadian government provides telegraphic services throughout the province. Telephones numbered about 60,000 at the end of 1959.

Principal Events, 1959.—Following a strike called in December 1958 by the International Woodworkers of America (IWA) against the Anglo-Newfoundland Development Company of Grand Falls, the Legislative Assembly unanimously passed, in March 1959, an act revoking the certification of the IWA as a bargaining agent. A newly formed union, the Brotherhood of Newfoundland Woods Workers, signed a contract in March with the development company, which then resumed logging operations. Meanwhile, Premier Smallwood's request for Royal Canadian Mounted Police reinforcements to maintain order was refused by the federal government.

The Royal Commission on the Financial Terms of Union with Canada recommended additional financial assistance under Term No. 29 to Newfoundland of $8 million for the fiscal years up to April 1, 1961, and $8 million per annum thereafter. However, the federal government announced that the rights under Term No. 29 shall become null and void after 1962.

The Iron Ore Company of Canada and the Wabush Iron Company are to expend $400 million on the development of the mining areas at Carol Lake and Wabush, which reportedly contain large reserves (some thousand million tons) of iron ore.

Newfoundland's government closed the 31st Legislative Assembly on June 28, 1959. As a result of the provincial elections held August 20, the Liberal Party was returned to office with a clear majority of 26 members.

J. W. McNeily,
Public Relations Officer,
Provincial Government of Newfoundland.

NEWSPAPERS. The trend toward amalgamation continued in the newspaper business in 1959, pointed up by five antitrust suits and the business partnership negotiated by the giant Hearst and Scripps-Howard chains.

As of Sept. 30, 1958, according to the 1959 *Editor & Publisher International Year Book,* 1,763 daily newspapers were being published in the United States, with a total paid circulation of 57,418,311. The average daily (papers published four or more days a week) consisted of 35 pages. There were also 556 Sunday editions, selling a total of 46,954,666 copies. On the same date, there were 9,396 nondailies (of which 9,025 were published once weekly; 332, twice weekly; and 33, three days a week), with a total paid circulation of 22,708,982.

An industry census of the newspaper industry, reported in 1959, showed that about 250,000 persons were employed full-time in the United States and Canada. Some 700,000 boys were engaged part-time in distribution, earning a total of more than $200 million.

Mergers and Sales.—The diminution of competitive situations in 1959 brought legal action on several fronts. A federal court ruled that the Harte-Hanks Newspapers had effected a "public advantage" in consolidating rival papers in Greenville, Texas. The Wichita (Kans.) *Eagle* was subjected to an antimonopoly decree and was sued for damages by the Wichita *Beacon.* Publishers in Sarasota, Fla., Haverhill, Mass., and Pasco, Wash., defended monopoly suits growing out of newly established newspapers.

The unique consolidation of the San Francisco *News* (Scripps-Howard) and the San Francisco *Call-Bulletin* (Hearst) immediately converted two "sick" evening competitors into a profitable *News-Call Bulletin,* which started publication on Aug. 10, 1959. Scripps-Howard retained editorial control, while Hearst took over the business operations. In a similar arrangement, the Columbus (Ohio) *Citizen,* owned by Scripps-Howard, was consolidated with the *Ohio State Journal,* a Wolfe family property, on Nov. 9, 1959.

A score of dailies changed hands in 1959. Major transactions included the following: Field Enterprises, Inc., paid $24 million for 97% of the common stock of The Chicago Daily News, Inc., a property of the John S. Knight newspaper group for 15 years; Knight Publishing Co. bought the Charlotte (N.C.) *News,* to be published as a companion to the Charlotte *Observer,* acquired a year earlier; the Lee group of Iowa was the successful bidder for the seven Montana newspapers owned for many years by the Anaconda Co.; Gannett Co., Inc., of Rochester, N.Y., paid $5 million for the Camden (N.J.) *Courier-Post;* Roy Thomson of Canada and Scotland extended his newspaper interests in the United States by acquiring the Petersburg (Va.) *Progress-Index,* and the Laurel (Miss.) *Leader Call.*

With the merger of the Montpelier *Argus* into the Barre *Times* on Sept. 1, 1959, Vermont became the only state in the United States without a daily newspaper in its capital city.

Circulation and Prices.—The United States (as of Sept. 30, 1958), had 307 morning dailies with 23,160,617 circulation; 1,456 evening newspapers with 34,257,694; and 556 Sunday papers with 46,954,666, according to the 1959 *Editor & Publisher International Year Book.* The list

of dailies priced at 10 cents a copy grew to nearly 200, and there were about 1,000 at 5 cents a copy. The majority of Sunday papers sold at 20 cents a copy; others ranged from 25 to 50 cents, depending on part on shipping distances. Other than the converted weeklies, only one daily was newly established: the Pasadena (Texas) *Citizen,* which began publishing five days a week on Oct. 1, 1959.

Prices of weekly newspapers generally ranged around 10 cents a copy. Symptomatic of the growth in suburbia, a number of weeklies developed into dailies, giving numerical counterbalance to those dailies which were dying or merging in large cities. Some examples of weeklies expanding to daily status (several adding Sunday editions as well) were: Burley (Idaho) *Bulletin Herald;* Grants (N. Mex.) *Beacon;* Red Bank (N. J.) *Register;* Hollywood (Fla.) *Sun Tattler;* Indio (Calif.) *News;* Le Mars (Iowa) *Sentinel;* Santa Clara (Calif.) *Journal;* and the Barstow (Calif.) *Desert Dispatch.*

The ten circulation leaders (Audit Bureau of Circulations, March 31, 1959) were: New York *News,* 2,025,229; Chicago *Tribune,* 882,837; New York *Mirror,* 836,810; Philadelphia *Bulletin,* 704,756; New York *Times,* 673,974; Philadelphia *Inquirer,* 605,007; New York *Journal-American,* 599,536; Chicago *News,* 552,426; Chicago *Sun-Times,* 527,675; Los Angeles *Times,* 497,873. Sunday newspapers with circulation of over 1 million were New York *News,* 3,460,528; New York *Times,* 1,347,036; New York *Mirror,* 1,345,573; Chicago *Tribune,* 1,253,617; and Philadelphia *Inquirer,* 1,075,084.

Income and Operations.—Considered as a whole, the newspaper business prospered in 1959, with an aggregate income from readers and advertisers of more than $5 billion. The public was spending $1.459 million annually for daily and Sunday newspapers alone, a sum equal to the combined expenditure for books and magazines.

In advertising volume, the Los Angeles *Times* amassed 77,608,917 agate lines in 1959. The Miami *Herald,* which ran 60,300,000 lines, held second place. The New York *Times* moved up to third ranking with 60,056,995 lines, representing $90 million gross revenue from advertising. Twenty-three dailies each printed 1 million or more individual classified ads, an index of the United States economic health. A total of 1,514 national and regional companies, other than retailers, each spent $25,000 or more for newspaper advertising, and the total national advertising expenditure was $721 million. For one schedule of announcements of a new car, the Chevrolet Division of General Motors ran copy in 7,100 newspapers.

Other financial developments included the following: The New York Times Co. reported 1958 net earnings of $166,052 on gross income of $85.5 million. Studies of a typical small-town daily (less than 25,000 circulation) showed that it realized 7 % profit on operating income in 1958. A typical daily of 50,000 circulation kept only 3 % of its income as profit after taxes. The Boston Herald-Traveler Corp. reported a net of $1,173,755 on $28,877,012 revenue, but attributed the profit mostly to an affiliated television station. Weekly newspapers yielded a return of 8 % on operating revenue after deducting the publisher's salary (average $7,000).

To curtail losses, the Gannett Co. scrapped its Saratoga Springs (N.Y.) *Saratogian* and made it a section of the Albany (N.Y.) *Knickerbocker News.* To give the five-year-old Jackson (Miss.) *State Times* new financial strength for competition against the Jackson *News,* the *State Times'* owner turned the stock control over to one of his companies that manufactures household products.

Ambassador (to Great Britain) John Hay Whitney began his rejuvenation of the New York *Herald Tribune* in 1959 as Ogden Reid, last of the Reid editorial dynasty, bowed out. Robert M. White, 2d, of Mexico, Mo., a Democrat, became president and editor, and Dwight E. Sargent, of Portland, Me., a Republican, was appointed editor of the editorial page.

Censorship.—The *Herald Tribune* also made news in January 1959 when its television columnist, Marie Torre, spent 10 days in jail for contempt of federal court. She had refused to reveal the source of a news item. (Neither Congress nor any state legislature was moved to write a confidential privilege code for reporters.)

Labor Disputes.—Strikes caused suspension of publishing in a dozen cities in 1959. The longest shutdowns were at the St. Louis (Mo.) *Globe-Democrat,* 99 days (February 21–June 1), during which period it sold its plant and became a contract printing operation at the Pulitzer Publishing Co. plant; and at the San Jose (Calif.) *Mercury* and *News,* 123 days (February 14–June 17).

New Industry Leaders.—James Russell Wiggins, executive editor of the Washington (D.C.) *Post and Times Herald,* was elected president of the American Society of Newspaper Editors. Arthur Rosenstock, supervisory librarian of the New York *Post,* was named president of the American Newspaper Guild.

Canada.—A total of 98 daily newspapers were published in Canada in 1959. The 17 morning papers had an aggregate circulation of 845,965, and 81 evening papers, 2,911,864. Roy Thomson (Thomson Co., Ltd.), who purchased the Kemsley Newspapers chain in England in a $32 million transaction, also added the Cornwall (Ont.) *Standard-Freeholder* and the weekly Orangeville (Ont.) *Banner* to his Canadian group. G. Max Bell of Calgary and Victor Sifton joined in purchasing control of the Ottawa *Journal* in a $3 million transaction.

JEROME H. WALKER,
Executive Editor, "Editor & Publisher."

NICARAGUA. The largest in size of the Central American republics, Nicaragua is bounded on the north by Honduras and on the south by Costa Rica. Estimated area, 57,140 square miles; population (est. July 1, 1958), 1,378,000. About 68% of the population is of mixed Spanish and Indian descent; 15% is Caucasian; 9%, Negro; and 5%, Indian. Spanish is the official language. Principal cities and 1954 estimated populations are: Managua (the capital), 176,569; León, 59,107; and Matagalpa, 58,093.

Government.—The president of the republic is Luis Somoza Debayle, who was elected in 1957 to a 6-year term after he succeeded his father, Anastasio Somoza, the virtual dictator of the country from 1937 until his assassination in 1956. According to a law promulgated on Aug. 14, 1959, a president may not be re-elected to office. Congress consists of a Chamber of Deputies of 42 members who are popularly elected to 6-year terms, and a Senate of 16 (plus former presidents, who are appointed for life, and the defeated presidential candidate in the previous election), also elected to a 6-year term. Following the 1957 elections, party alignment in the Chamber of Deputies was: National Liberals, 28 seats; Conservatives, 14; and in the Senate: National Liberals, 12; Conservatives, 7.

Education and Religion.—Illiteracy is high (about 62% of the population aged 15 and over in 1950). Pupils enrolled in primary and preprimary schools numbered 118,679 in 1955. Secondary education is carried on privately, with some state aid. In 1953 there were 39 secondary schools (with 3,781 students); 34 technical schools (3,383); 6 teacher-training schools (397); and 1 higher institution, the national university at León (1,078). The population is predominantly Roman Catholic.

Finance.—Estimated budget figures for the 1959 fiscal year ending June 30 were: revenue, 265,546,000 cordobas; expenditure, 288,956,143. In March 1959, Congress revised the income tax rates, established subsidies for cotton growers, increased import duties on 458 commodities, and abolished the special export exchange rates for certain minor products. The official buying (export) rate is 7 cordobas to the U.S. dollar.

Transportation and Communications.—In 1957, paved roads aggregated about 250 miles, and other all-weather roads, 1,000 miles. Nicaragua's section of the Inter-American Highway is 240 miles in length. The government-owned Pacific Railroad of Nicaragua operates 270 miles of track. There are several international airlines and a domestic airline. Passenger cars in 1957 numbered 7,800; commercial vehicles, 5,700; telephones, 6,332; television sets, 500; radio receivers, 50,000 (1955).

Production.—Agriculture employs about two thirds of the labor force. The economy is dependent largely on the production of coffee and cotton for export. The exportable output of green coffee in the 1958–59 marketing year was 320,000 bags of 132.3 pounds each (down 16% from 1957–58). The 1958 cotton crop was estimated at 220,000 bales of 480 pounds each, about the same as in 1957. Production of rice in 1957–58 totaled about 70.4 million pounds (up 10% over 1956–57); sugar (in 1958–59), 75,000 short tons (up 19% over 1957–58); corn (1957), 4,330,000 bushels (down 24% from 1956); and sesame seed (1957), 7,600 short tons (up 95% over 1956). Other crops include beans and yucca.

Manufactures consist chiefly of food products and light consumer goods. Gold, the principal mineral, increased in value exported by 5% in 1958, to $7.29 million. Nicaragua's forests yield hardwoods and gums. In 1957, cement production totaled 43,000 metric tons, and output of electricity was 124.5 million kw.-hr. (118.8 million in 1956).

Foreign Trade.—Nicaragua's trade in 1958 was slightly lower in value than in 1957. Total exports were valued at $63.77 million in 1958, and imports, at $77.94 million. Cotton regained its position as the country's chief export, accounting for $24.89 million in exported value; coffee exports were valued at $24.23 million. The United States

took 37% of Nicaragua's 1958 exports, and provided 45% of total imports.

Principal Events, 1959.—An abortive invasion of Nicaragua by exiled rebels who were attempting to overthrow the Somoza regime was crushed in early June by the Nicaraguan National Guard. Guardsmen captured or killed most of the 110 invaders flown into southwestern Nicaragua from Costa Rica on May 31 and June 1, and 61 of the captured rebels were paraded under guard in Managua on June 14 to celebrate the virtual end of the rebellion. The invasion, which was directed by Dr. Enrique Lacayo Farfan, the leader of Nicaraguan exiles in Costa Rica, failed chiefly because of the lack of public support. Other small invasions from Costa Rica and Honduras were reportedly quelled in August, October, and December.

As a result of increasing opposition to his rule, President Somoza decreed martial law and suspended certain civil guarantees on May 30. He later approved a constitutional amendment prohibiting a president from succeeding himself and a president's blood relatives from seeking the office, but this measure failed to mollify his political opposition. The tense situation within the country was aggravated by a general strike of shopkeepers at Managua on June 1–8, and by riots at León in late July.

Following Nicaragua's request on June 2 that the Organization of American States investigate the invasion of its territory, the Council of the Organization appointed a fact-finding commission which reported that the invasion was an internal matter.

(See also Inter-American Affairs; Organization of American States).

W. R. F.

NICKEL. The United States, the world's largest consumer of nickel, has an insignificant domestic output of the ore. In 1958, however, it improved its situation slightly with an output of 5% of the world output, compared with 3% in 1957. Output of nickel in countries outside the Soviet bloc dropped 22% to the lowest annual production recorded since 1952. In the United States, domestic mine output of nickel contained in ore increased to 13,490 short tons in 1958, compared with 12,900 tons in 1957. According to the U.S. Bureau of Mines, the supply of nickel in the United States in 1958 exceeded industrial demand for the first full year since 1949. The improved supply-demand position resulted from the combination of increased production, cessation of government stockpiling, and decreased industrial requirements for nickel.

United States imports of new nickel products for consumption, principally from Canada and Norway, totaled 97,731 short tons in 1958, compared with 150,665 tons in 1957. Exports of nickel from the United States, mainly contained in nickel and nickel alloys in ingots, bars, rods, and other crude forms and scrap, increased to 14,032 tons gross weight in 1958 from 13,415 tons in 1957. The chief foreign markets were the United Kingdom, Canada, and West Germany.

Total consumption of nickel in the United States in 1958 was 79,000 tons, compared with 122,466 tons in 1957. In the first nine months of 1959, consumption of nickel (exclusive of scrap) totaled 79,470 short tons (reported by companies which consumed 94.5% of the total nickel in 1958).

(See Mineral Production for output of major producing countries.)

NIGER. The Republic of Niger is an autonomous republic of the French Community (q.v.), situated in western Africa. Estimated area, 458,993 square miles; pop. (est. 1958), 2,450,000, including (in 1956) 3,040 nonindigenous persons, mainly French. The official language is French. Chief cities are Niamey, the capital (est. pop., 20,000), and Zinder (13,300).

Government.—A former French overseas territory included within the federation of French West Africa (q.v.), Niger chose the status of a member state of the French Community on Dec. 19, 1959. As an autonomous republic, Niger has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Niger adopted its constitution on Feb. 25, 1959. The Legislative Assembly consists of 60 members elected for a five-year term by universal suffrage. The premier (president of the council) is invested by a majority of the assembly. In the elections of Dec. 14, 1958, to the former Territorial Assembly, the Union for the Franco-African Community, headed by Hamani Diori, obtained 54 seats, as against 6 for the left-wing Sawaba, led by former Premier Djibo Bakary. Following the elections, Hamani Diori was chosen premier of a new conservative government.

Education and Religion.—In 1958 there were 137 schools with a total of 14,078 pupils (only 4% of the school-age population). Expenditure on education amounted to 447.9 million francs CFA, or about 12.3% of the budget.

Finance.—The ordinary budget for 1958 totaled 3,232 million francs CFA; the extraordinary budget, 381 million (the franc CFA equals 2 metropolitan francs). French financial aid under the Economic and Social Investment Development Fund (FIDES) was equivalent to $25.2 million in the period 1947–57.

Transportation.—Roads and trails aggregate 3,565 miles (1956), including 1,786 miles of highways. Niamey and Zinder are the southern termini of two trans-Saharan highways. There are no railways. Niamey has an international airport.

Production.—The republic is largely desert in the north. Water is scarce in most areas except the Niger River section of the southwest. The main occupation is stock raising, and there are large numbers of cattle, sheep and goats, and camels. The chief commercial crop is peanuts (output of shelled peanuts in the 1957–58 season: 98,495 metric tons). Subsistence crops include millet, rice, manioc, barley, wheat, maize, and dates. The principal minerals are sodium phosphate, salt, and tin ore. Industrialization has hardly begun, and French economic aid has consisted mainly of the construction of waterworks and other aids to livestock breeding, and the improvement of the cultivation of rice and other cereals.

Foreign Trade.—Exports in 1958 totaled 3,818 million francs CFA; imports, 2,198 million. Chief exports were shelled peanuts, 87,005 metric tons (worth 3,213 million francs CFA), and live animals (worth 263 million). France provided about 53% of imports and purchased about 71% of exports.

Principal Events, 1959.—On May 8, 1959, Niger signed an agreement with the Joint Organization for the Sahara (a French agency for the development of the Saharan regions), whereby Niger obtained over 500 million francs in credits in 1959 for economic development. It was reported on October 18 that the left-wing Sawaba had been dissolved by the government of Premier Hamani Diori.

M. J. G.

NIGERIA. See British West Africa.

NITROGEN COMPOUNDS. In the United States a large part of the fixed nitrogen supply is obtained from plants making nitrogen compounds from the nitrogen of the atmosphere. Second in importance is the recovery of ammonia compounds as a by-product of coking coal. Natural sodium nitrate furnishes only a relatively small proportion of the supply. Synthetic plants produced 3,831,425 short tons of anhydrous ammonia (NH_3), and coking plants produced 190,930 tons, compared with 3,734,213 tons and 261,527 tons respectively in

1957. Anhydrous ammonia production continued its upward trend and reached a new high in 1958. Annual capacity for producing atmospheric nitrogen in the United States totaled nearly 5 million short tons of equivalent nitrogen, compared with 4.75 million for 1957. World production of nitrogen equivalent, for the year ending June 30, 1958, was 10,569,000 short tons.

NIVEN, (James) David (Graham), British-American actor: b. Kirriemuir, Scotland, March 1, 1910. After 20 years as a motion picture star and featured player, David Niven was chosen best film actor of 1958 by both the Academy of Motion Picture Arts and Sciences (announced April 6, 1959) and the New York Film Critics Circle (announced Dec. 30, 1958) for his sensitive portrayal of the talkative bogus army major in the screen version of Terence Rattigan's *Separate Tables.*

David Niven was graduated in 1929 from the Royal Military College at Sandhurst, England. In

David Niven, who received an Academy Award in 1959 for best actor, as he appeared in his prize-winning role in *Separate Tables.*

UNITED ARTISTS

1934, following a three-year military career and varied employment in Canada, the West Indies, and the United States, he went to Hollywood, where he was given a screen test and played in minor parts before being assigned to his first major role, opposite Ginger Rogers, in *Bachelor Mother* (released in 1939). He was then cast as Edgar Linton in *Wuthering Heights* (1939). Well on his way to stardom when World War II broke out, he returned to England to re-enlist. During the war, Niven served in Normandy, Belgium, the Netherlands, and Germany, and was a major in the famed Phantom Reconnaissance Regiment. He was discharged in 1945 as a colonel.

His first postwar appearance was in the British film *Stairway to Heaven,* which was released in the United States in 1947. Returning to Hollywood, he was soon seen in *The Bishop's Wife* (1948), giving a performance which critics called one of his finest. Among his later motion pictures were *The Moon Is Blue* (1953), *The Little Hut* (1957), *Oh, Men! Oh, Women!* (1957), *My Man Godfrey* (1957), *Bonjour Tristesse* (1958), and *Ask Any Girl* (1959). In his role as Phileas Fogg in *Around the World in 80 Days* (1956), he was described by one critic as "serenely imperturbable . . . the epitome of a Frenchman's conception of a Britisher."

Niven's credits in other branches of the arts include a novel, *Once Over Lightly* (1951), believed to be largely autobiographical; a role on Broadway in André Roussin's *Nina* (1952); and frequent appearances in television plays.

NIXON, Richard Milhous, vice president of the United States: b. Yorba Linda, Calif., Jan. 9, 1913. Although he had already enjoyed the solid support of party leaders, and for some time had been considered the probable Republican nominee in the 1960 presidential election, two events of 1959 served virtually to assure his candidacy. The first of these was his visit to the Soviet Union on July 23–August 2 and his extraordinary public debate with Premier Khrushchev. From this tour, which also included Poland, the vice president emerged with enhanced stature and respect, particularly for the manner in which he acquitted himself in the rough-and-tumble verbal clash with Khrushchev. The second development which bolstered Nixon's prospects for 1960 was the surprise withdrawal (December 26) of New York Gov. Nelson A. Rockefeller (q.v.) from the Republican presidential picture. The move by Rockefeller, who might have provided the only serious opposition to Nixon, left the vice president unchallenged from within his party.

(Nixon also was credited with helping to bring about a settlement of the steel strike, announced on Jan. 4, 1960, and thus gained another significant political asset as the election year began.)

After four years as a naval officer in World War II (1942–46), Nixon was elected to the U.S. House of Representatives in 1946 and again in 1948, and to the U.S. Senate in 1950. He was the successful Republican vice presidential candidate in both 1952 and 1956. As vice president he served as President Eisenhower's goodwill ambassador, touring the Middle and Far East in 1953, the Caribbean area in 1955, southern Asia in 1956, and South America and England in 1958. His Latin American tour was a stormy one, and he won acclaim for his courage in the face of hostile mobs in Peru and Venezuela. Nixon has also undertaken many activities rarely performed by previous vice presidents—particularly the assumption of some presidential duties during President Eisenhower's convalescence following a heart attack in 1955.

Vice President Nixon returned to the public spotlight in the spring of 1959 after a relative political lull during the early months. In an address in New York City, April 13, he proposed that the International Court of Justice undertake to arbitrate disputes growing out of future East-West agreements. On June 27 he and Queen Elizabeth II, in ceremonies at Massena, N.Y., formally dedicated the St. Lawrence hydroelectric power project.

Nixon's eventful visit to the Soviet Union was viewed by observers as a political master stroke. Although the formal purpose of the journey was the opening of the American National Exhibition in Moscow's Sokolniki Park on July 24, his travels about Moscow and formerly closed industrial cities in Siberia and the Urals afforded him close contacts with the Soviet leaders and people, and focused world attention upon him.

Apart from any personal advantages which ac-

Vice President Richard M. Nixon (in dark suit) discusses a kitchen display with Soviet Premier Khrushchev at opening of the American National Exhibition in Moscow, July 24.

WIDE WORLD

crued to him, Nixon's visit was unique in a number of respects. It marked the first time that an American official of Nixon's standing was able to penetrate Iron Curtain secrecy and to appeal directly to the Soviet people, as he did on August 1 in an outspoken address over the Moscow television network and which was broadcast nationwide by radio. (His speech was published in full by the government newspaper *Izvestia* the next day.) He was allowed to mingle with ordinary Russians on his tours of Moscow (July 25) and Leningrad (July 26), and on a swing through the hinterlands (July 28–31) to such growing industrial cities as Novosibirsk in Siberia and Sverdlovsk in the Urals. Surprisingly friendly crowds cheered Nixon's arrival in many places, although there were instances of heckling and hostile questioning. In short, the occasion of his visit came to resemble more an old-fashioned political campaign tour than a sensitive diplomatic maneuver, and the vice president, a veteran of the political stump, adroitly seized the opportunity to explain his nation's ideals, policies, and way of life.

Accompanying the vice president on his trip were his wife, Pat; Dr. Milton S. Eisenhower; Vice Admiral Hyman G. Rickover; and a party of 56 American newsmen.

In his personal contacts with Khrushchev, Nixon was able to review at length a wide range of East-West issues, notably during a 5½-hour discussion (July 26) at the premier's *dacha* outside Moscow. But their famous running debate on the opening day of the American exhibition was the incident which astonished diplomats and made headlines throughout the world. In a blunt, sometimes acrimonious but generally good-natured exchange, as they made their way through the throngs inspecting the exhibits, both men expressed forcefully their countries' respective positions. The day-long debate flowed over a wide variety of topics, including the relative merits of their two systems with respect to color television, housing, kitchen gadgetry, workers' salaries, and missile power. The high point came in the kitchen of a model American home, where the two leaders, in full view of television tape recorders, argued with fervor and animation.

From Moscow, Nixon flew on to Warsaw, Poland, on August 2. There he was given a rousing welcome by a crowd of 100,000 Poles. He conferred with Polish Communist leader Władysław Gomułka and other officials before returning home on August 5.

Nixon had been meeting privately for some time with both sides in the steel dispute, and in December, with the president's approval, he intensified his efforts in a series of behind-the-scenes conferences. As the January 26 deadline neared for expiration of the Taft-Hartley injunction and a likely resumption of the strike, Nixon met secretly (December 31) with labor and management representatives in Washington and New York City, and reportedly impressed upon the steel companies the prospects that Congress might adopt legislation inimical to industry. These talks led directly to a marathon negotiating session and final agreement on a compromise plan which the vice president had proposed. All parties in the dispute paid tribute to Nixon's role in effecting an end to the stalemate, and Labor Secretary James P. Mitchell, who joined him in the final round of talks, said, "Without the vice president we would not have had a settlement." (See also LABOR.)

On Jan. 9, 1960—his 47th birthday—Nixon agreed to permit the entry of his name in the New Hampshire, Ohio, and Oregon primaries, and, in effect, announced his candidacy for the presidency. Popular polls (see PUBLIC OPINION SURVEYS) in 1959 had shown him to be leading all prospective Democratic candidates. (See also REPUBLICAN PARTY.)

Consult Mazo, Earl, *Richard Nixon: A Political and Personal Portrait* (1959).

S. J. F.

NOBEL PRIZES. See PRIZES AND AWARDS.

NOEL-BAKER, Philip John, British government official: b. London, England, 1889. On Nov. 5, 1959, the Nobel Peace Prize was awarded to Noel-Baker, a Quaker pacifist who had spent his life working for world peace through disarmament as a delegate to the League of Nations and the United Nations, and as a writer, teacher, and Labour member of Parliament.

His father, Joseph Baker, emigrated from Canada, established an engineering firm, and entered the British Parliament as a Liberal. The son was sent for a year to Haverford College in Pennsylvania and then to the Sorbonne in Paris before going on to Cambridge University. He represented Great Britain in the Olympic Games in 1912 as a middle-distance runner and captained the British Olympic teams of 1920 and 1924. He served with the Religious Society of Friends ambulance unit in France and Belgium during World War I. "Noel" was added to his name when he married Irene Noel in 1915.

His lifelong involvement in peace conferences began in 1919 with the Paris Peace Conference. He helped to draft the Covenant of the League of Nations and was a member of the League Secretariat until 1923, when he became personal assistant to Viscount Cecil, winner of the Nobel Peace Prize in 1937. As a professor of international relations at the University of London (1924–29), he wrote several books on disarmament and the League of Nations. He assisted at the Disarmament Conference at Geneva in 1932, and held a Labour seat in Parliament in 1929–31 and from 1936. He served the Labour government as minister of state (1945–46), secretary of state for air (1946–47), secretary of state for commonwealth relations (1947–50), and minister of fuel and power (1950–51). Thereafter he was a member of the "shadow cabinet" of the Labour Party until he was defeated in the party's elections held on the same day that he was announced as winner of the Nobel Prize.

At the close of World War II, Noel-Baker helped draft the United Nations Charter, was a delegate to the General Assembly, and participated in the formation of the U.N. Food and Agricultural Organization. In his most recent book on disarmament, *The Arms Race: A Program for World Disarmament* (1958), he advocated a world disarmament treaty embodying strict international controls at all stages. He said he would use the Nobel Prize money ($42,600) to promote disarmament through the United Nations Association and the World Federation of United Nations Associations.

NORFOLK ISLAND. Discovered by Captain Cook in 1774, this island (area, 13.3 square miles; pop., 1,045, June 30, 1959) lies 930 miles east of Sydney, Australia, and was accepted as a Commonwealth government territory on July 1, 1914. An administrator (R. S. Leydin) is assisted by an elected 8-member Advisory Council. Many inhabitants are descendants of *Bounty* mutineers, the whole population of Pitcairn Island (q.v.) having been transferred to Norfolk Island in 1856. There is one free primary school (139 pupils in 1959). Whaling (for which the quota was increased to

150 whales in 1959) and seed production are the chief occupations. Imports in 1957–58 were valued at £A225,037; exports at £A176,231.

NORTH AMERICA. A continent in the Western Hemisphere. Estimated area (including Central America, q.v.), 9,360,000 square miles; pop. (est. 1958), 256 million. (See the Index entry, *North America.*)

NORTH ATLANTIC TREATY ORGANIZATION. The North Atlantic Treaty was signed in Washington on April 4, 1949, by the United States, United Kingdom, France, Italy, Canada, Norway, Denmark, Portugal, Belgium, the Netherlands, Luxembourg, and Iceland. Greece and Turkey joined the organization in 1952, and the Federal Republic of Germany in 1955. At the beginning of 1960, NATO's organizational structure was as follows:

ORGANIZATIONAL STRUCTURE OF NATO

I. North Atlantic Council (15 states); headquarters, Paris
II. Military Committee (14)*
  A. Standing Group (3); headquarters, Washington
    1. NATO supreme commands (see separate outline below)
    2. Canada–United States Regional Planning Group (CUSRPG); headquarters, Washington
    3. NATO Defense College, Paris
    4. Military Agency for Standardization (MAS)
    5. European Military Communications Coordination Committee (EMCC), the European Long Lines Agency (ELLA), the European Radio Frequencies Agency (ERFA), the European Communications Security Agency (ECSA), and the European Naval Communications Agency (ENCA)
    6. Advisory Group on Aeronautical Research and Development (AGARD)
III. International Staff/Secretariat, Paris: Secretary General, Paul-Henri Spaak

Under the authority of the Military Committee, and receiving guidance and direction from the Standing Group, are the following NATO supreme commands:

I. European Command:
  A. Supreme Headquarters, Allied Powers, Europe (SHAPE); Supreme Allied Commander, Europe (SACEUR), Gen. Lauris Norstad (U.S.); headquarters, Rocquencourt, near Paris
    Deputy SACEUR, Gen. Sir Richard Gale (U.K.)
    Deputy (Naval), Vice Admiral Pierre Barjot (France)
    Deputy (Air), Gen. Leon W. Johnson (U.S.)
  1. Commander in Chief, Allied Forces, Central Europe (CINCENT), Gen. Jean-Étienne Valluy (France); headquarters, Fontainebleau
  2. Commander in Chief, Allied Forces, Northern Europe (CINCNORTH), Lt. Gen. Sir Horatius Murray (U.K.); headquarters, Oslo
  3. Commander in Chief, Allied Forces, Southern Europe (CINCSOUTH), Admiral Charles R. Brown; headquarters, Bagnoli, near Naples
  4. Commander in Chief, Allied Forces, Mediterranean (CINCAFMED), Admiral Sir Alexander Bingley (U.K.); headquarters, Malta
II. Atlantic Ocean Command:
  A. Supreme Allied Commander, Atlantic (SACLANT), Admiral Robert Lee Dennison (U.S.); headquarters, Norfolk, Va.
    Deputy SACLANT, Vice Admiral W. J. W. Woods (U.K.)
  1. Commander in Chief, Eastern Atlantic Area
  2. Air Commander in Chief, Eastern Atlantic Area
  3. Commander in Chief, Western Atlantic Area
  4. Commander, Striking Fleet, Atlantic
III. Channel Committee and Allied Command Channel:
  A. Allied Commander in Chief Channel (CINCCHAN), Admiral Sir Manley Power (U.K.); headquarters, Portsmouth, England
  B. Allied Maritime Air Commander in Chief, Channel (CINCMAIRCHAN), Air Marshal Sir Edward Chilton (U.K.); headquarters, Northwood, England

NATO IN 1959

The 15-member Western defense organization —the largest, most highly developed, and most important of the many alliance systems of which the United States is a member—completed its 10th year of existence in 1959, the original North Atlantic Treaty having been signed in Washington on April 4, 1949. The 12-nation treaty of 1949 has evolved into a 15-nation organization, with the accession of Greece and Turkey (1952) and West Germany (1955), and has become not only a defensive alliance but an international body of considerable complexity with a large military and civilian staff.

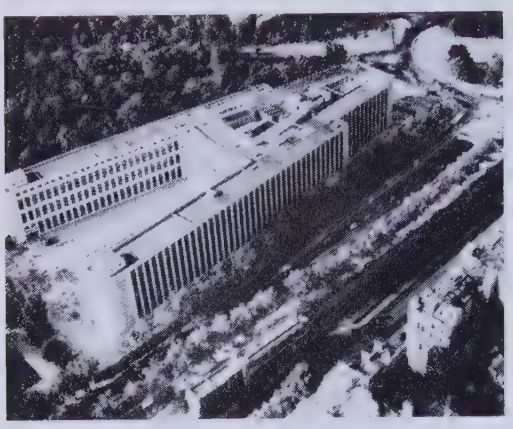
Apart from the celebrations and the self-assessments that went with the completion of the first decade, 1959 was in many ways a routine year for NATO. Noteworthy, though in a negative way, was the almost complete absence of projects and proposals, based on Article 2 of the treaty, for some reconstruction of NATO, or expansion of its functions, which would make it something more than just a military alliance. The comparative absence of such suggestions was undoubtedly due to the existence of such bodies as the European Coal and Steel Community and the European Economic Community (qq.v.), which increasingly are seen as the proper mediums for economic integration—though it is to be noted that they are confined to Europe and do not include either Canada or the United States.

Almost the only voice which speculated about a broadening of NATO's functions was that of Dean Acheson, who developed the subject in an important speech at Bonn, Germany, on October 4. Acheson, who was United States secretary of state when NATO was created, suggested that the member nations of the Atlantic alliance "and other European nations who might want to join" should negotiate a second treaty, giving western Europe and the United States a united front on all political and economic, as well as military, issues. He suggested a wider arrangement, with more limited functions, than the present European bodies, to extend the political and economic powers of NATO. He proposed the creation of a high council, with the powers of foreign ministers, to make policy decisions. It would have three main tasks in the first instance: to improve the welfare of member nations; to help underdeveloped countries create their own means of production; and—pending global disarmament—to coordinate Western industrial capacity in order better to support the military effort and scientific research.

The fact remained, however, that the necessity for defense against Soviet aggression had brought NATO into being, and that, after all, the same necessity was the justification for maintaining it. Such was the theme of the short volume, *Why NATO?* (London 1959), which the secretary general, Paul-Henri Spaak, wrote to mark the 10th anniversary.

Unhappily, the general turning away from any expansion of NATO's functions did not carry the corollary that the member nations were prepared seriously and in a spirit of cooperation to face the problems of defense, and if necessary to make sacrifices for them. The year saw a continuation of earlier tendencies to reduce the actual number of troops in Europe, as well as of fighters and intermediate-range bombers. In theory the cutback in troops was compensated for by long-distance bombers and by the increasing installation of missiles of various kinds, with nuclear warheads, on European sites. What this theory left out of account was a hypothetical (but by no means entirely improbable) situation in which an enemy committed an aggression by conventional means, carefully eschewing nuclear weapons. The Western allies would then seemingly be confronted with the alternatives of speedy defeat, or of being the first to use the frightful weapon of nuclear bomb-

* Iceland, which has no military establishment, may be represented on the committee by a civilian.



UPI; WIDE WORLD

(*Left*) New headquarters of the North Atlantic Treaty Organization near completion in Paris. (*Right*) President Eisenhower (at left, hand to chin), attending NATO Council meeting in Paris on September 3, hears NATO Secretary General Paul-Henri Spaak (at right, with glasses) address the Council. Randolph Burgess, U.S. representative, is at the president's left.

ing, in which there was no longer any reason to assume a definite Western superiority.

A fairly sharp dichotomy of opinion was emerging between informed critics of NATO who put forward such points in criticism of current policies, and the leading statesmen of the Western alliance, who continuously applied and intensified such policies throughout 1959. Among the notable critics might be mentioned Henry Kissinger, the American military expert, who spoke at a large-scale discussion conference, the Atlantic Congress, held in Westminster Hall, London, June 5–10; and George F. Kennan, former member of the U.S. State Department who, in a BBC broadcast in October, reconsidered the themes of his famous Reith Lectures of 1957 in the light of changing circumstances.

NATO ground forces in Europe in 1959 amounted to no more than 21⅓ divisions, understood to consist of 5 United States divisions of the Seventh Army, 7 West German divisions, 4 small British divisions, 2 French, 2 Belgian, and 1 Netherlands, plus a Canadian brigade. Soviet forces, which in all were estimated at perhaps 175 divisions, included 22 in East Germany (plus 9 anti-aircraft divisions), 2 in Poland, 2 in Rumania, and 5 to 7 in Hungary. Satellite armies were thought to comprise another 65 divisions.

The current goal in modernization of NATO ground forces is 100 missile battalions of all types —a goal to be achieved by 1963. The missiles furnished by late 1959 went to a base in Britain, but the NATO military command during the year was also moving to arm NATO's flanks. A missile base was well under construction in Italy, negotiations were being conducted for bases in the Scandinavian countries, and on October 10 it was announced in Washington that agreement had been reached for the construction in Turkey of an intermediate-range missile base. On the negative side, France continued its refusal to permit a missile base on her soil, and it was reported in October that negotiations for a missile base in Greece had apparently broken down.

The most serious internal difficulties within NATO in 1959—as distinguished from general questions of Western military policy—concerned French cooperation in the alliance. These difficulties stemmed basically from President de Gaulle's determination that France should be considered an equal partner with the United States and Britain, and, as a consequence, that France should have as much access as Britain to United States atomic secrets. From these premises a number of French policy steps, all exceedingly awkward for her allies, followed. France announced plans for exploding an atom bomb of her own at a test site in the Sahara. This announcement exacerbated relations between the European powers and newly independent African states, including some of France's own former colonies (See AFRICA; ATOMIC ENERGY).

Secondly, it was announced on March 11 that French naval forces in the Mediterranean would remain under French national command, and would not be transferred to NATO, even in wartime. On March 19, Gen. Lauris Norstad, supreme allied commander in Europe, commenting on this decision at a press conference in Paris, expressed concern, but said that it would be inaccurate to suggest that the withdrawal of such a relatively small force could have any decisive influence on the success or failure of the Atlantic alliance.

Thirdly, President de Gaulle refused to permit the stockpiling by the United States of atomic weapons on French soil unless France were given control of them. As a consequence of this stand, there had to be a large-scale redeployment of NATO's air strength, and on July 8 it was announced that nine squadrons of fighters and fighter-bombers (about 200 planes) based on French airfields would be moved to bases in Britain and West Germany.

Among other notable NATO developments in 1959 was the signing (August 3) of an agreement between West Germany and the six allied powers with troops stationed there (United States, United Kingdom, France, Belgium, Netherlands, and Canada) regarding the status of NATO forces. The new regulations, which replaced those of 1952, had as their general effect the cutting back of concessions, immunities, and financial advantages of the allied forces in West Germany.

A further redeployment of United States air strength in Europe was foreshadowed by the conclusion in October of an agreement whereby the United States would withdraw from bases in Morocco.

At the end of 1959 the new NATO headquarters building in Paris, at the Port Dauphine, was nearing completion, for occupation early in 1960. The new building, which cost $10 million and has a ground plan in the shape of an enormous A (for Atlantic), replaces the temporary quarters in the Palais de Chaillot, occupied since 1951.

On his trip to Europe in the late summer, President Eisenhower visited NATO headquarters, scene of his former command, on September 3, and

addressed a session of permanent representatives to the North Atlantic Council.

The spring ministerial meeting of the North Atlantic Council, which included formal celebrations of the 10th anniversary, took place in Washington, April 2–4. The conference was concerned largely with forging a united policy on the questions of Berlin and of Germany.

The winter ministerial meeting of the council took place in Paris on December 15–17 and 22. The rather bland communiqué of December 17 said little beyond the fact that the ministers had instructed the permanent council to undertake long-term planning covering the next ten years. It gave no hint either of the storm which had been caused by a supposedly secret speech by Gen. Nathan Twining in the Military Committee on December 10 criticizing France's lack of cooperation in military matters, or of current United States hopes that a greater share of NATO costs would be met by the European allies.

(For further references, see the Index entry, *North Atlantic Treaty Organization.*)

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NORTH BORNEO. See BORNEO.

NORTH CAROLINA. South Atlantic state, United States; one of the original 13 states. The "Tarheel State" ranks 28th in area and 12th in population among the 50 states.

Area and Population.—Area: 52,712 square miles (land, 49,097; inland water, 3,615), divided into 100 counties. Population: (1950) 4,061,929; (est., July 1, 1958) 4,469,000. Urban places with populations above 10,000 (as estimated by the State Board of Health for July 1, 1959) are:

Albemarle	18,958	Kinston	21,065
Asheville	54,563	Lexington	16,365
Burlington	35,993	Lumberton	14,448[3]
Charlotte	164,697	Monroe	13,535
Concord	17,328	New Bern	19,512
Durham	81,597	Raleigh (*capital*)	83,051
Elizabeth City	13,721	Reidsville	12,929
Fayetteville	50,708	Rocky Mount	29,667
Gastonia	24,697	Salisbury	21,092
Goldsboro	25,321	Sanford	14,684
Greensboro	88,329	Shelby	16,868
Greenville	20,470	Statesville	21,952
Henderson	14,095	Thomasville	11,256
Hickory	15,930	Wilmington	55,810
High Point	41,342	Wilson	26,507
Kannapolis[1]	28,448[2]	Winston-Salem	95,211

[1] Unincorporated place. [2] 1950 federal census figure. [3] Special census, 1955.

Executive.—Chief state officers in 1959:
Governor: Luther H. Hodges (Democrat)
Lieutenant Governor: Luther E. Barnhardt
Secretary of State: Thad Eure
Treasurer: Edwin S. Gill
Attorney General: Malcolm B. Seawell
Auditor: Henry L. Bridges
Supt. of Public Instruction: Charles F. Carroll

Constitution and Judiciary.—The present constitution, which went into effect in 1877, is based on that of 1868. The Supreme Court comprises seven justices; chief justice in 1959 was J. Wallace Winborne.

Legislature.—The North Carolina General Assembly comprises a 50-member Senate (in 1959, 49 Democrats and 1 Republican) and a 120-member House of Representatives (116 Democrats and 4 Republicans), which meet in odd-numbered years commencing the first Wednesday after the first Monday in February. (See below, *Principal Events, 1959.*)

Finance.—State revenue in the 1957–58 fiscal year totaled $518,643,135, comprising $355,084,393 from state tax sources, $153,350,628 from the federal government, and $10,208,114 from other sources. Tax revenue consisted of $73,296,420 from a 3% general sales tax, $55,108,422 from individual income taxes, $43,472,197 from corporate income taxes, $91,693,313 from motor fuel taxes, $35,130,973 from licensing, and $56,383,068 from other sources. Expenditures of $427,048,896 comprised $175,165,058 for education, $35,762,667 for health, welfare, and safety, $152,165,388 for highways, and $63,955,783 for other purposes. Long-term indebtedness on Aug. 31, 1958, amounted to $270,971,000.

Banking.—As of June 10, 1959, the state's 43 national banks had $710,820,000 in assets, $467,837,000 in demand deposits, and $164,287,000 in time deposits. The 156 commercial banks had assets of $2,095,426,000, demand deposits of $1,293,804,000, and time deposits of $519,798,000.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year were an estimated $193 million ($203.09 per pupil), comprising $31.66 million from local school districts, $154.4 million from the state, and $6.94 million from the federal government. Construction and improvement outlays approximated $48.54 million, and teachers' salaries averaged $3,745.

NORTH CAROLINA SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–8)	2,029	25,679	815,177
Public secondary (9–12)	910	9,416	245,010
Private and parochial elementary and secondary	26	228	2,642
Vocational and trade schools	7	121	2,765
Junior colleges	24	553	7,211
Teachers colleges	6	517	8,269
Colleges and universities	29	3,791	47,794
Other higher institutions	4	32	900

Social Welfare.—In the 1958–59 fiscal year, public assistance expenditures from state and federal funds (excluding institutional costs) totaled $59,345,276, including $23,672,756 for the aged, $22,759,177 for dependent children, and $9,279,582 for the permanently and totally disabled. A monthly average of 175,894 persons received public assistance. The state spent $18,287,361.71 for mental health activities and $12,258,482 for penal programs.

Labor Force.—On July 1, 1959, nonagricultural employment totaled 1,094,400, compared with 1,061,700 for the previous July 1 and a 1,090,600 average for the 12 intervening months. Of nonfarm employees in 1959, 43.43% were engaged in manufacturing, 18.75% in trade, and 13.67% in government. Unemployment was down sharply to 25,465 on Sept. 1, 1959, from 38,800 a year earlier. The state paid $48,745,049 in unemployment compensation in 1958.

Manufacturing.—There were 480,000 persons employed in the state's 7,000 manufacturing plants in 1958. Wages of production workers in 1957 amounted to $1,476,263,000, and value added by manufacture totaled $2,929,291,000. Production workers averaged $62.82 for an average workweek of 41.6 hours in August 1959.

MAJOR NORTH CAROLINA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Textile mill products	224,751	$662,158	$1,086,280
Tobacco manufactures	26,124	94,876	527,203
Furniture and fixtures	40,385	128,487	222,913
Food and kindred products	27,442	86,249	199,800
Chemicals and products	11,560	51,696	141,454
Electrical machinery	14,403	59,069	126,731
Lumber and wood products	33,720	77,091	112,198
Apparel and related products	29,431	68,064	108,834
Pulp, paper, and products	10,664	49,896	96,913

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 North Carolina ranked 40th among the states in the value of its mineral output, with 0.24% of the national total. It was first in the output of feldspar, sheet mica (79% of domestic total), scrap and flake mica, olivine, pyrophyllite, and spodumene; third in talc and soapstone; and fifth in kaolin. The state stopped producing tungsten in 1958.

NORTH CAROLINA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	2,046,000	$ 1,187,000
Feldspar (long tons)	...[2]	...[2]
Mica, scrap	50,897	1,041,000
Mica, sheet	261	1,722,000
Sand and gravel	7,044,000	5,880,000
Stone	12,385,000	19,132,000
Talc and pyrophyllite	126,158	614,000
Tungsten concentrates (60% WO_3)	...[2]	...[2]
Other minerals	...	10,315,000
Total	...	$39,891,000

[1] Excludes certain clays, value for which is included in "Other minerals." [2] Figures withheld to protect individual company's confidential data. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in 1958 was valued at $7,694,808, including principally menhaden (235,493,700 pounds valued at $3,485,306).

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $562,542,000 from $629,844,000 for the corresponding period of 1958. For the full year 1958, income comprised $313,567,000 from livestock and livestock products, $697,093,000 from crops, and $37,538,000 from government payments. Principal income sources in 1958 were tobacco, $439,080,000; broilers, $78,176,000; dairy products, $63,798,000; and eggs, $61,386,000. Forest products yielded $49,915,000.

NORTH CAROLINA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	1,303	1,800	1,400
Corn (1,000 bu.)	65,521	81,400	85,914
Cotton lint (1,000 bales)	419	256	325
Cottonseed (1,000 tons)	175	106	136
Hay (1,000 tons)	1,221	1,258	1,225
Oats (1,000 bu.)	12,379	10,416	13,650
Peanuts (1,000 lb.)	284,998	331,080	284,800
Potatoes (1,000 cwt.)	3,856*	3,775	3,628
Soybeans (1,000 bu.)	5,426	10,442	9,592
Sweet potatoes (1,000 cwt.)	2,660*	2,325	2,560
Tobacco (1,000 lb.)	871,045	755,455	725,455
Wheat (1,000 bu.)	7,326	7,191	9,353

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 274,000 farms in the state in 1958. Total acreage (1954) of 18,260,000 included 5,504,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,014,000 cattle, 1,490,000 hogs, and 14,146,000 chickens (excluding commercial broilers). There were 333,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $160,318,000. During the calendar year 1958, contracts involving 1,136 miles of construction were completed in addition to work on local roads and highways.

Highways, roads, and streets on Jan. 1, 1959, totaled 78,158 miles (42,112 hard-surfaced). *Registered motor vehicles* numbered 1,722,230 on Aug. 31, 1959, including 1,232,905 passenger cars. There were (1958) 30 *railroads* operating 4,470.6 line miles and (1959) 6 regularly scheduled *airlines* and 111 *airports and airfields* (55 commercial and municipal, 5 military, and 51 private).

Communications media (1959) included 136 AM and 42 FM *radio stations;* 11 VHF and 1 UHF *television stations;* 47 daily *newspapers* (circulation, 1,806,598) and 158 other newspapers (373,448); and (January 1) 268,500 business and 751,300 residential *telephones.*

Principal Events, 1959.—In its biennial session, held from February 4 to June 20, the General Assembly adopted a budget of $1.2 billion, the largest in state history, for the 1959–61 biennium. The legislature also proposed several bond issues for capital improvements, which were approved by the voters on October 27. These will provide state higher educational institutions with $18,891,000; state mental institutions, $12,053,000; community colleges, $1.5 million; state hospitals, $500,000; state ports, $500,000; state training schools, $466,000; and a state blind rehabilitation center, $140,000. The assembly also took steps to provide for the erection in Raleigh of a long-needed legislative building. The budget was adopted without the addition of new taxes, although the legislature enacted a law which provides that beginning in January 1960, state personal income taxes are to be withheld by the employer.

The 1959 General Assembly enacted a minimum hourly wage law of 75 cents for employees in companies hiring more than five people, thus becoming the first legislature in the South to enact such a measure. It increased appropriations for the Parole Board, which for the first time will be able to give proper supervision to parolees. One of the assembly's outstanding acts was the establishment of a Department of Water Resources, with a director as administrative head and a seven-member board to formulate policies to coordinate the conservation and use of water in the state. The legislature further enacted laws providing for a penalty point system for violations of motor vehicle laws; giving the Milk Commission authority to regulate the retail price of milk when the commission finds that an emergency exists; and granting pensions to firemen, which are to be financed through increases in tax rates on fire insurance premiums. After lengthy debate the assembly rejected recommendations for court reform submitted by a court study committee; it also turned down proposals submitted by the Constitutional Study Commission, created by the 1957 General Assembly. Attempts to reapportion representation in the legislature on the basis of the 1950 census again failed, as they had in every legislature since 1951.

Through legislative action, North Carolina became the first state to require a compulsory polio vaccination. A new law denies admission of unvaccinated six-year-olds to any public school.

The campaign of Gov. Luther Hodges for industrial expansion, research, and diversification in the state continued to be notably successful. Industrial investment in North Carolina in the fiscal year 1958–59 totaled $247,371,000, exceeding the record established the preceding year. Chemstrand and several other corporations were making plans to locate plants in the Research Park area of the Research Triangle (Durham-Raleigh–Chapel Hill). In the fall, Governor Luther Hodges and some 60 state business and professional leaders visited countries of western Europe in an effort to promote the industry and trade of North Carolina.

The year witnessed, at the textile mills in Henderson, the state's most prolonged strike. The strike was finally settled, although not until after intermittent outbursts of violence caused the National Guard to be ordered to the scene in May. On July 23, eight textile union members were sentenced to prison terms following convictions for conspiring to blow up mill installations.

Slow and peaceful adjustment to racial integration in the public schools continued under the Pupil Assignment Law of 1956. Local school boards in Craven and Wayne counties admitted Negroes to formerly all-white schools. In October, 54 Negro pupils were attending integrated schools in seven of the state's cities and towns.

Principal Events by: HUGH T. LEFLER,
Kenan Professor of History,
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NORTH DAKOTA. North Central state, United States; admitted to the Union, Nov. 2, 1889. The "Flickertail State" ranks 17th in area and 43d in population among the 50 states.

Area and Population.—Area: 70,665 square miles (land, 70,057; inland water, 608), divided into 53 counties. Population: (1950) 619,636; (est., July 1, 1958) 638,000. Urban places with populations above 7,500 in 1950 (unless another date is given) are: Bismarck, *the capital*, 18,640; Fargo, 38,256; Grand Forks, 26,836; Jamestown, 10,697; Mandan (1955), 9,374; Minot, 22,032; and Williston (1956), 10,886.

Executive.—Chief state officers in 1959:
Governor: John E. Davis (Republican)
Lieutenant Governor: C. P. Dahl
Secretary of State: Ben Meier
Treasurer: John R. Erickson
Attorney General: Leslie R. Burgum
Auditor: Curtis Olson
Supt. of Public Instruction: M. F. Peterson

Constitution and Judiciary.—The present constitution went into effect in 1889. The Supreme Court comprises five justices; chief justice in 1959 was P. O. Sathre.

Legislature.—The North Dakota Legislative Assembly comprises a 49-member Senate (in 1959, 31 Republicans and 18 Democrats) and a 113-member House of Representatives (64 Republicans and 49 Democrats), which meet in odd-numbered years commencing the first Tuesday after the first Monday in January.

During the 1959 session, fiscal activities were reorganized under a new Department of Accounts and Purchases. The lawmakers provided for a state administrator of courts; the replacement of justices of the peace by county justice courts; and increases in the salaries of Supreme Court justices to $14,000 and those of District Court judges to $12,000. In education, the compulsory school attendance age was raised to 16 years; the Board of Higher Education was authorized to issue revenue bonds for the construction of revenue-producing buildings; state and county aid to school districts was increased to 60% of pupil costs; and state aid was initiated for junior colleges and for public school transportation.

Welfare legislation increased unemployment compensation benefits to $38 weekly; extended the maximum benefit period to 26 weeks; and raised disability benefits.

Other legislation revised regulation of installment and charge accounts and the issuance of securities; strengthened truck and motor vehicle laws; authorized the Highway Department to regulate advertising and businesses on the state highway system; and appropriated $1 million for loans to nonprofit organizations for the building of nursing homes and homes for the aged.

Constitutional amendments to be presented to the voters in 1960 would change the method of reapportioning the Legislative Assembly; establish a state Department of Labor; provide for the sale of state coal lands; and exempt license receipts and aviation gasoline and motor fuel tax revenues from being used for highway purposes.

Finance.—In the 1958–59 fiscal year, state revenue of $124,235,126.98 included $106,237,993 from state tax sources and $1,480,878.79 from the federal government. Tax revenue comprised $14,850,881.71 from a 2% general sales tax, $4,494,508.07 from individual income taxes, $1,514,756.51 from corporate income taxes, $18,927,340.26 from motor fuel taxes, $9,446,617.27 from licensing, and $57,003,889.18 from other sources. Expenditures of $126,965,334.45 consisted of $9,051,577.31 for education, $6,923,898.84 for health, welfare, and safety, $49,598,945.78 for highways, and $61,390,912.52 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $8,251,250.

Banking.—As of June 10, 1959, the state's 38 national banks had $371,724,000 in assets, $215,502,000 in demand deposits, and $125,422,000 in time deposits. The state's 117 other banks had assets of $321,047,742, demand deposits of $192,369,368, and time deposits of $99,978,986.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $38,837,419.62 ($312.10 per pupil), and revenue comprised $33,132,325.26 from local school districts, $10,091,791.89 from the state, and $514,771.34 from the federal government. Outlays for construction and improvements amounted to $8,250,839.67, and teachers' salaries (1958–59) averaged $3,460.05.

NORTH DAKOTA SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–8)	2,358	4,805	95,731
Public secondary (9–12)	375	1,990	33,219
Private and parochial elementary and secondary	86	661	17,461
Junior colleges	4	126	1,839[1]
Teachers colleges	5	248	3,573[1]
Colleges and universities	2	554	6,853[1]
Other higher institutions	1	30	482[2]

[1] 1959–60 figures. [2] 1958–59 figures.

UPI

North Dakota's Sen. William Langer (l.), who died November 8, was succeeded by ex-Gov. C. Norman Brunsdale (r.).

Social Welfare.—In the 1958–59 fiscal year, county, state, and federal funds for public assistance expenditures (excluding institutional costs) totaled $12,279,091, including $7,443,345 for the aged, $2,924,289 for dependent children, and $1,161,344 for the permanently and totally disabled. A monthly average of 17,634 persons received public assistance. The state spent $3,551,078.38 for mental health activities and $779,209.62 for correctional and penal programs.

Labor Force.—The state's labor force totaled 300,520 in July 1959, including 142,000 agricultural workers. Nonagricultural employment of 153,400 compared with 152,900 in the previous July and an average of 150,530 for the 12 intervening months. Of total nonfarm employees in July 1959, 30.4% were engaged in trade, 14.2% in service industries, and 22.4% in government. Unemployment of 3,570 on July 15, 1959, was below the 5,250 reported a year earlier. The state paid $3,517,009 in unemployment compensation during the year ending June 30, 1959.

Manufacturing.—The 5,931 persons employed in the state's manufacturing plants in 1957 earned $23,246,000 in wages. Value added by manufacture totaled $51,389,000, and outlays for new plant and equipment amounted to $3,646,000. Production workers' salaries averaged $80.82 for an average workweek of 42.7 hours in August 1959.

The state's major industry is food processing, which in 1957 employed 3,160 persons who received $12,430,000 in wages, and which added $28,734,000 in value by manufacture.

Mining.—In 1958 North Dakota ranked 35th among the states in the value of its mineral output, with 0.36% of the national total. Output value, up 4% from that of 1957, was at a record high. Chiefly accountable for the gain were increased outputs of petroleum, natural gas, and sand and gravel.

NORTH DAKOTA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	54,000	$ 66,000
Coal (lignite)	2,314,000	5,409,000
Natural gas (million cu. ft.)[2]	17,325	1,672,000
Petroleum (1,000 bbl.)[2]	14,141	42,282,000
Sand and gravel	11,464,000	6,605,000
Stone	23,000	35,000
Other minerals	...	3,024,000
Total	...	$59,093,000

[1] Excludes certain clays; value for which is included in "Other minerals." [2] Preliminary. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first

nine months of 1959 dropped sharply to $373,807,000 from $429,285,000 in the corresponding period of 1958. For the full year 1958, income comprised $219,354,000 from livestock and livestock products, $438,944,000 from crops, and $27,260,000 from government payments. Principal income sources were wheat, $267,423,000; cattle, $131,114,000; and barley, $64,395,000.

NORTH DAKOTA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	56,793	109,704	77,580
Corn (1,000 bu.)	26,862	25,479	22,572
Flaxseed (1,000 bu.)	18,799	20,576	11,356
Hay (1,000 tons)	3,717	3,919	3,180
Oats (1,000 bu.)	51,432	75,738	38,538
Potatoes (1,000 cwt.)	10,572*	14,700	12,000
Rye (1,000 bu.)	3,930	6,549	2,862
Soybeans (1,000 bu.)	953	3,710	3,029
Sugar beets (1,000 short tons)	326	464	426
Wheat (1,000 bu.)	113,651	147,372	97,152

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 58,000 farms in 1959. Total acreage (1958) of 42,800,000 included 20,515,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,870,000 cattle, 410,000 hogs, 581,000 sheep, and 3,568,000 chickens (excluding commercial broilers). There were 67,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds spent for the state highway system during the 1958 calendar year totaled $42,993,797, and 978.1 miles of highway were surfaced or graded during the year.

Highways and roads on Dec. 31, 1958, totaled 96,410.5 miles (49,809.8 surfaced). Registered *motor vehicles* numbered 470,485 in 1958, including 220,017 passenger cars. There were (1959) 6 *railroads* operating 5,258.84 line miles; 3 regularly scheduled *airlines;* and 217 *airports and airfields* (98 commercial and municipal, 2 military, and 117 private).

Communications media (1959) included 18 AM *radio stations;* 8 UHF *television stations;* 10 daily *newspapers* (circulation, 159,153) and 110 other newspapers (185,256); and (January 1) 44,600 business and 132,100 residential *telephones.*

Principal Events, 1959.—North Dakota's agricultural income declined approximately 18% in 1959, due primarily to drought, hail, and heat conditions over a large part of the state. Total cash income from all crops was $353,789,000 in 1959, compared with $438,944,000 in 1958. Livestock and livestock products yielded $217 million, a drop from $219 million the preceding year. These figures do not include government payments. (See also above, *Agriculture.*)

Other major sources of income—mineral production, tourism, and manufacturing—remained at approximately the 1958 level or improved. A total of 1,234 oil wells in 76 fields were producing in 1959, and the value of the oil and gas they yielded was expected to have increased. Of 404 new wells drilled during the year, 226 were brought into production. The value of lignite coal and other mineral output was up slightly. Reflecting the general economic improvement in nonfarm areas, employment in nonagricultural jobs reached an all-time high by mid-1959. (See above, *Labor Force.*)

On November 8, U.S. Sen. William Langer (q.v.) died at the age of 72 in Washington, D.C. Former Gov. C. Norman Brunsdale, a Republican, was appointed to serve until June 1960, when a special election will be held.

Otherwise, politically, the actions of the 1959 legislature were perhaps of most interest. Among these were its moves to improve public education. The legislature established minimum curriculums for high schools and minimum terms for grade schools. It appropriated $108,255,089 for public schools during the 1959–61 biennium, more money for that purpose than in any preceding session. Although no new major taxes were levied, the budget was expected to remain balanced, largely because income from various taxes was up about 9% over that of 1958, reflecting a similar increase in retail sales during the year.

Highway construction expenditures totaled $40 million. Some 570 miles of roadways were blacktopped or paved, and 240 miles were graded. The superhighway system, with 71 additional miles opened to traffic in 1959, reached a total length of 110 miles.

Principal Events by: C. W. Leifur, *Principal, Bismarck (N.Dak.) High School.*

NORTHERN IRELAND. Northern Ireland's six counties (land area, 5,238 square miles; est. 1958 pop., 1,402,300) form under the Government of Ireland Act (1920) an integral part of the United Kingdom of Great Britain and Northern Ireland. The counties, with 1958 estimated populations, are: Antrim (698,800, including Belfast county borough, 436,200); Armagh (117,400); Down (251,300); Fermanagh (50,900); Londonderry (161,200, including Londonderry county borough, 51,500); and Tyrone (131,700). Belfast is the capital city and chief port. The latest census figures (1951) show that Protestants numbered 899,461; Roman Catholics, 471,460.

Government.—Executive power is vested in a governor (Lord Wakehurst, who assumed office on Dec. 3, 1952, and was reappointed for a second 6-year term in 1958). He is advised by ministers responsible to Parliament, which consists of a 52-member House of Commons and a 26-member Senate. Northern Ireland also elects 12 members to the United Kingdom House of Commons, and the Unionist government in power is pledged to continue constitutional links with Great Britain.

Finance.—In the 1959–60 budget, total revenue was estimated at £100,540,000 (some £3 million less than in 1958–59), including £83,416,000 from taxes, which are levied at virtually the same rates as in Great Britain. Supply services accounted for £83,461,670 out of total estimated expenditure of £97,489,670. After allowing for an imperial contribution (a sum retained annually by the British Exchequer) of £3 million, a surplus of £50,330 was anticipated.

Education.—For 1959–60, expenditure on education was estimated at £14,358,200. Educational facilities on Dec. 31, 1958, included 1,558 primary schools (201,101 pupils, 6,314 teachers); 73 secondary intermediate schools (35,968 pupils, 1,451 full-time teachers); 33 technical intermediate schools (5,459 pupils; teachers in these schools are also employed in institutions of higher education); 81 grammar schools (35,577 pupils, 1,792 full-time teachers); and 19 special, including hospital, schools (1,434 pupils, 104 teachers). On July 31, 1958, there were 179 institutions of higher education (32,980 students, 654 full-time teachers). Students enrolled at Queen's University, Belfast, and Magee University College, Londonderry, numbered 3,202 and 208, respectively, in 1958–59.

Production and Trade.—About 60,000 persons are employed in the textile industry, and 52,000 work in shipbuilding, aircraft construction, and engineering. The aggregate tonnage of ships launched in 1958 was 100,253. The value of agricultural gross output for 1957–58 was estimated at £122 million. Principal acreages in 1958 together with their yield (in tons) were: oats, 218,420 (182,000); hay, 434,260 (702,000); potatoes, 98,980 (574,000); and barley, 16,010 (17,800).

Great Britain has close economic links with the six counties and absorbed £276 million (about 92.5%) of total Northern Ireland exports during 1957, when exports amounted to £297,904,000 and imports to £318,392,000.

Transportation and Communications.—Road mileage totals 13,736 (trunk roads, 348). Rail traffic is conducted by the Ulster Transport Authority. British European Airways maintains air services with Great Britain.

Principal Events, 1959.—The complete defeat of the Sinn Fein Party in the general elections of October 8 dealt a severe blow to that extreme nationalist movement. All 12 of the seats in the United Kingdom House of Commons were taken by the Ulster Unionists, including two formerly held by the Sinn Fein. The latter party polled only 63,415 votes, less than half of the 152,310 it re-

ceived in 1955. Viscount Brookeborough, the prime minister, hailed the results as bolstering the Eire government's efforts to suppress the Irish Republican Army (IRA), to which the Sinn Fein has been linked.

The campaign of terrorism begun by the outlawed IRA in 1956 continued in the early part of 1959 on a limited scale. Concern was caused in Northern Ireland by the Republic of Ireland's releasing of IRA internees. The British ambassador in Dublin delivered a protest on March 6, but by March 11 the last of the internees had been freed. In August, two policemen were injured in a bombing attack on a vehicle just inside the Northern Ireland frontier.

In postwar years, Northern Ireland has laid great stress on the development and expansion of its industry. In 1959, one of the biggest of its new industries, a plant built at Coleraine by Chemstrand, Ltd., to produce artificial fibers for the manufacture of clothing, was opened. Officiating at the ceremonies was Prince Philip, who also visited Belfast in May to open a £2 million science and engineering center at Queen's University, which celebrated the 50th anniversary of the granting of its charter. Later in the year Princess Margaret visited Northern Ireland to launch the Royal Mail Line's ship *Amazon* (20,000 tons).

DONOVAN ROWSE,
Author and Publicist.

NORTHERN RHODESIA. See RHODESIA AND NYASALAND.

NORTHWEST TERRITORIES. Comprising slightly less than 34% of the land and water area of Canada, the Northwest Territories' 1,304,903 square miles include most of the Canadian mainland north of the 60th parallel, together with a number of islands in Hudson, James, and Ungava bays, and the islands of the Arctic Archipelago. The 1956 census placed the population at 19,313; est., June 1, 1959, 21,000. Racial distribution, based on the 1951 census, was: Eskimos, 43%; whites, 33%; and Indians, 24%.

Government.—The Northwest Territories is divided for administrative purposes into the districts of Mackenzie (527,490 sq. mi.), Franklin (549,253 sq. mi.), and Keewatin (228,160 sq. mi.). It is governed by a commissioner, who acts on instructions given from time to time by the governor general in council or the minister of northern affairs and national resources. Legislative powers are held by the Council of the Northwest Territories. Of its nine members, five are appointed, mainly from the ranks of the senior federal civil service, and four are elected for three-year terms from constituencies in the Mackenzie District. The commissioner in 1959 was R. G. Robertson, deputy minister of northern affairs and national resources.

Education.—In 1959 there were 46 federal-territorial schools in operation, 19 of which were primarily for the education of Eskimos. In addition, a number of part-time mission schools are maintained with government assistance, and federal-territorial residential schools are operated at Fort Smith, Fort McPherson, Yellowknife, and Inuvik. The Inuvik School, comprising a 30-classroom school and two 250-pupil residences, was opened in the autumn of 1959. Free correspondence courses were also available to children and adults.

Public Health and Welfare Services.—Federal welfare workers, assisted by teachers, missionaries, and the Royal Canadian Mounted Police, carried on their work in 1959 among the native population from posts distributed over thousands of miles of the northern frontier. In addition to the payment of family allowances, which contribute greatly to the welfare of the Eskimos and Indians, old-age assistance, blind persons' allowances, and disabled persons' allowances are paid to those eligible for these benefits. A hospital insurance plan has been set up, to go into effect in the spring of 1960. Fourteen hospitals were operated in the territories in 1959; missions conducted 10 of them, one was operated by the federal Department of National Health and Welfare, the locally elected hospital board at Yellowknife operated one, and the other two were company hospitals. Of 12 nursing stations in operation, one was a mission station. The territorial and federal governments conducted X-ray and medical surveys during the summer months and provided free treatment for crippled children and cancer and tuberculosis patients, as well as free dental service for children in Yellowknife, Fort Smith, and Hay River. The 38th annual Eastern Arctic Patrol, including physicians, a dentist, nurses, and an X-ray technician examined and treated Eskimos at some 30 settlements on the 12,000-mile voyage.

Transportation and Communications.—The main water transportation route from Alberta into the Northwest Territories is provided by the Athabasca, Slave, and Mackenzie rivers for a distance of 1,700 miles to the Arctic coast. The 433-mile Mackenzie Highway, linking Grimshaw, Alberta, with Hay River and Fort Providence, on Great Slave Lake, is being extended to Yellowknife. Scheduled air routes carry passengers, mail, and freight to settlements in the Mackenzie District and to Frobisher Bay, Baffin Island. Chartered air services and steamships supply eastern Arctic points. The Eastern Arctic Patrol was carried out in 1959 by the Canadian Government Ship *C. D. Howe*. In the area of communications, the Canadian Broadcasting System added five stations to its northern network in 1959, including a 1,000-watt transmitter at the new townsite of Inuvik, and increased the number of shortwave broadcasts to the territories.

Production and Industry.—Despite a slight decline in the rate of economic expansion during 1958, mineral production increased and there was a very large expansion of oil and natural gas exploration. Mineral production in 1958 had a value of $24,791,516 (up about 12% from 1957), of which gold (335,720 fine ounces) accounted for $11,392,475; uranium ore, $9,628,000; and silver, $63,723. Crude oil produced and refined at Norman Wells was valued at $475,000, and natural gas at $7,075.

There were some 6,000 reindeer maintained by the federal government in the Mackenzie River delta region for the benefit of the native population. Wood Buffalo National Park contains about 14,000 buffalo. A controlled slaughter of reindeer and buffalo for meat is made annually. Timber cutting is also carried on in Wood Buffalo National Park, where 1958–59 production totaled 12,449,323 board feet of lumber, 328,535 linear feet of round timber, and 7,814 cords of fuelwood.

Commercial fishing in Great Slave Lake and surrounding lakes during 1958–59 had a market value of $705,000 from a catch of 5,763,000 pounds, principally whitefish and trout. Fur production in the 1958 season totaled 257,183 pelts valued at $735,000.

Principal Events, 1959.—Great interest was shown in oil and natural gas exploration in the Northwest Territories during the year. In the 12 months ended March 31, 1959, oil and gas exploratory permits were issued for 43.4 million acres in the Northwest Territories; and in the Arctic islands north of 70° latitude, priorities for exploratory permits for over 95.4 million acres had been allotted by the end of July, 1959.

In July 1959, the 17th session of the Council of the Northwest Territories, meeting for the first time in Chesterfield Inlet, passed a resolution calling upon the federal cabinet to give Indians equal liquor rights with white residents and Eskimos. The session's major legislation was an ordinance establishing a hospital insurance plan for territorial residents which is expected to be in operation by April 1960.

Eskimos were given a voice in their own affairs for the first time in 1959 when three of their elected representatives took their places in May on the Eskimo Affairs Committee in Ottawa. The first Eskimo cooperatives were formed during the year in the Ungava Bay area under legislation passed by the Northwest Territories Council. A limited amount of sports hunting for buffalo was permitted, and the first sportsmen to hunt buffalo in the Northwest Territories went into the field in the autumn of 1959.

An extensive market research program was carried out to establish the market potential for Eskimo handicrafts and other products. An organized handicrafts industry will be established to supply Eskimo-made products to retail outlets in southern Canada.

R. G. ROBERTSON,
Commissioner, Northwest Territories.

NORWAY. A constitutional monarchy in northwestern Europe, Norway's area is 125,064 square miles. Its population as of Jan. 1, 1959, was 3,541,000, or about 28 inhabitants per square mile.

EUROPEAN

Stephen Rockefeller, son of New York's Gov. Nelson Rockefeller, was married to the former Anne-Marie Rasmussen, in Sögne, Norway, August 22. Behind the bridal couple are (l. to r.): Mrs. Nelson Rockefeller, Mr. and Mrs. Kristian Rasmussen, the bride's parents, and Governor Rockefeller.

Twenty-two cities of more than 10,000 population include Oslo, the capital (454,000); Bergen (114,300); Trondheim (60,000); and Stavanger (52,300).

Government.—The Norwegian Constitution of 1814, with amendments, provides for three separate branches of government. Legislative power is vested in the 150-member Storting, a modified unicameral Parliament, elected every fourth year. Three fourths of its members constitute the Odelsting, and one fourth, the Lagting. All citizens 21 years of age have the right to vote. Executive authority is vested in the King (since Sept. 21, 1957, Olav V), who exercises his power through a cabinet, headed by a premier. Other cabinet members head 14 government departments. Except for World War II and a short period thereafter, Norway has had all-Labor governments since 1935. The present Storting, elected Oct. 7, 1957, is composed of 78 Laborites, 29 Conservatives, 15 Liberals, 15 Centerists, 12 Christian Democrats, and 1 Communist. Judiciary power is centered in the Supreme Court, the ultimate court of appeal, which comprises a chief justice and 18 justices.

Religion and Education.—About 96% of the population belongs to the Evangelical Lutheran State Church, but other creeds enjoy full freedom of worship. The 1950 census showed 123,314 did not belong to the state church, including 30,036 Pentecostals, 11,570 Methodists, 8,964 Baptists, and 4,753 Catholics.

Elementary education is free and compulsory for all children aged 7 to 14. A new law approved in 1959 permitted municipalities to start 9-year obligatory schooling, with 2-year elective courses. In the fall of 1959 about 450,000 were enrolled in elementary schools, 68,000 in secondary schools, and 8,600 in institutes of higher learning. Another 3,140 studied abroad, including over 400 in the United States. Most schools, including universities, are free. The 5-year gymnasium qualifies students for admission to universities and colleges. Higher institutes include the Oslo and Bergen universities; the Agricultural College, Aas; the Institute of Technology, Trondheim; and the School of Economics and Business Administration, Bergen.

Social Welfare.—All Norwegians belong to the obligatory Health Insurance Plan, which provides medical examinations, hospitalization, special services, and cash benefits. Children aged 7–18 receive free dental care. The social security program includes mother and child care, family subsidies, unemployment insurance, old-age pensions for persons 70 and over, and care of the poor, blind, and disabled.

Finance.—The monetary unit, the krone, is divided into 100 öre. The official exchange rate is Kr.7.14286 to the U.S. dollar. The 1959–60 state budget approved a record high of Kr.6,394 million for expenditure, allocating Kr.1,073 million for defense. The national accounts for 1958–59 were balanced with an operating surplus of Kr.842.7 million. The net foreign debt rose Kr.746 million during 1958 to reach a total of Kr.2,647 million at the end of the year.

The current balance of foreign payments on goods and services in the first half of 1959 showed a deficit of Kr.470 million, as against Kr.630 million in the 1958 period. Total foreign exchange holdings as of June 30, 1959, amounted to over Kr.2,590 million.

Defense.—Norway is a charter member of the North Atlantic Treaty Organization. The defense program calls for establishment of (1) short-range rocket units; (2) one Nike antiair battalion; (3) 11 air squadrons; and (4) a 125,000-man national guard. Norway has received nearly $700 million in aid under the U.S. Mutual Defense Assistance Program. Military service is compulsory for men 19 years of age, who serve either 18 months in the navy or air force, or 16 months in the army.

Transportation.—The Norwegian State Railways operate 2,719 miles of track, of which 881 miles are electrified. The North Norway railway was extended from Salten to Fauske, a distance of 24 miles, in 1959. Over 526 miles of public roads were built during 1958–59, making a total length of over 32,000 miles, including some 2,360 miles of permanently surfaced state highways. Most of the domestic air routes are operated by the Scandinavian Airlines System.

Labor.—On Jan. 1, 1959, a total of 542,557 workers, over 50% of all wage earners, belonged to unions affiliated with the Federation of Labor. Most large companies are members of the Employers Association. Wage contracts are negotiated through collective bargaining. On Aug. 31, 1959, Norway had 1,037,250 employed wage earners, and 10,900 unemployed.

Agriculture and Forestry.—Only 4% of the total area is arable. Total farm production in 1959 was estimated at 1,950 million feed units (one unit equals 1 kilogram of barley), as against 2,081 million in 1958. Major crops are hay, grains (mainly barley), legumes, and potatoes. About 245 million cubic feet of timber was felled during 1958–59.

Industry.—The index of general industrial production (1953 = 100) declined from 128 in 1957 to 124 in 1958; in the first 6 months of 1959 the index averaged 3% above the 1958 level. The nation's chief industries are based on domestic raw materials, principally ores, fish, and timber. Production of chemical wood pulp totaled over 700,000 tons in 1958. During 1959, hydroelectric power stations with more than 1,000 kilowatts capacity produced 29 billion kw.-hr. averaging over 6,500 kw.-hr. per capita, the highest in the world. Installed plant capacity was due to reach a total of 6,012,000 kw. by the end of 1959. Coal output in 1958 was estimated at 291,600 metric tons.

Fisheries and Whaling.—The total fish catch in January–June 1959 was 844,791 metric tons, or 82,257 tons more than in the same period of 1958; the landed value was about Kr.378 million, an increase of over Kr.65 million, compared with the first half of 1958. Norway's nine Antarctic whaling expeditions in 1958–59 produced 135,000 tons of whale and sperm oil, as against 145,000 tons in 1957–58.

Shipping.—By June 30, 1959, Norway had 2,783 merchant ships of over 100 gross tons, totaling 10,394,000 gross tons—a net increase of 491,600 tons since July 1, 1958. A total of about 1.1 million gross tons was laid up for lack of business. Net freight earnings in foreign exchange were estimated at Kr.1,360 million for January–June 1959, about Kr.35 million more than in the 1958 period. Ships on order or under construction totaled some 3,900,000 gross tons, including 1,300,000 tons at domestic shipyards.

Foreign Trade.—Exports of goods and ships in the first half of 1959 totaled Kr.2,806 million, as against Kr.2,620 million in the same period of 1958 (total for 1958, Kr.5,311 million; for 1957, Kr.5,867 million). Imports rose from Kr.4,670 to

Kr.4,677 million (total for 1958, Kr.9,352 million; for 1957, Kr.9,108 million). The import surplus, including net ship imports valued at Kr.1,030 million, amounted to Kr.1,872 million in the first half of 1959, as against Kr.2,051 million in the 1958 period. Commodity imports from the United States decreased from Kr.359 million in the first half of 1958 to Kr.344 million in the first half of 1959, while exports to that country increased from Kr.231 million to Kr.300 million over the same period. Leading exports were ores and metals, pulp and paper, furs, fish and fish products, chemicals and fertilizers, oils, and fats. Major imports were ores and metals, fuels, machinery and transport equipment, textiles, and grains.

Principal Events, 1959.—King Olav toured northern Norway in July and August. Accompanied by Princess Astrid, he called at 39 towns and rural communities.

The Norwegian economy showed a moderate but distinct improvement during the first half of 1959, with indications that production and construction would continue to expand through the rest of the year. The deficit on the balance of payments was substantially less than in the same period of 1958. Winter unemployment rose to a postwar peak of 47,500, but by midsummer only 8,500 were unemployed. Parliament received proposals for stimulating industry in districts suffering from recurring winter unemployment. In October 1959, four private banks set up a financing institute which, with state backing, will extend second mortgage loans on ships built at Norwegian shipyards. Convertibility of the krone was extended to most countries as of Dec. 29, 1958.

The 104th session of Parliament, which convened October 2, was scheduled to approve Norway's admission to the newly formed European Free Trade Association (q.v.). Trygve Lie, former secretary general of the United Nations, was temporarily assigned as a special ambassador at large to solicit foreign capital for investment in Norwegian industry. On July 8, the World Bank granted Norway a $20 million (Kr.143 million) loan for hydroelectric power development projects (totaling Kr.428 million). Strict rationing of electricity, caused by prolonged drought, forced many plants in southern Norway to curtail production in the fall.

Municipal elections held on September 28 effected no major changes in the political situation. Under a management-labor agreement, directly affecting some 270,000 workers, the workweek was reduced from 48 to 45 hours as of March 1.

Prominent nuclear scientists from the United States and 12 European countries attended the official opening of the world's only boiling-heavy-water reactor at Halden on October 10.

The United States transferred two minelayer-escort vessels to the Norwegian Navy during the year. The Norwegian Parliament approved the admission of two West German officers to NATO's northern headquarters at Oslo. West Germany pledged DM60 million for distribution among Norwegian civilians who had been imprisoned by the Nazis during the war.

Norway resigned from the International Whaling Convention as of July 1 because of the failure of the members to reach agreement on the distribution of the Antarctic whaling quota.

The wedding of Steven Clark Rockefeller, son of New York Governor Nelson A. Rockefeller, and Anne-Marie Rasmussen at Sögne, Norway, on August 22 received worldwide press coverage.

ANDREW MOURSUND,
Editor, "News of Norway," Norwegian Embassy, Washington, D.C.

NOVA SCOTIA. This Maritime province of southeastern Canada has an area of 21,068 square miles, of which 14,439 are forest land, 1,034 are improved agricultural land, and 325 are fresh water. In view of its relatively short length of 374 miles, Nova Scotia has an astonishing length of coastline—some 4,624 miles. The population of the province is 718,000 (est. Sept. 1, 1959), an increase of about 3½% since the last official census (694,717) in June 1956. Much of this increase has been in the metropolitan area of Halifax, which, including the town of Dartmouth, had a population in 1958 of about 178,000. Other centers, with estimated 1958 populations, are: Sydney, 32,300; Glace Bay, 24,300; Truro, 12,850; New Glasgow, 10,000, and Yarmouth, 8,100.

Government.—The province is represented in the federal Parliament by 10 life-appointed senators and 12 elected members of the House of Commons. As a result of the federal elections of March 1958, Nova Scotia is represented entirely by Progressive Conservative members, the Liberals having lost the 10 seats they had in 1956.

The province is nominally administered by a lieutenant-governor, appointed for a 5-year term by the governor-general of Canada in council. The present lieutenant-governor is Maj. Gen. E. C. Plow, appointed in January 1958. He is advised by a cabinet, headed in 1959 by Premier Robert L. Stanfield. The cabinet is responsible to the 43-member House of Assembly in which the Progressive Conservatives hold 24 seats, the Liberals 18, and the Co-operative Commonwealth Federation (CCF), 1.

Education.—In September 1959 the estimated total enrollment in Nova Scotian schools was 169,892 students (about 24% of the population). Almost all primary education is handled by nondenominational, compulsory, free public schools. There are some private schools and business colleges, and several universities, of which the largest are Dalhousie (in Halifax), St. Francis Xavier (in Antigonish), and Acadia (in Wolfville).

Finance.—Provincial revenues totaled $78,092,787, and expenditures (before sinking fund payments), $68,899,684, for the year ending March 31, 1959. For debt retirement the expenditure was $8,844,470. The net direct debt of Nova Scotia, as of March 31, 1959, was $153,538,122. Estimated revenue for the fiscal year 1959–60 is $82,891,597; estimated expenditure, $76,209,169, plus sinking fund payments of $6,651,970.

Agriculture.—Farm cash income for 1958 was $42,288,000 (an increase of $333,000 over 1957), and the gross income from agricultural production was $51,784,000. The estimated 1959 apple crop was 15,363,000 bushels (a 9% drop from 1958).

Mining.—Total mineral production for 1958 was estimated at $64,002,597. The 1958 gypsum output was valued at over $5 million and totaled over 3 million tons. Salt production in 1958 was valued at $2 million. Coal production for 1958 was about 5,297,248 tons, valued at $49,480,680; output of coal has declined 20% since 1936. The barite output in 1958 was 183,843 tons.

Manufacturing.—The gross value of manufacturing in Nova Scotia in 1958 was $399,691,000. Foods and beverages, iron and steel products, and wood and paper products form the chief manufactures. In 1957 there were 1,402 manufacturing establishments, with 31,764 employees. Iron and steel products in 1957 were valued at $76,881,000, a slight increase over 1956. The total electric power capacity in the province, as of mid-1958, amounted to about 429,230 kilowatts, of which about 73% was generated by thermal plants and the rest by hydroelectric plants.

Fishing.—The 1958 salt water fish catch was 464,721,000 pounds, with a landed value of $24,841,000. From January through July 1959, the catch was 240,105,000 pounds.

Lumbering.—Nova Scotia ranks fifth among the Canadian provinces as a producer of forest products. In 1957, lumber production was valued at $15,759,031.

Tourism.—The growing tourist industry is important to the economy. In 1958 some 599,843 tourists and 150,539 cars came to Nova Scotia, mostly from the United States.

Communications.—The province has 1,420 miles of railway. As of March 1958 there were 15,197 miles of highway, of which 2,218 miles are paved and 10,142 miles are good secondary roads. Cape Breton Island is connected to the mainland of Nova Scotia by a causeway across the Strait of Canso, built at a cost of $23 million. Nova Scotia has a dozen commodious harbors, of which Halifax is the most important. The new international airport at Kelly Lake, near Halifax, is to be completed in 1960.

Principal Events, 1959.—On July 31–August 1, Queen Elizabeth II and Prince Philip visited Nova Scotia at the end of their Canadian tour. A meeting of the federal cabinet held in Halifax during the royal visit was attended by the queen.

Much concern has been shown over the plight of Nova Scotia's coal mining industry in view of the loss of much of its market in Quebec, where natural gas from western Canada is being used widely. A royal commission will investigate the situation in the near future.

At Baddeck, in February, the 50th anniversary of the first successful flight in the British Empire was observed, with J. A. McCurdy, who piloted the *Silver Dart* on that occasion, in attendance. During the year, the 20th anniversary of the founding of the Gaelic College at St. Ann's (the only such college in North America) was marked. At Chester and at Liverpool, bicentennial ceremonies were also held.

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NUCLEAR PHYSICS. See Atomic Energy; Physics.

NURSING. Research.—Research into nursing practice and nurses' personalities and motivations continued to be carried on during 1959 by the profession itself and, through the American Nurses' Foundation, by other organizations and agencies. In September 1958 the foundation, under a grant from the U.S. Public Health Service, sponsored a conference at which progress in nursing research and future research goals were discussed.

Between 1955 and 1959 the Public Health Service awarded 83 full-time nursing research fellowships, totaling $333,368, and 63 nursing research projects, totaling $2,750,000. The projects include such subjects as the selection of persons for leadership in nursing, the professional nurse in public health, and nursing in maternity and newborn care.

Scholarship Aid to Nurses.—During the first session of the 86th Congress, bills to aid collegiate nursing education were introduced into both houses; however, final action was carried over to the second session. Each bill has three major parts: (1) grants to collegiate schools of nursing to help in constructing and equipping classrooms, offices, libraries and laboratories; (2) grants to help meet the cost of instruction; and (3) scholarship aid to candidates for baccalaureate degrees in nursing.

Congress extended for five years the traineeship program for nurses studying supervision, teaching and administration, and public health, and appropriated funds toward the program amounting to $8,115,000 for the 1959–60 fiscal year. For the first time, funds were allocated for short-term intensive training courses in supervision and administration for nurses not able to enroll for longer periods.

State legislatures are slowly increasing scholarship aid for basic professional nursing education and for graduate nurse education. In 1958, 14 states appropriated amounts varying from $12,500 in North Dakota to $100,000 in Connecticut.

Admissions to Schools of Nursing.—Students admitted to nursing educational programs between Aug. 31, 1957, and Sept. 1, 1958, totaled 44,221, with 36,402 admitted to diploma programs, and 7,819 admitted to baccalaureate and associated degree programs. In addition, 20,531 were admitted to practical nurse programs.

Nursing Statistics.—Preliminary figures issued by the various state boards of nursing show that about 50% of the registered nurses in the United States, an estimated 460,000, are working in general duty or staff level positions; about 10% are employed in head nurse or assistant head nurse positions; and about 12% are in supervisory or administrative positions. While about 60% of the nurses working in hospitals, on private duty, or in offices are married, only about 33% of the registered nurses employed in schools of nursing are married.

Also, these figures indicate that the average age of the nurse population in the United States is increasing. In 1959 only about 65% of the nurses were less than 45 years old, whereas in 1943 about 75% were under that age. Furthermore, older professional nurses tend to be employed in private duty positions, while younger nurses tend to fill positions on hospital staffs.

Miscellaneous.—Professional nurses associations in Alaska and Hawaii, the newest states in the Union, have been constituent units of the American Nurses' Association (ANA) since 1951 and 1918, respectively. In December 1958, ANA membership in Alaska totaled 273; in Hawaii, 986. Alaska has no school of professional nursing; Hawaii has three. Each has one school of practical nursing.

In 1959, American nurses were represented at a conference on nursing employment conditions, held by the International Labor Organization in Geneva. Representatives from 14 countries were present. The problems discussed included the nearly worldwide shortage of nurses; the 40-hour workweek, which is not observed by all countries; the social status of nurses, which varies among countries; the need for legal control in all countries of the practice of nursing; and the need for recruiting more nursing students.

Also during the year, the Canadian Nurses' Association began to publish in June a French-language edition of its official publication, *Canadian Nurse,* with the title *L'Infirmière Canadienne.*

Marian G. Kent,
Associate Editor,
"The American Journal of Nursing."

NUTRITION. Recommended Dietary Allowances.—The Food and Nutrition Board of the National Research Council periodically revises and re-evaluates the Recommended Dietary Allowances. The most recent revision (1958) is contained in Publication 589 of the National Academy of Sciences—National Research Council, Washington, D.C. The Food and Nutrition Board, like other groups within the National Research Council, is purely advisory, but its recommendations provide the most reliable guide for diet evaluation and for the appropriateness of the claims made for numerous pharmaceutical or food products that are widely advertised as being of nutritional value.

Evaluating Diet.—Two principles concerning dietary evaluation should be recognized. First, diets can only be evaluated in terms of specific nutrients. In this regard, one food is neither better nor worse than another except in terms of the amount of nutrients each contains. Second, an excessively high intake of any particular nutrient is of no benefit and may be detrimental. Thus, it is not true that if more than the recommended amount of a particular nutrient is consumed or present in a food, the more beneficial that nutrient or food will be. Whether to include or exclude, in relation to diet, a particular food or food supplement as being beneficial, detrimental, or innocuous depends on the overall nutritional content of the diet with which it is to be consumed and on the nutrients contained in the individual food or food supplement. The Recommended Dietary Allowances provide baseline values by which such decisions should be made.

Minimal Nutritional Requirements.—Minimal nutritional requirements—the smallest quantities of various nutrients that must be consumed for good health—depend on a number of factors, including

variations in individual needs and in the availability of nutrients in different foods and under different conditions. These variables are further complicated by a large diversity in the nutritional content of food samples and by the fact that varying amounts of nutrients may be lost through different methods of food preparation. In addition, neither the absolute nutrient intake of an individual nor his specific nutritional requirements are often, if ever, known.

In view of these inevitable uncertainties, the Recommended Dietary Allowances are considerably above the values estimated to be the actual minimal average requirements. Consumption of somewhat smaller amounts than those recommended does not indicate, therefore, the presence of a nutritional deficiency or an inadequate diet. In fact, there is considerable debate as to whether the allowances might not be unnecessarily generous in several respects. For all practical purposes, one may assume that if his diet includes as much of each of the various nutrients as recommended there is no reason for consuming unusual or expensive dietary supplements.

Recommended Consumption of Nutrients.—The required amounts of various nutrients differ with the age and activity of the individual. Daily recommended consumption for the average, moderately active adult man of 25 years of age is as follows: calories, 3,200; protein, 70 grams; calcium, 0.8 grams; iron, 10 mg.; vitamin A, 5,000 international units; thiamin, 1.6 mg.; riboflavin, 1.8 mg.; niacin equivalents, 21 mg.; ascorbic acid, 75 mg.; vitamin D, none.[1] In general, the recommended allowances for women and for children under 12 years of age (except in the case of vitamin D for children, who require more of this nutrient) are equal to or less than these amounts. The amounts recommended for adolescents and for pregnant and lactating women are somewhat larger, including additional amounts of vitamin D.

Food Supplements.—It should be noted that even relatively poor diets supply about half of the recommended amounts of nutrients, and that, under ordinary circumstances, there is no reason for consuming dietary supplements to supply more than these amounts. In the face of competition, many manufacturers tend to add large amounts of some vitamins to their products, claiming that greater benefits may be derived from their use. Such claims are not in accord with good nutritional practice.

Other Essential Nutrients.—The Recommended Dietary Allowances also consider the following essential nutrients: sodium, potassium, phosphorus, magnesium, copper, iodine, fluorine, zinc, cobalt, manganese, molybdenum, vitamin B_6, vitamin B_{12}, folic acid, pantothenic acid, biotin, vitamin E, and vitamin K. However, the Food and Nutrition Board concluded that, with the exception of iodine and fluorine, the ordinary diet in the United States provides adequate amounts of all of these, and that it is not necessary to establish allowances for them. Only in rare situations requiring medical attention need one consider these nutritional elements. Since there is no evidence that these elements benefit the consumer when eaten in amounts greater than those supplied by an ordinary diet, a misleading impression is created when they are listed on the labels of commercial products.

"Natural" Vitamins.—Special benefits are often claimed for "natural" vitamins occurring in particular foods or in commercial preparations of natural materials. In this regard it should be noted that there are no chemical or physiological differences between the vitamins which occur in foods and those manufactured. Although the possibility exists that in the future new essential nutrients may be discovered in food materials, there is no evidence now that certain exotic materials, such as seaweed, alfalfa leaf meal, honey, and wheat germ oil, which are commonly included in some nutritional preparations or special diets, have any particular benefical properties not explained by the known nutrients they contain.

Iodine.—Many diets do not contain sufficient iodine, and enlarged thyroid glands or goiter may result. Since the iodine content of foods varies widely and depends to a great extent on the locality in which those foods are grown, it is not possible to estimate iodine intake from a knowledge of the foods eaten. Hence, there is no Recommended Dietary Allowance for iodine.

To assure an adequate iodine intake, the Food and Nutrition Board recommends including iodized salt, readily available in all stores, in the diet. The use of iodized salt has been largely responsible for the great diminution of the incidence of goiter in many areas of the United States and in other parts of the world. It is known, however, that less iodized salt is marketed if its importance is not continually brought to the attention of the public. A practical solution to this problem in some parts of the world has been the passage of legislation requiring the iodization of all salt for human consumption.

Fluorine.—A somewhat similar situation is presented by the need for fluorine. Extensive investigations demonstrate a close inverse relationship between the fluorine content of the water supply and the incidence of caries. In many areas of the United States where the fluorine content of the water supply is less than one in one million parts there are higher rates of dental decay than in communities with this amount of fluorine in the water. Furthermore, numerous long-term studies have shown that appropriate fluoridation of water supplies reduces the dental decay rate by approximately 50% without producing harmful effects. Approximately 35 million people in the United States now have a fluoridated water supply. (See also DENTISTRY.)

Although other methods of adding fluorine to the diet could undoubtedly be developed, it must be emphasized that self-medication programs should not be recommended, since the consumption of fluorine at levels somewhat higher than the prescribed ratio is definitely toxic. Furthermore, few public health programs are successful if they depend entirely on voluntary activities. In view of the practicality and ease of water fluoridation, no advantage can be envisioned for other methods of supplying fluorine in adequate amounts. In 1953 the Food and Nutrition Board published an extensive favorable evaluation of water fluoridation (National Research Council, Publication 294, Washington, D.C.), and many health organizations, such as the American Medical Association, the American Dental Association, and the American Public Health Association, have urged fluoridation of public water supplies wherever the level is below the desired amount.

(See also AGRICULTURAL RESEARCH SERVICE; HEART DISEASE.)

D. MARK HEGSTED, *Associate Professor of Nutrition, Harvard School of Public Health;* FREDRICK J. STARE, *Professor of Nutrition, Harvard School of Public Health.*

[1] Provitamin D in the skin, which is converted into vitamin D by sunlight, supplies sufficient vitamin D for adults under ordinary circumstances.

NUTS. The 1959 peanut crop in the United States, as estimated by the Department of Agri-

culture in December, was 1,602 million pounds, 13% less than the 1958 production of 1,836 million pounds. Average yield per acre in 1959 was 1,097 pounds. Major peanut-growing states, with estimated 1959 crops in millions of pounds, were: Georgia, 552.4; North Carolina, 284.8; Texas, 202.3; Virginia, 194.3; and Alabama, 160.8.

Pecan production in 1959 was estimated at 127.5 million pounds, 27% down from 1958's 174.8 million pounds. Chief producing states, with estimated 1959 output in millions of pounds, were: Georgia, 39; Texas, 23; Louisiana, 21; and Alabama, 12.

California's 1959 almond yield was a record-breaking 82,000 tons, compared with 19,800 in 1958. The state's English walnut crop, however, dropped to 57,000 tons from 82,200 in 1958. Oregon produced 4,200 tons of English walnuts in 1959 and 9,000 tons of filberts.

NYASALAND. See RHODESIA AND NYASALAND.

OATS. See GRAINS.

OBITUARIES. For a list of prominent persons who died in 1959, see the NECROLOGY at the end of this volume.

OBSERVATORIES. See ASTRONOMY.

OCCUPATIONAL REHABILITATION. See Index entry, *Vocational Guidance.*

OCEANIA. A term commonly denoting the Polynesian, Melanesian, and Micronesian island groups of the South and Southwest Pacific, and sometimes taken to include Australasia and the Malay Archipelago. (See PACIFIC ISLANDS.)

OCEANOGRAPHY. From Aug. 30 to Sept. 11, 1959, the General Assembly Building of the United Nations in New York City was the scene of the largest and most important event in the history of oceanography. More than a thousand delegates from over 38 countries assembled there for the International Oceanographic Congress and for an exchange of ideas which took place through several formal addresses, over 500 presentations of scientific papers, and countless informal conferences.

A noteworthy feature of the congress was the presence in New York Harbor of the oceanographic research vessels *Atlantis* and *Chain* (Woods Hole Oceanographic Institution), *Maury* (Chesapeake Bay Oceanographic Institute), *Pathfinder* (Virginia Fisheries Laboratory), *Gibbs* (Lamont Laboratories), *Calypso* (Français de Recherches Sous-Marines), and *Mikhail Lomonosov* (Soviet Academy of Science). The *Calypso,* under the command of Capt. Jacques-Ives Cousteau, had aboard it an interesting two man jet-propelled underwater "flying saucer" still in the experimental stage. It gives promise of being a useful means of underwater exploration. The most impressive sight was the giant (6,000-ton) *Mikhail Lomonosov,* one of the few ships specifically designed and constructed for oceanographic purposes.

Only a few of the hundreds of papers presented at the congress can be mentioned here, and these can do no more than indicate the broad scope of the congress. A 1,022-page book containing abstracts of these papers was published by the American Association for the Advancement of Science, one of the sponsors of the congress.

O. S. Arrhenius showed that the equator is more than an imaginary line, that a particular type of sediment is found at the equator, and that it has been there a long time. Therefore, it is unlikely that the poles have shifted much in the past.

The Cromwell Current, which was first described in 1954, was the subject of a report by Harold P. Knauss. Direct current measurements in the Pacific showed that the maximum velocity was at the equator. The current is eastward below the surface (at the surface the flow is westward) with a maximum up to 3 knots at depths of from 40 to 100 meters. It is about 200 miles wide, and direct measurements have shown that it is at least 3,500 miles long. (Indirect evidence suggests it may be 5,000 to 6,000 miles long.) It does not flow beyond the Galapagos Islands.

Oceanic trenches are long, narrow depressions with steep slopes, forming the deepest parts of the ocean bottom. The Soviet research vessel *Vitiaz,* a sister ship of the *Lomonosov,* was especially equipped to study these trenches. G. D. Udintzev described some of the findings. The shape, depths, and positions of the Aleutian, Kurile-Kamchatka, Japanese, Bonin, Marianas, Yap, Palau, New Britain, and Bougainville trenches were determined with greater precision. Some of these were found to be twice as long as had been thought. The maximum depth of the Marianas Trench was revised to 10,863 meters (35,630 feet) from the previously established figure of 11,034 meters (36,192 feet).[1]

The "apparent age" of deep water in the Pacific Ocean was determined by Hans E. Suess, Norris Rakestraw, and Hans Oeschger using the carbon-14 dating method. They found that these waters had been at the bottom of the sea from 1,300 to 1,900 years; and from this finding they deduced that bottom waters moved about 8 miles per year.

Meng-Chierego and Picotti studied the distribution of copper in the Adriatic Sea. One interesting finding is that the deep water in the center of the sea is absolutely stagnant.

A re-evaluation by Francis Shepard of the data on cable breaks of 1929 in the Grand Banks region, which had caused other geologists to infer turbidity currents with velocities up to 85 knots, led to the conclusion that the speed of the currents was a more moderate 15 knots. He concluded that there was little evidence to suggest the action of violent currents.

A remarkable report by Sokolova on some peculiarities of the deep-sea bottom fauna should give notice to the rest of the world of how seriously the Russians are taking deep-sea oceanography. Bottom organisms can be divided into three

[1] On Nov. 14, 1959, the U.S. Navy's bathyscaphe *Trieste* descended to a depth of 18,600 feet in the Marianas Trench off Guam and obtained photographs of the ocean floor. Descents to 24,000 and 35,800 feet in the same area were made by the *Trieste* on Jan. 7 and 23, 1960.

classes: (1) suspension feeders (such as oysters or barnacles); (2) predators; and (3) detritus feeders. A study of 1,923 specimens belonging to 83 species showed that in the Kurile-Kamchatka Trench, at depths of from 1,000 to 10,000 meters, there were three different zones: (1) a zone with numerous suspension feeders; (2) a zone with all three types; and (3) a zone with a dominance of detritus feeders. This sequence of zones was repeated in consecutive order at 3,000, 5,000 and 8,500 meters, and these zones were correlated with sedimentation processes. Collections from other trenches in temperate latitudes confirmed these findings.

The suspended matter in the ocean has been studied for years by many workers. Lisitzin reported on Soviet work in which 5 to 7 tons of water are pumped per hour from depths down to 200 meters. Below this level, water samples of 50 gallons are taken. A total of 18,000 samples have been obtained from the Indian and Pacific oceans. Under each square meter of the ocean surface, from 4 to 20 pounds of matter are in suspension.

The causes of the long-term changes in the fauna and biological productivity in the Barents Sea were studied by Kamshilov. Young codfish are dependent on the copepod *Calanus* for food, but two species of ctenophores (sea gooseberries), *Bolinopsis* and *Pleurobrachia,* also feed on *Calanus.* When these ctenophores become abundant, they deplete the copepod population to the point where the young cod cannot survive. However, the Barents Sea also harbors another ctenophore, *Beroë,* which feeds on the other two ctenophores. When *Beroë* is abundant, young cod thrive. Nature provides the final check and assures its balance by causing all ctenophores to sink to the bottom in the cold winter months. There the older cod quickly find and eat *Beroë* but refuse *Bolinopsis.*

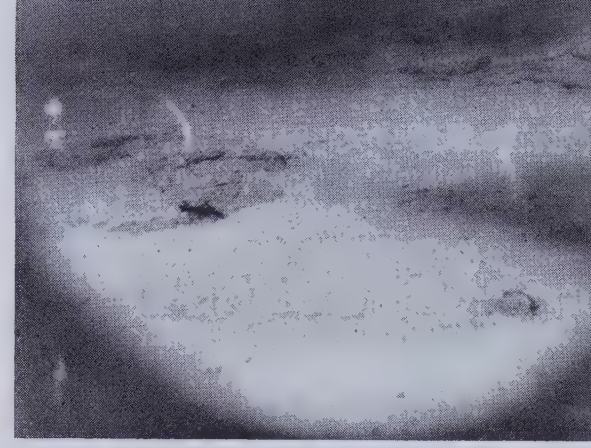
A theoretical study by Labeysh on the influence of the earth's rotation on the near-shore circulation showed that in the Northern Hemisphere, when the shore is to the right of the main stream, the stream will be very close to the shore. If the shore is to the left, the stream will lie a sufficient distance offshore to allow a compensating countercurrent to flow close to the coast.

(See also Coast and Geodetic Survey, U.S.; Geography and Exploration; Marine Biology.)

F. C. W. Olson,
Head, Environmental Studies Branch, U.S. Navy Mine Defense Laboratory.

OCHOA, Severo, Spanish-American biochemist: b. Luarca, Spain, Sept. 24, 1905. Dr. Ochoa shared the 1959 Nobel Prize in medicine and physiology ($42,600) with his former student, Dr. Arthur Kornberg (q.v.). The prize was awarded for "discoveries of the mechanism in the biological synthesis of ribonucleic acids and deoxyribonucleic acids." These are substances which are believed to play a major role in the synthesis of protein molecules in cells of living organisms, and in the transmission of genetic patterns from generation to generation.

Dr. Ochoa received his medical degree from the University of Madrid in 1929. He was successively associated as a teacher and researcher with the University of Madrid (1931–36), Kaiser Wilhelm Institute for Medicine (Heidelberg, 1936–37), and the University of Oxford Medical School (1938–40). In 1940 he went to the United States, where he accepted an appointment in 1941 as research associate and instructor at the Washington University School of Medicine in St. Louis. From 1942 he was associated with the New York University College of Medicine, becoming chairman of the Department of Pharmacology in 1946 and chairman of the Department of Biochemistry in 1954. Dr. Ochoa became a U.S. citizen in 1956.



WIDE WORLD

The ocean floor, 18,600 feet down, in the Marianas Trench off Guam, photographed from the U.S. Navy bathyscaphe *Trieste,* during its record-breaking descent on November 14. Later, the *Trieste* descended in the same area to 24,000 feet on Jan. 7, 1960, and to 35,800 feet on Jan. 23, 1960.

OFFICE OF CIVIL AND DEFENSE MOBILIZATION. The Office of Civil and Defense Mobilization (OCDM), an agency within the Executive Office of the President, is responsible for nonmilitary planning to assure United States survival and recovery in the event of enemy attack or natural disaster. It maintains its national headquarters in the Executive Office Building, Washington, D.C., and its operational headquarters in Battle Creek, Mich. During 1959, an eighth regional office, at Everett, Wash., was established to serve the Pacific Northwest and Alaska. Other regional offices are located at Harvard, Mass.; Olney, Md.; Thomasville, Ga.; Battle Creek, Mich.; Denton, Texas; Denver, Colo.; and Santa Rosa, Calif.

OCDM directs and delegates far-reaching programs under its National Plan for Civil and Defense Mobilization (promulgated in October 1958). This includes advice and guidance to state and local governments in the development of their survival plans, development of a national radiological defense plan, maintenance of a national attack-warning system (NAWAS), and development of protective measures to save lives and minimize damage in the event of enemy attack. Nationwide warning is now possible in 90 seconds via the NAWAS-leased telephone system, interconnecting OCDM personnel at the North Atlantic Air Defense Command (NORAD) with more than 300 strategically located warning points and OCDM's national and regional offices.

The detailed National Plan for Civil Defense and Defense Mobilization was published in 1959. The year also saw major application of the national policy on shelter, which stresses these points: (1) education of all Americans on the facts of nuclear attack effects, and education on what can be done to minimize these effects; (2) a survey of existing structures on a sampling basis to determine capabilities for fallout shelter, particularly in large cities; (3) accelerated research on the incorporation of fall-out shelters in existing and proposed buildings, including homes, private buildings, and government structures; (4) construction of a limited number of prototype shelters of various kinds for testing; (5) leadership and example through incorporating fall-out shelters in appropriate new federal buildings.

A booklet, *The Family Fallout Shelter,* was issued for general free distribution and proved a major factor in increasing public knowledge of the shelter concept. By Jan. 1, 1960, demand far ex-

ceeded the 12,500,000 copies already distributed.

A nationwide radiological defense education program for high school students was launched, and by autumn 1959 radiological courses were available in more than 7,000 schools and colleges. OCDM has purchased and is distributing 900,000 radiological instruments.

A federal radiological network had available 900 fixed monitoring points operating around the clock in 1959; there will be 3,000 of these points by 1962. The information obtained from this network, combined with state and local monitoring at more than 14,000 stations, will be used to assist in making decisions for protective, remedial, and recovery action at all levels of government. It is planned to have an additional 3,000 federally operated monitoring points and 130,000 state and local points in the fiscal year 1962.

In May 1959, the Eastern Instructor Training Center at Manhattan Beach, N.Y., was activated. It is designed to train thousands of radiological defense and civil defense instructors. A similar Western Center was opened in October in Alameda, Calif.

A civil defense program aimed specifically at rural areas was inaugurated. Its major objectives are to encourage rural family shelters, educate rural families in the protection of livestock and salvage of crops, and coordinate family efforts with community civil defense programs. Leaders of nationwide rural activities, particularly the farm organizations, have joined in this effort.

The nation's survival plan program, with civil defense operational plans for 240 areas in all the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico, continued with emphasis on government readiness for emergencies. Local-level planning involved 2,315 areas, with several hundred additional plans being inaugurated.

Of prime importance early in 1959 was enactment of Public Law 85–606, which amended the Federal Civil Defense Act of 1950 by establishing civil defense as the joint responsibility of the federal government, the several states, and their political subdivisions. The earlier act, known as Public Law 920, had placed primary responsibility for civil defense with the several states and their political subdivisions. PL 85–606 also authorized the federal government to extend financial assistance to the several states to support administrative costs of their civil defense programs. However, Congress failed to provide the funds.

The national civil defense exercise, Operation Alert 1959, was conducted in three phases beginning in April and ending in August. Most state and city governments, many with entire staffs, participated in the tests. CONELRAD, the emergency broadcasting system, was tested in conjunction with the Federal Communications Commission (q.v.) and the entire radio-television industry. All normal broadcasting and telecasting in the United States was suspended for a 30-minute period.

Continuity of government, an important theme of OCDM's program, received major attention from state legislators. By midsummer, legislatures which met in 43 of 46 states had taken some action on OCDM-suggested legislation to provide for emergency lines of succession, preservation of essential records, government emergency relocation sites, and the use of government facilities, equipment, and personnel in emergencies. By autumn 1959 all or part of this program had been signed into law by governors of 34 states.

In another program, OCDM had, by the end of 1959, positioned more than 1,400 civil defense emergency hospitals throughout the nation, each portable hospital having a 200-bed capacity.

President Eisenhower reported to Congress that net allocations for federal disaster relief since inception of the program in 1951, administered by OCDM under Public Law 875, totaled $97.5 million as of the end of calendar 1958.

The original acquisition cost to the government of surplus property made available to states and cities for civil defense aggregated $83,573,127 from the beginning of the program in 1956 through June 30, 1959. This represented an increase of $48,057,819 during the fiscal year 1959.

LEO A. HOEGH,
Director, OCDM.

OFFICE OF EDUCATION, U.S. A unit of the U.S. Department of Health, Education, and Welfare since the latter's creation in 1953, the Office of Education was originally established in 1867. It has been engaged in three major areas of activity. The first, the preparation and dissemination of statistics and other information, had its beginnings in 1867. The second major area, materializing particularly after the turn of the century, involved extensive services exemplified by educational surveys and consultative services to the education profession, to state education agencies, to institutions of higher education, and to other groups regarding the condition and progress of education. The third area is distinguished by a more active participation with local and state education agencies and institutions of higher education in financing educational facilities and programs.

An illustration of the role of the office in the third area is the National Defense Education Act of 1958, which signified congressional recognition that the defense and the security of the nation are inseparably bound with education.

A major activity in 1959 was the launching of the several programs under this act (see EDUCATION). The purposes include: the identification and education of more of the nation's talented young people; the provision of loans to students who are not financially able to enter college or to continue their higher education; the correction of existing imbalances resulting in an insufficient portion of the population's being educated in science, mathematics, foreign languages, and technology; provisions for attacking the problem of the shortage of teachers; efforts toward the improvement of instruction at all levels through more and better use of communications media; and the provision for the training, through mastery of foreign language, of more competent representatives in the fields of business and government.

Increased exchange of information and publications between the United States and other countries provided substantial resources for the study of new developments in worldwide education and cultural programs. The publication, *Soviet Commitment to Education*, reports on the first official United States education mission to the Soviet Union, under the Cultural Exchange Agreement of 1958. The U.S. commissioner of education headed the mission. A similar group of educational specialists from the USSR visited schools in the United States in 1958. Office of Education studies in comparative education dealt with Haiti, Brazil, Japan, East Germany, the Netherlands, Belgium, and Luxembourg.

Expansion of teaching in the education of mentally retarded children through fellowship grants to institutions of higher education and to state educational agencies was made possible by passage in 1958 of Public Law 85–926.

Effective July 1, 1958, Congress made permanent the provisions of the program of federal assistance for the construction and maintenance of schools in areas affected by federal activity. Such facilities are designed for children whose parents reside on and are employed on federal property.

One of the primary needs in education is adequacy in the quantity and quality of educational research to substantiate present policies and practices and to provide guidelines for redirecting educational processes. During 1959 important gains were made in the research program. As of June 30, 1959, 192 cooperative research projects

were receiving support from the Office of Education.

An expansion of the research and statistical services begun three years earlier resulted in 1959 in a number of major new statistical studies such as those dealing with the status and career plans of the beginning teacher, teacher turnover, suburban school systems, junior-year college students enrolled in major fields of science and mathematics, and rural country school systems.

Two monthly publications, *School Life* and *Higher Education,* continued to be issued by the office.

LAWRENCE G. DERTHICK,
U.S. Commissioner of Education.

OHIO. North Central state, United States; admitted to the Union, March 1, 1803. The "Buckeye State" ranks 35th in area and fifth in population among the 50 states.

Area and Population.—Area: 41,222 square miles (land, 41,000; inland water, 222), divided into 88 counties. Population: (1950) 7,946,627; (est., July 1, 1958) 9,533,000. Urban places with populations above 20,000 (as estimated by the State Department of Health for Jan. 1, 1959) are:

Akron	308,014	Lorain	61,068
Alliance	31,207	Mansfield	52,515
Ashtabula	27,079	Maple Heights	29,005
Barberton	36,047	Marion	39,148
Canton	124,116	Massillon	38,694
Chillicothe	27,562	Middletown	44,252
Cincinnati	575,523	Newark	40,211
Cleveland	926,808	Norwood	39,090
Cleveland Heights	61,800	Parma	73,410
Columbus (*capital*)	479,431	Portsmouth	39,959
Cuyahoga Falls	50,550	Sandusky	34,998
Dayton	300,704	Shaker Heights	33,707
East Cleveland	40,571	South Euclid	27,862
East Liverpool	27,260	Springfield	88,282
Elyria	37,926	Steubenville	38,942
Euclid	62,521	Tiffin	23,418
Findlay	28,786	Toledo	343,741
Garfield Heights	35,183	Upper Arlington	27,174
Hamilton	72,721	Warren	63,223
Kettering	48,488	Whitehall	20,614
Lakewood	66,859	Youngstown	185,875
Lancaster	32,918	Zanesville	45,309
Lima	57,813		

Executive.—Chief state officers in 1959:
Governor: Michael V. DiSalle (Democrat)
Lieutenant Governor: John W. Donahey
Secretary of State: Ted W. Brown
Treasurer: Joseph T. Ferguson
Attorney General: Mark McElroy
Auditor: James A. Rhodes
Supt. of Public Instruction: Edward E. Holt

Constitution and Judiciary.—The present constitution went into effect in 1851. The Supreme Court comprises seven justices; chief justice in 1959 was Carl V. Weygandt.

Legislature.—The Ohio General Assembly comprises a 33-member Senate (in 1959, 20 Democrats and 13 Republicans) and a 139-member House of Representatives (78 Democrats and 61 Republicans), which meet in odd-numbered years commencing the first Monday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $1,445,088,454 comprised $728,344,311 from state tax sources, $290,972,216 from the federal government, and $425,771,927 from other sources. Tax revenue consisted of $231,063,200 from a 3% general sales tax, $156,488,380 from motor fuel taxes, $100,671,603 from licensing, and $240,121,128 from other sources. Expenditures totaling $1,516,346,063 comprised $287,747,752 for education, $240,506,797 for health, welfare, and safety, $373,821,262 for highways, and $614,270,252 for other purposes. State long-term indebtedness on June 30, 1959, amounted to $408,455,000.

Banking.—As of June 10, 1959, the state's 225 national banks had $5,980,838,000 in assets, $3,454,885,000 in demand deposits, and $1,926,500,000 in time deposits. The 375 state banks had assets of $5,665,870,386, demand deposits of $2,847,473,373, and time deposits of $2,105,266,813.

Education.—School attendance is compulsory between the ages of 5 and 17, inclusive. Operating expenditures for public elementary and secondary schools in the 1957–58 school year totaled $515,400,609 ($325.08 per pupil), and revenues comprised $357,469,322 from local school districts, $184,433,598 from the state, and $10,285,707 from the federal government. Outlays for construction and improvements amounted to $157,530,476, and teachers' salaries (1958–59) averaged $4,862 (high school, $5,183; elementary, $4,661).

UPI

Floods in Ohio in late January were among the worst in the state's history. Here, part of Columbus, the state capital, is inundated by rising waters from the Scioto River.

OHIO SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–6; 1–8)	2,995	39,954	1,205,437
Public junior high (7–9)	171	5,229	124,458
Public senior high (6–12; 9–12; 10–12)	958	21,130	463,877
Private and parochial elementary and secondary	890	10,220	351,800
Colleges and universities	...	...	156,385

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $161,881,004, including $71,444,162 for the aged, $29,208,791 for dependent children, and $7,976,651 for the permanently and totally disabled. A monthly average of 334,015 persons received public assistance.

Labor Force.—Nonagricultural employment in July 1959 totaled 3,083,700 persons, up from 2,922,700 reported in July 1958, and including 1,278,300 factory workers and 1,805,400 nonmanufacturing workers. Leading sources of nonmanufacturing employment were wholesale and retail trade (588,200) and government services (362,400).

Manufacturing.—The state's manufacturing plants in 1957 employed 1,358,293 persons who earned $7,066,726,000 in wages. Value added by manufacture totaled $12,757,187,000, and outlays for new plant and equipment amounted to $1,208,554,000. In August 1959, production workers averaged $101.21 for an average workweek of 40.7 hours.

MAJOR OHIO MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Nonelectrical machinery	230,763	$1,265,739	$2,246,193
Primary metal industries	191,225	1,077,142	2,165,999
Transportation equipment	174,554	998,429	1,611,899
Fabricated metal products	135,133	686,946	1,160,464
Electrical machinery	92,267	446,473	867,735
Food and kindred products	85,405	380,701	766,298
Chemicals and products	49,109	255,135	708,567
Rubber products	74,670	403,307	683,181
Stone, clay, glass products	66,715	306,587	604,652
Printing and publishing	58,465	310,726	545,802

* For definition see footnote 1 in the article *Industrial Production.*
(Source: *Annual Survey of Manufactures: 1957.*)

Mining—In 1958 Ohio ranked 14th among the states in the value of its mineral output, with 2.09% of the national total. It was first in output of fire clay and lime; second in beryllium metal and alloys and pig iron; third in coke; and fifth in cement, salt (11% of the national total), and stone.

Aluminum production facilities which went into operation near Clarington in 1958 were expanded in 1959. Also in 1959, a new rock salt (halite) mine was opened at Fairport Harbor.

OHIO MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	15,700,000	$ 53,043,000
Clay	5,220,000	13,082,000
Coal	32,028,000	126,241,000
Coke	6,474,405	110,275,760[1]
Ferroalloys	406,723	92,698,000[1]
Iron, pig	9,609,594	556,662,000[1]
Lime	2,411,000	32,471,000
Natural gas (1,000 cu. ft.)[2]	31,786,000	6,802,000
Petroleum (bbl.)[2]	6,260,000	18,091,000
Salt, common	2,443,000	17,443,000
Sand and gravel	29,624,000	36,619,000
Stone	29,122,000	49,782,000
Other minerals	...	2,092,000
Total	...	$344,856,000[3]

[1] Value for processed materials is not included in the total. [2] Preliminary. [3] Total adjusted to avoid duplication of value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $684,470,000 from $713,390,000 for the corresponding period of 1958. For the full year 1958, income comprised $641,728,000 from livestock and livestock products, $341,907,000 from crops, and $33,992,000 from government payments. Principal income sources were dairy products, $204,923,000; hogs, $170,733,000; and cattle, $145,887,000.

OHIO CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	2,972	3,100	2,750
Buckwheat (1,000 bu.)	167	54	72
Cherries (tons)	2,138	2,400	1,720
Corn (1,000 bu.)	198,233	202,560	250,992
Grapes (tons)	14,240	20,000	16,000
Hay (1,000 tons)	3,791	3,862	3,622
Maple sirup (1,000 gal.)	131	124	118
Oats (1,000 bu.)	47,436	56,680	52,256
Peaches (1,000 bu.)	944	1,100	780
Pears (1,000 bu.)	127	60	60
Popcorn (1,000 lb.)	32,554	54,000	39,060
Potatoes (1,000 cwt.)	3,420*	3,046	3,202
Soybeans (1,000 bu.)	24,800	37,466	38,272
Strawberries (1,000 lb.)	5,019*	5,180	4,480
Sugar beets (1,000 short tons)	214	309	352
Tobacco (1,000 lb.)	25,361	14,913	22,170
Wheat (1,000 bu.)	48,335	46,345	32,977

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

There were 174 000 farms in the state in 1958. Total acreage (1954) of 19,992,000 included 10,340,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 2,367,000 cattle, 2,628,000 hogs, 1,055,000 sheep, and 14,064,000 chickens (excluding commercial broilers). There were 248,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal spending for highways in the 1958–59 fiscal year totaled $339,376,701. New construction of 277.38 miles included the $65 million, 52-mile Detroit-Toledo Expressway, which was officially opened on May 17, 1959.

Highways and roads on Jan. 1, 1959, totaled 100,342 miles (63,597 surfaced). Registered *motor vehicles* numbered 3,811,209 in 1958. There were (1958) 29 *railroads* operating 10,000 miles of track; 13 regularly scheduled *airlines;* and 400 *airports and airfields* (201 certificated and 199 private).

Communications media (1958) included 86 AM and 45 FM *radio stations;* 22 *television stations;* 98 daily *newspapers* (circulation, 3,455,073) and 265 other newspapers (779,000); and (Jan. 1, 1959) 937,200 business and 2,843,800 residential *telephones.*

Principal Events, 1959.—In late January, heavy rains and ice jams in rivers flowing into Lake Erie and the Ohio River contributed to one of the worst floods in the history of the state. In Chillicothe alone about 9,000 persons were driven from their homes. Governor DiSalle and President Eisenhower declared the entire state a disaster area, and the Red Cross opened disaster centers.

Michael V. DiSalle, Democrat, was inaugurated on January 12 as Ohio's first four-year-term governor, following a constitutional change in 1954. Against vigorous Republican opposition, he secured legislative sanction for almost half a billion dollars in increased expenditures for the 1959–61 biennium. Tax boosts totaling over $300 million included: a 2-cent-a-pack increase in the cigarette tax and rises in taxes on corporate franchises, beer, horse-race wagers, inheritances, and on sales (the minimum sale subject to tax being lowered from 41 to 31 cents). A 2-cent-a-gallon hike in gasoline and diesel fuel taxes was expected to produce almost $120 million for highway construction.

Additional estimated increases in assessments, fees, premiums, and benefits were expected to amount to about $200 million. An administrative order increased liquor prices at state stores by $40 million. Increased jobless benefits (due to a temporary extension of the regular 21-week period to 39 weeks), higher workmen's compensation payments by both employers and employees, legislation permitting simultaneous payment of supplemental unemployment benefits and jobless compensation, higher fees for county officials, and increased state fees for examinations of banks, doctors, dentists, pharmacists, and embalmers were sanctioned. Tolls were eliminated on the Steubenville-Weirton Ohio River bridge.

A new Department of Economic and Industrial Development and a new Personnel Department (with a Board of Review to replace the Civil Service Commission) were established. Other legislation removed the $65 monthly ceilings on aid to the needy aged and blind, modified old state "blue laws" to permit full Sunday operation of fairs and parks, banned motor scooters for 14- and 15-year-olds, allowed quail hunting on state-controlled lands, regulated billboards along interstate highways, exempted radio and television broadcasters from revealing news sources, required the licensing of nursing and rest homes, and permitted re-registration of voters by mail. Columbus Day was made a legal holiday, and a state motto was adopted: "With God all things are possible."

The legislature overrode DiSalle's veto of a so-called fair trade bill, and the governor failed in energetic efforts to abolish capital punishment, to change Ohio's utility rate formula, to secure labor reform and criminal conspiracy laws, and to end the use of sales tax stamps.

Three proposed constitutional changes were referred to voters in November. One had been declared invalid by the courts due to technicalities, but the others, authorizing additional appellate court judges and the removal of limitations on the sale of water by municipalities to outside areas, were popularly approved.

Ohio gave some encouragement to Republicans in November, as a Democratic mayor was defeated in Columbus, and as Republican mayoralty candidates won in Elyria, Niles, and Massillon.

(See also CLEVELAND.)

FRANCIS P. WEISENBURGER,
Professor of History,
The Ohio State University.

OIL. See PETROLEUM.
OILS AND FATS. See FATS AND OILS.
OKINAWA. See PACIFIC ISLANDS.

OKLAHOMA. Southwestern state, United States; admitted to the Union, Nov. 16, 1907. The "Sooner State" ranks 18th in area and 27th in population among the 50 states.

Area and Population.—Area: 69,919 square miles (land, 69,031; inland water, 888), divided into 77 counties. Population: (1950) 2,233,351; (est., July 1, 1958) 2,252,000. Urban places with populations above 10,000 in 1950 (unless another date is given):

Ada	15,995	Midwest City	10,166
Ardmore	17,890	Muskogee	37,289
Bartlesville	19,228	Norman	27,006
Chickasha	15,842	Oklahoma City (*capital*)	290,400*
Duncan	15,325	Okmulgee	18,317
Durant	10,541	Ponca City	20,180
El Reno	10,991	Sapulpa	13,031
Enid	36,017	Seminole	11,863
Guthrie	10,113	Shawnee	22,948
Lawton	34,757	Stillwater	20,238
McAlester	17,878	Tulsa	182,740
Miami	11,801		

* 1957 estimate.

Executive.—Chief state officers in 1959:
Governor: J. Howard Edmondson (Democrat)
Lieutenant Governor: George Nigh
Secretary of State: William N. Christian (succeeded John D. Conner, who died on August 26)
Treasurer: William A. Burkhart
Attorney General: Mac Q. Williamson
Auditor: Andy Anderson
Supt. of Public Instruction: Oliver Hodge

Constitution and Judiciary.—The present constitution went into effect in 1907. The Supreme Court comprises nine justices; chief justice in 1959 was Denver N. Davison.

Legislature.—The Oklahoma Legislature comprises a 44-member Senate (in 1959, 41 Democrats and 3 Republicans) and a 119-member House of Representatives (109 Democrats and 10 Republicans), which meet in odd-numbered years commencing the first Tuesday after the first Monday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $457,179,019.63 comprised $254,569,313.55 from state tax sources, $170,995,986.42 from the federal government, and $31,613,719.66 from other sources. Tax revenue consisted of $51,970,531.14 from a 2% general sales tax, $26,107,203.07 from individual income taxes, $56,670,661.16 from motor fuel taxes, $39,107,698.28 from licensing, and $80,713,219.90 from other state tax sources. Expenditures of $446,491,393.68 comprised $115,358,265.92 for education, $168,061,289.18 for health, welfare, and safety, $140,224,609.30 for highways, and $22,847,229.28 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $36,810,000.

Banking.—As of June 10, 1959, the state's 197 national banks had $2,102,054,000 in assets, $1,521,614,000 in demand deposits, and $328,332,000 in time deposits. The 189 state banks on June 30, 1959, had assets of $549,935,284.36, demand deposits of $307,392,553.85, and time deposits of $126,103,527.71.

Education.—School attendance is compulsory between the ages of 7 and 17, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $124,274,093 ($270.09 per pupil), comprising $67,729,380 from local school districts, $48,963,992 from the state, and $7,580,721 from the federal government. Outlays for construction and improvements amounted to $21,360,400, and teachers' salaries averaged $4,272.21.

OKLAHOMA SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (k-6)	1,953	11,548	305,090
Public junior high (7–9)	278	3,060	86,461
Public senior high (10–12)	657	5,481	107,733
Private and parochial elementary and secondary	45	230	6,467
Junior colleges	16	277	6,522*
Teachers colleges	6	426	11,154
Colleges and universities	11	1,992	36,040

* 1958–59 school year.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $119,375,363.54, including $71,075,776 for the aged, $20,067,717 for dependent children, and $7,610,920 for the permanently and totally disabled. A monthly average of 4,136 persons received assistance.

Labor Force.—The state's labor force totaled 896,000 persons in July 1959, including 182,000 agricultural workers. Nonagricultural employment was up slightly to 554,100 from 549,600 in the previous July. Of nonfarm employees, averaging 549,400 in 1958, 23.2% were engaged in trade, 23% in government, and 15.4% in manufacturing. Unemployment was down to 40,300 in July 1959 from 53,200 a year earlier.

Manufacturing.—The 1,625 manufacturing plants in the state in 1958 employed an average of 83,650 persons who received $387,605,000 in wages. Value added by manufacture (1957) totaled $744,165,000, and outlays for new plant and improvement amounted to $59,292,000. Production workers averaged $86.10 for an average workweek of 41 hours during August 1959.

MAJOR OKLAHOMA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Petroleum and coal products	7,022	$39,017	$147,195
Food and kindred products	15,456	57,517	123,030
Nonelectrical machinery	11,303	54,305	93,686
Fabricated metal products	7,515	36,118	66,663
Stone, clay, glass products	5,813	24,841	55,055
Transportation equipment	11,993	62,205	51,155
Printing and publishing	6,055	23,491	45,345
Primary metal industries	3,656	16,663	27,071
Electrical machinery	1,924	7,301	24,378

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—Oklahoma ranked fifth among the states in the value of its mineral output in 1958, with 4.65% of the national total. The 1958 value of $767,856,000 represented a drop from the $809,004,000 (revised) total for 1957, with most of the loss accounted for by reduced petroleum output. The state was fourth in its 1958 output of asphalt and marketed natural gas.

OKLAHOMA MINERAL PRODUCTION, 1958
(In short tons except as noted)

Mineral	Quantity	Value
Clays[1]	576,000	$ 579,000
Coal	1,629,000	10,858,000
Lead	3,692	864,000
Natural gas (1,000 cu. ft.)[2]	696,504,000	70,347,000
Natural gasoline (bbl.)	10,495,190	26,029,000
Petroleum (bbl.)[2]	202,699,000	599,989,000
Petroleum gases (bbl.)	15,645,571	25,822,000
Sand and gravel	7,232,000	5,859,000
Stone	10,794,000	12,232,000
Zinc	5,267	1,074,000
Other minerals	...	16,063,000
Total	...	$767,856,000[3]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Preliminary. [3] Total adjusted to avoid duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $402,925,000 from $438,489,000 for the corresponding period of 1958. For the full year 1958, income comprised $321,597,000 from livestock and livestock products, $312,180,000 from crops, and $38,605,000 from government payments. Principal income sources in 1958 were cattle, $215,523,000; wheat, $181,835,000; cotton lint, $53,063,000; and dairy products, $52,894,000.

The state's 116,000 farms in 1958 had an acreage of 35,630,000 (10,249,000 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 3,313,000 cattle, 458,000 hogs, and 5,428,000 chickens (excluding commercial broilers).

OKLAHOMA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Broomcorn (tons)	11,400	12,000	9,500
Corn (1,000 bu.)	12,966	9,000	9,306
Cotton lint (1,000 bales)	367	313	385
Cottonseed (1,000 tons)	150	129	161
Hay (1,000 tons)	1,766	2,038	1,919
Mung beans (1,000 lb.)	6,829	14,850	3,900
Oats (1,000 bu.)	11,259	22,296	12,425
Peanuts (1,000 lb.)	97,751	133,300	133,100
Pecans (1,000 lb.)	18,620	15,500	10,000
Rye (1,000 bu.)	580	1,243	914
Sorghum grain (1,000 bu.)	10,778	18,460	18,792
Soybeans (1,000 bu.)	455	1,012	1,428
Wheat (1,000 bu.)	64,925	115,440	89,174

(Source: U.S. Department of Agriculture.)

There were 133,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal spending for highways in 1958 totaled $94,449,673.87, and 513 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 11,555.6 miles (10,111.2 surfaced). Registered *motor vehicles* numbered 1,124,175 in 1958, including 812,070 passenger cars. There were (1959) 20 *railroads* operating 5,794.68 miles of main line tracks; 6 regularly scheduled *airlines;* and 152 *airports and airfields* (79 commercial and municipal, 6 military, 3 joint civilian-military, and 64 private).

Communications media (1959) included 59 AM and 7 FM *radio stations;* 9 VHF and 1 UHF *television stations;* 54 daily *newspapers* (circulation, 1,623,152) and 219 other newspapers (312,459); and (January 1) 242,300 business and 571,100 residential *telephones.*

Principal Events, 1959.—Gov. J. Howard Edmondson (Democrat) presented to the 27th Oklahoma Legislature in January a program of revolutionary change in state government. Before the longest legislative session in the history of the state adjourned in July, principal features of the controversial program were enacted into law. These included acts which provided for a merit system for state employees, central purchasing for state agencies, and a liquor control bill. Provision was also made for collecting state income taxes through a withholding system.

The event of paramount importance to Oklahoma was the repeal of prohibition, which had been in effect since statehood (1907). On five occasions Oklahomans had rejected similar proposals. Shortly after the governor was inaugurated, he exerted the full strength of his office and personality toward enforcement of the prohibition law; and on April 7, Oklahomans, overawed by his campaign to enforce the law, repealed the constitutional provision for prohibition by a vote of 396,845 to 314,380. Legislation provided for the opening in September of retail package stores under the supervision of a newly created Alcoholic Beverage Control Board.

Three controversial measures offered by the governor in his reform program were turned down by the legislature. He advocated a constitutional amendment to make the state Highway Commission a constitutional body; urged reapportionment of membership in the legislature to reflect shifts in the state population; and backed a law to permit the transfer of county road funds from boards of county commissioners to the Highway Commission. In November the governor began an all-out campaign to obtain sufficient signatures to petition for a special election on these proposals.

The Frontiers of Science Foundation of Oklahoma held its annual meeting in Oklahoma City in April. A dozen of the great scientists of the country reported on scientific achievements of the International Geophysical Year (q.v.), and some 5,000 high school students from all parts of the state attended a one-day conference.

During the March–June tornado season there were fewer weather alerts than usual. On March 31, however, a funnel dipped down near Lake Texoma, and another struck near Silver City and Terlton in north-central Oklahoma. These caused injuries to 10 people and destroyed 14 homes and other property. Two funnels formed over Fittstown early in the evening of May 9 and in a few moments struck the nearby communities of Frisco and Stonewall in Pontotoc County. Five persons were killed and 12 injured. Hailstones which weighed as much as a quarter of a pound accompanied the deadly storm and caused considerable damage in these rural communities.

More damaging to crops, property, highways, and communities were floodwaters early in October, the result of unseasonal and torrential rains which blanketed the Southwest for a 10-day period. All principal rivers of the state reached flood stage, and by October 4 it was estimated that 6,000 people had been evacuated from flooded sections of Stillwater and Guthrie, the environs of Tulsa, and nearby communities of Avant, Bixby, and Skiatook.

In the minds of many Oklahomans, however, October will long be remembered as the month of greatest disaster: The University of Nebraska football team defeated the pride and joy of Oklahoma —the University of Oklahoma team—by a score of 25–21, at Lincoln, Nebr., on October 31. This was Oklahoma's first loss to a Big Eight Conference team in 13 years.

Principal Events by: J. Stanley Clark,
Author, "The Oil Century from the Drake Well to the Conservation Era" (1958).

OLD AGE. The aging population of the United States continues to arouse widespread interest. By the end of 1959, a White House Conference on Aging was in the planning stages; considerable publicity had been directed toward retirement policies of industry, government, and nonprofit institutions; private as well as public pension systems had been examined more critically from the point of view of benefits paid and their financial arrangements; and numerous state laws against discrimination in employment because of age had experienced their first years of operation.

By July 1959 the United States population over 65 numbered about 15,300,000 persons. This group increases at a rate of over 300,000 per year. In July 1959 only 34.9% of the men over 65 and 10.4% of the women in this age group were in the labor force. About 4% of those men and women over 65 counted in the labor force were unemployed. The rest of this older age group—about 75%—were dependent on income other than earnings for a living.

Income.—The level of income for those 65 and over remains pathetically low. New compilations by Lenore Epstein of the U.S. Department of Health, Education, and Welfare show that in 1958, about 40% of all couples with the head of the household over age 65 had annual incomes of less than $2,000. Government agencies now estimate that $2,300 per year is the minimum income needed by an elderly couple living in the city to enable them to live at a minimum standard of health and decency. Even more revealing of the low level of income is the fact that 60% of all individuals in this older age group receive less than $1,000 per year.

Information published by the Census Bureau from its annual 1% sample survey, and from the Beneficiaries Survey of the Bureau of Old-Age and Survivors Insurance, and data from numerous public and private agencies administering cash pay-

ment programs to older people permits the construction of a crude table of income sources and approximate amounts paid out. In addition to median annual earnings (employment income) of $3,475 by 3,219,000 workers plus one million dependents, average monthly income from various sources was as follows:

Source of income	Recipients	Average monthly payment
Old-Age and Survivors Insurance benefits	10,389,000 beneficiaries over 62	$ 71.62
Old-age assistance	2,437,000 recipients	$ 64.22
Private pensions	1,125,000 pensioners	$ 80.00
Veterans pensions	1,200,000 pensioners	$ 78.00
Railroad retirement and government retirement systems (federal and state)	790,000 recipients	$114.00

Over 3 million of those listed in the table above receive retirement income from more than one source. No single source, except employment, provides an average income high enough to support a comfortable living for older people.

White House Conference on Aging.—The persistence of the problems of older people has resulted in numerous programs to activate public interest in aging. During the 1958 session, Congress enacted legislation (H.R. 9822) authorizing a White House Conference on Aging to be held in January 1961. Money was appropriated to finance planning committees and to assist states in running statewide conferences and collecting data on the aging in each of the states. In the spring of 1959 there was appointed a National Advisory Committee for the White House Conference on Aging, of 146 persons representing each of the states. Under the general chairmanship of former Representative Robert W. Kean, 20 subcommittees have been formed, consisting of technical consultants and persons holding membership on the National Advisory Committee. Each subcommittee has been charged with the responsibility for planning the conference program in a particular subject related to aging.

Retirement.—Interest in retirement policies and practices, in retirement preparation programs, and in pension planning has resulted in extensive research programs in these subjects. The Ford Foundation made a grant of $190,000 to the School of Industrial and Labor Relations at Cornell University for a study of retirement. A grant of $100,000 was made by the Ford Foundation to the social science departments of Duke University for studies of employment and retirement, using the intensive case study approach. The National Bureau of Economic Research received other foundation funds to conduct a study of the economic effects of pensions. Under the sponsorship of the Fund for the Republic, Robert Tilove prepared a report published in 1959 under the title *Pension Funds and Economic Freedom.*

Congressional Hearings.—In addition to these research efforts, two congressional committees devoted substantial time in 1959 to hearings on numerous aspects of the problems of the aging. The Subcommittee on Problems of the Aged and Aging, of the Senate Committee on Labor and Public Welfare, under the chairmanship of Senator Pat McNamara of Michigan, began hearings on this subject in October. The Committee on Ways and Means of the House of Representatives, under the chairmanship of Congressman Wilbur Mills of Arkansas, held hearings in the fall on the impact of taxation on older people.

Miscellaneous.—A second summer seminar in social gerontology was held in Berkeley, Calif., Aug. 1–21, 1959. The 20 or more persons who attended the seminar were members of faculties of American colleges and universities. The purpose of the seminar was to present social gerontology as an academic subject with the expectation that these faculty members might be encouraged to include the subject in college curricula. The seminar was financed by the National Institutes of Health, but was organized by the Division of Gerontology of the University of Michigan, acting for the Inter-University Committee on Social Gerontology (Wilma Donahue, chairman).

New York State's law against discrimination in employment because of age has been in effect since July 1, 1958. The 1959 annual report of the State Commission Against Discrimination (SCAD), which has the responsibility for enforcing this law, reports that it received 148 complaints of age discrimination from persons whose ages ranged from 22 to 86. Discrimination was charged against employers in 73% of the cases, employment agencies in 17%, and labor unions in 10%. The overwhelming majority of complaints came from the New York City area. The committee has been successful in reducing the age discriminatory want ads appearing in New York State newspapers. Additional experience is necessary, however, before any sound evaluation of the law's effectiveness can be made.

The Federal Council on Aging, which coordinates various government efforts in this field, reported on Nov. 16, 1959, that the federal government will pay out benefits amounting to $14.6 billion to older people in fiscal 1959–60.

(See also DENTISTRY; HOUSING; INSURANCE—*Health Insurance;* SOCIAL WELFARE.)

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OLD-AGE AND SURVIVORS INSURANCE. See Index entry.

OLEOMARGARINE. See DAIRY PRODUCTS.

OLIVES. See FRUITS.

OMAN AND MUSCAT. See MUSCAT AND OMAN.

ONIONS. See VEGETABLES.

ONTARIO. Stretching from Lake Erie to Hudson Bay, and 1,000 miles from east to west, Ontario is Canada's second largest province; its total area of 412,582 square miles comprises 10.7% of the total area of Canada. It is the most heavily populated province, with an estimated population on Sept. 1, 1959, of 5,990,000 (1956 census, 5,404,933)—an increase of 50% since 1945. About 75% of the population is urban, and 90% is English-speaking. The province has 30 cities with more than 17,000 residents: the principal centers, with their 1959 estimated populations, are Toronto, the capital of Ontario, 658,420 (metropolitan area, 1,429,207); Ottawa, the capital of Canada, 233,-

Queen Elizabeth, with Prince Philip (r.), visiting Ottawa, July 1, is greeted by Prime Minister and Mrs. Diefenbaker.

NATIONAL FILM BOARD

946; Hamilton, 284,946; Windsor, 119,319; and London, 99,115.

Government.—The premier of Ontario in 1959 was the Hon. Leslie M. Frost, leader of the provincial Progressive Conservative Party. The formal executive is the lieutenant-governor (Hon. John Keiller MacKay in 1959), appointed by the federal government. The elected Legislative Assembly of 98 members comprises 71 Progressive Conservatives, 22 Liberals, and 5 Co-operative Commonwealth Federation (CCF) representatives. In the Canadian Parliament, the province is represented by 85 members in the House of Commons and 24 in the Senate.

Education.—Thirteen years of free education are provided by the province and the municipalities. In the 1958–59 school year nearly 1,900,000 pupils were in attendance, and over 40,000 classroom teachers were employed. The 7 major universities served about 27,800 students, with nearly 14,000 enrolled in the University of Toronto.

Finance.—Net ordinary revenue for the fiscal year ended March 31, 1958, was $591,849,092; and the net ordinary expenditure was $590,983,062. As of that date, the net capital debt stood at $818,606,441. Major sources of revenue were: corporation taxes, $148 million; gasoline tax, $139 million; tax rental agreements with the federal government, $74 million; liquor control taxes, $67 million; and motor vehicle licenses, $52 million. Major governmental expenditures were: education, $142 million; highways, $122 million; and health and public welfare, $102 million. Total income of taxpayers in 1958 was about $9.8 billion, including disposable personal income of about $8.9 billion.

The Provincial Economy.—The total labor force in 1958 was 2,253,000. Salaries averaged $73.20 per week, the highest in the country. Capital investment in the province reached more than $4 billion, with more than $3 billion in new investment, the largest proportion of which went into manufacturing (24.6%).

Transportation.—Motor vehicle registrations in 1958 numbered 1,868,922 (39.6% of the national total). Road and street mileage was 85,092, of which nearly 18,800 miles were hard-surfaced. The volume of freight carried through Ontario canals totaled 1,748,700 tons of cargo in 1957. Railway freight in 1958, though down from 1957, still amounted to 58 million tons. Natural gas pipeline mileage in 1958 totaled 5,900. On May 1, 1959, construction was begun on a $20 million international bridge linking Sault Ste. Marie, Ont., with Sault Ste. Marie, Mich.

Electric Power.—The year 1958 saw the largest increase in generating capacity in Ontario's history. The total increase over 1957 for the publicly owned Hydro-Electric Power Commission of Ontario was 917,000 kilowatts—61% greater than any previous annual increase. Dependable peak hydroelectric capacity in December 1958 was 5,761,000 kilowatts. Two large thermal energy projects are under way in southern Ontario; and plans are being worked out in cooperation with Atomic Energy of Canada, Ltd., for the country's first large-scale nuclear power station. Scheduled for completion in 1964, the nuclear plant will be erected at a site 9 miles north of Kincardine.

Agriculture and Forestry.—The gross farm income increased from $910 million in 1957 to $996 million in 1958. The largest sources of income were livestock and poultry, followed by dairy products, vegetable and field crops, grain, and fruit. Revised estimates for 1957 show that the 220,219,000 acres of land given to forest production yielded 565,010,000 cubic feet of timber, valued at $155,365,873. Ontario ranks third among the provinces in both volume and value of forest production.

Minerals.—The gross value of mineral production in 1958 was estimated at $799,168,474 (37.7% of the national total). Metallic minerals accounted for more than 80% of the total, with the nickel-copper industry of Sudbury leading the field (nickel, $179,177,630; copper, $71,795,860). Uranium production underwent the greatest increase in value, from $82,940,763 in 1957 to $221,895,356 in 1958. Gold production rose slightly, to over $90 million.

Manufacturing.—Ontario is the leading manufacturing province in Canada. Latest revised figures show that there were 13,580 firms (35.9% of the Canadian total) employing 644,200 workers (47.4% of the national manufacturing force), paying $2,430,676,000 in wages and salaries, and producing goods with a gross value of $13,215 million in 1957. Leaders among the 18 major industrial groups included iron and steel (factory value of output, over $515 million), transportation (over $315 million), and food and beverages (over $257 million). Motor vehicles and parts constituted the largest industry, with a gross value of $2,556,604,000.

Principal Events, 1959.—On June 11, 1959, a provincial election was called by Premier Leslie Frost's Progressive Conservative administration. The government stood on its record, promising to continue the province's economic expansion and to assist in maintaining the high level of prosperity. The official opposition (Liberal), led by John Wintermeyer, criticized the government on the grounds that its program was inadequate and that three of its cabinet ministers had profited in the construction of the Northern Ontario Natural Gas Company pipeline. In their own program, the Liberals promised increased aid to education and social security. The CCF (Socialist) party, led by Donald McDonald, attacked the government for its record on labor legislation and social security, as well as for the alleged pipeline scandal. Premier Frost was returned to office with a slightly decreased majority. At dissolution of the assembly, his party held 84 seats, while after the election it held 71. The Liberals increased their membership from 10 to 22, and the CCF added two seats, bringing its total to 5.

Other events included the initiation of construction of a $20 million international bridge linking Sault Ste. Marie, Ont., with Sault Ste. Marie, Mich.; a disastrous fire in Lanark on June 15, which destroyed the homes of more than 150 persons, and caused damage estimated at $2,000,000; and the visit of Queen Elizabeth II and the Duke of Edinburgh in July.

(See also OTTAWA; TORONTO.)

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OPERA. See MUSIC.

OPHTHALMOLOGY. Many advances in the specialty of ophthalmology and its related sciences were reported in 1959. Among the areas that were investigated were new drugs for keratoplasty (corneal transplantation); the use of ophthalmodynamometry (measurement of pressure of the central retinal artery) as a useful diagnostic aid; the retinal changes associated with ocular proptosis (protrusion of the eyeball); the surgical and medical treatment of intractable bullous keratitis (inflammation and blisters on the inner surface of the cornea); the use of polyethylene tubing for retinal detachment; the study of further diagnostic methods for oculomotor palsies (paralysis of the muscles that move the eye); the effects of prematurity on mental and ocular changes; and diagnostic aids in glaucoma, and treatment of glaucoma (hardening of the eyeball). Some of these developments are discussed briefly below. The year also saw some remarkable new developments in the rehabilitation of the blind and the vocational training of those with marked visual impairment.

Keratoplasty.—A great amount of investigative work was completed in the use of frozen and fresh corneal tissue and of stored corneal grafts. It is believed that the stored type of graft is useful mainly in the lamellar type of transplantation, whereas the fresh graft may be used for either the lamellar type or a through-and-through transplantation. Various antibiotics were tested to see which were best in the course of a corneal transplant operation. Some physicians have tested various types of radioactive isotopes and have used beta-radiation to aid in the healing of corneal grafts so as to give a clearer cornea.

Ophthalmodynamometry.—This technique has been found very useful for diagnosis in patients

UPI; BATTELLE MEMORIAL INSTITUTE

(*Left*) Emotionally disturbed blind children are given special therapy at the Institute of Physical Medicine and Rehabilitation of the New York University–Bellevue Medical Center, New York City. Here, a small patient "sees" plants in the Institute's greenhouse. (*Right*) By using this "aural reading machine," developed at the Battelle Memorial Institute, Columbus, Ohio, blind persons may "read" by interpreting tones transmitted from the electronic probe passing over the printed page.

with an occlusion of the carotid artery. The extent of its use is being explored, and motion pictures (photography and television) showing the appearance of changes taking place within retinal arteries have been investigated in conjunction with the ophthalmodynamometer. Due to the relationship between the intracranial (cerebrospinal fluid) pressure and the pressure in the central artery of the retina, physicians have found this instrument of value in recording the systolic and diastolic pressure of this artery. By means of this technique, increased intracranial pressure can often be detected before choked disc appears and before performance of lumbar puncture when brain tumor is suspected.

Dynamometry.—Dynamometry has proved especially useful in diagnosis of various forms of headache of vasomotor origin. It allows differentiation of a type which is accompanied by dilatation of intracranial vessels and of a type with narrowing or tendency to vascular spasm. In this condition, dynamometry would be the only clinical routine method to show the intracranial vascular disturbance. With functional dynamometry, it is possible to follow objectively the result of treatment on cerebral vessels through a therapeutic test or by prolonged observation.

Other Developments.—A new tool has been developed and improved in the study of oculomotor palsies (paralysis of the muscles that move the eye). This is known as electromyography, and it gives us additional information about the supranuclear mechanisms; it may be likened to the electroencephalogram test for various neurologic diagnoses.

A new testing device for measuring intraocular tension has been developed. This is the Goldmann applanation tonometer, which is mounted on a corneal microscope and slit lamp for direct tension readings.

New drugs have been developed in the treatment of glaucoma. For several years Diamox (acetazoleamide), a carbonic anhydrase inhibitor, has been used. In 1959 two new products became available for use either in place of Diamox or in conjunction with it. These are Daramide (dichlorphenamide) and Neptazane (methazolamide), and should prove to be of great value.

Rehabilitation and Education of the Blind.—In the field of rehabilitation of the blind, or of those with a major visual defect, some important new aids are being developed. A revolutionary device which will permit blind people and others visually handicapped to read books not printed in braille is being developed by the Veterans Administration, the Department of Defense, and private research groups. It consists of an electronic probe which, when passed over the printed page of any book, emits sounds that spell out the lower case or upper case Roman characters. At first the blind person will be able to read only 5 to 10 words per minute, but as he gains speed and proficiency he probably will increase his reading to 15 to 20 words per minute. In the instrument's present stage of development, the sounds which it produces do not resemble those of speech but are patterns of musical tones similar to chords played on an organ. By interpreting these tones, trained persons ultimately should attain a reading speed up to 30 words per minute. Only a few prototype models of the "reader" have been made, and further development of both the device and training methods will be required before quantity production is advisable.

Textbooks are being improved to aid teachers of the partially seeing. Research has modified the type size and spacing, as well as the illustrations, of books for the partially seeing. New low-vision aids with microscopic and telescopic spectacles have undergone further improvement, enabling more visually limited persons to read print.

Schools for the Blind.—Education of the blind, as with the seeing, begins in the preschool age group. There are a few nurseries for blind babies, but it is now generally acknowledged that a blind child of preschool age is better off in the normal atmosphere of his own home. This special situation demands more attention to his needs than can be given by parents, and so the guidance and advice of specially trained teachers or social workers are also required. Blind children are sometimes educated in residential schools for the blind or in special classes for the blind in the public schools. Many states educate their blind children in schools of this type in a neighboring state. In 1959 more than 13,000 blind children were receiving education in the United States, about half of them in residential schools distributed over 41 states and Puerto Rico, and the remainder in public day schools.

The Deaf-Blind.—The problem of the education, training, and rehabilitation of blind persons is much more difficult when other physical handicaps are present. It is estimated that more than 3,000 persons in the United States suffer from serious loss of hearing in addition to defective sight. The blind child who is deaf is usually sent either to a school for the blind or a school for the deaf where he is taught by a special teacher. There were eight such schools in the United States in 1959.

A new system for communication with the deaf-blind was announced on May 18, 1959, by Arthur S. Flemming, secretary of health, education, and welfare. Consisting merely of tracing block letters, one on top of another, on the palm of a deaf-blind person, the new method employs

a standard universal alphabet, and may be learned readily by anyone.

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OPINION POLLS. See PUBLIC OPINION SURVEYS.
ORANGES. See FRUITS.
ORCHESTRAS. See MUSIC.

OREGON. Northwestern coastal state, United States; admitted to the Union, Feb. 14, 1859. The "Beaver State" ranks 10th in area and 32d in population among the 50 states.

Area and Population.—Area: 96,981 square miles (land, 96,315; inland water, 666), divided into 36 counties. Population: (1950) 1,521,341; (est., July 1, 1958) 1,746,000. Incorporated cities with populations above 10,000 (as estimated by the State Board of Census for July 1, 1958) are:

Albany	13,000	Pendleton	15,300
Astoria	12,000	Portland	402,300
Bend	12,450	Roseburg	12,200
Corvallis	19,100	Salem (*capital*)	47,100
Eugene	47,600	Springfield	13,800
Klamath Falls	19,500	The Dalles	11,560
Medford	24,300		

Executive.—Chief state officers in 1959:
Governor: Mark O. Hatfield (Republican)
Secretary of State: Howell Appling, Jr.
Treasurer: Sigfrid B. Unander
Attorney General: Robert Y. Thornton
Supt. of Public Instruction: Rex Putnam

Constitution and Judiciary.—The present constitution went into effect in 1859. The Supreme Court comprises 7 justices; chief justice in 1959: William McAllister.

Legislature.—The Oregon Legislative Assembly comprises a 30-member Senate (in 1959, 19 Democrats and 11 Republicans) and a 60-member House of Representatives (33 Democrats and 27 Republicans), which meet in odd-numbered years commencing the second Monday in January.

The 1959 session enacted measures modifying state income tax rates and provisions. A citizens' petition forced delay of these measures until they could be voted on as a constitutional amendment in the 1960 elections. Other tax measures placed a 1% monthly interest levy on income taxes paid on a quarterly basis, revised the inheritance tax to yield additional income, and raised the cost of liquor at government stores.

Judiciary measures set the chief justice's term at 6 years; authorized the Supreme Court to engage temporary judges to ease court backlogs, added 3 new Circuit Court judges and 1 District Court judge to the judiciary system; and authorized a new appellate code. In education, a state Scholarship Commission was set up; 2-year community colleges were authorized; and school districts with 12 or more mentally retarded children were required to set up schools for their care by 1964.

Other measures established a uniform traffic code; outlawed racial discrimination in real estate transactions and age discrimination in employment; and established sanitary standards for farm labor camps, provided for the education of children of migrant laborers, and licensed migrant labor contractors. A small-boat law was enacted, and the Western Interstate Corrections Compact and the Interstate Compact on Juveniles were ratified (as was, belatedly, the 15th Amendment to the federal Constitution).

Constitutional amendments proposed would permit: a legislative revision of the state constitution (subject to final voter approval after revision); increase legislative salaries; provide a shortcut for grand jury indictments; and set up procedures for state and local government continuity in event of disaster.

Finance.—In the 1958–59 fiscal year, state revenue of $659,067,778 comprised $178,310,610 from state tax sources, $75,675,386 from the federal government, and $405,081,782 from other sources. Tax revenue consisted of $93,500,000 from individual income taxes, $38,215,130 from motor fuel taxes, $41,177,943 from licensing, and $5,417,537 from other sources. Expenditures of $670,804,725 included $63,840,383 for education and $102,594,442 for highways. Long-term indebtedness on July 1, 1959, amounted to $292,150,000.

Banking.—As of June 10, 1959, the state's 11 national banks had assets of $1,858,224,000, demand deposits of $984,939,000, and time deposits of $678,413,000. The 45 state banks (Dec. 31, 1958) had $297,289,648 in assets, $108,858,559 in demand deposits, and $124,718,030 in time deposits.

Education.—School attendance is compulsory between the ages of 7 and 17, inclusive. National Education Association estimates for the 1959–60 school year indicated operating expenditures for public elementary and secondary schools to total $147,500,000 ($441 per pupil). Revenue comprised $119,800,000 from local school districts, $53,232,000 from the state, and $5,200,000 from the federal government. Capital outlays amounted to $33 million, and teachers' salaries averaged $5,300 (high school, $5,583; elementary, $5,180).

For the 1959–60 school year the NEA estimated that there were 284,700 public elementary school pupils served by 10,750 teachers, and 98,600 public secondary pupils and 4,425 teachers. Publicly supported higher educational institutions (1958–59) comprised 3 teachers colleges with 167 instructors and 3,380 students; 3 colleges and universities (977; 19,790); and 2 other higher institutions (129; 1,098). Public and private college and university enrollment totaled 38,530.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $38,394,279.38, including $17,229,652.33 for the aged, $9,586,147.58 for dependent children, and $5,084,349.05 for the permanently and totally disabled. A monthly average of 58,400 persons received public assistance.

Labor Force.—Nonagricultural employment in August 1959 was up to 515,300 from 492,400 a year earlier; agricultural workers numbered 114,000. The three major sources of nonfarm employment were manufacturing (159,900 workers), wholesale and retail trade (110,200), and government (88,300). State-insured unemployment dropped to 9,900 in October 1959 from 15,500 in the previous October.

Manufacturing.—The state's 5,500 manufacturing plants in 1958 employed an average of 136,000 persons who received $678,540,000 in wages. Value added by manufacture (1957) totaled $1,061,734,000, and outlays for new plant and equipment amounted to $104,553,000. Production workers averaged $97.74 for an average workweek of 39.7 hours in August 1959.

MAJOR OREGON MANUFACTURES, 1957

Product or industry	Average no. of employees	Salary and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Lumber and wood products	71,053	$331,419	$506,494
Food and kindred products	19,404	77,869	170,853
Pulp, paper, and products	6,448	33,610	86,065
Fabricated metal products	6,270	32,271	50,825
Printing and publishing	5,128	24,300	41,822
Nonelectrical machinery	3,667	20,012	31,005
Electrical machinery	2,025	10,490	22,439
Textile mill products	2,361	9,133	21,813

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Oregon ranked 37th among the states in the value of its mineral output, with 0.27% of the national total. The $45,053,000 value marked a record total for the state, with much of the increase accounted for by a greater output of

OREGON MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Chromite	4,133	...[1]
Clays	252,000	$ 293,000
Gold (fine ounces)	1,423	50,000
Mercury (76-pound flasks)	2,276	521,000
Sand and gravel	10,464,000	10,265,000
Stone	15,004,000	15,483,000
Other minerals	...	19,649,000
Total	...	$45,053,000[2]

[1] Figures withheld to protect individual company's confidential data. [2] Total has been adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

crushed stone and cement for highways and dams. Oregon led in the production of columbium metal and nickel ore and was third in chromite and diatomite, fourth in pumice, and fifth in mercury. A new aluminum plant began production at The Dalles in 1958, and a uranium mill was completed at Lakeview.

Fisheries.—The commercial fish and shellfish catch in 1959 amounted to 59,467,000 pounds valued at $7,345,000. Principal species were chinook salmon (6,008,000 pounds valued at $2,022,000) and albacore (9,754,000; $2,013,000).

Agriculture.—Cash farm income for the first nine months of 1959 was up to $310,349,000 from $300,197,000 for the corresponding period of 1958. For the full year 1958, income comprised $190,295,000 from livestock and livestock products, $210,272,000 from crops (chiefly wheat, $46,956,000) and $6,441,000 from government payments. Principal livestock income sources were cattle, $80,473,000, and dairy products, $45,329,000.

OREGON CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	2,534	2,250	2,200
Barley (1,000 bu.)	14,466	19,890	19,368
Cherries (tons)	24,930	28,600	28,600
Cranberries (bbl.)	25,470	32,300	44,000
Filberts (tons)	7,270	7,150	9,000
Hay (1,000 tons)	1,813	1,886	1,827
Hops (1,000 lb.)	11,110	5,400	6,968
Oats (1,000 bu.)	9,635	10,574	7,718
Peaches (1,000 bu.)	439	450	550
Pears (1,000 bu.)	5,608	5,500	5,640
Potatoes (1,000 cwt.)	7,793*	9,750	8,510
Prunes (tons)	52,020	19,700	42,000
Strawberries (1,000 lb.)	59,794*	69,300	89,320
Sugar beets (1,000 short tons)	383	521	513
Walnuts (tons)	6,690	6,500	4,200
Wheat (1,000 bu.)	27,312	28,000	28,464

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 54,000 farms in 1958. Total acreage (1954) of 21,047,000 included 3,265,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,497,000 cattle, 881,000 sheep, and 3,630,000 chickens (excluding commercial broilers). Some 74,000 family and hired workers were engaged in farming in the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal spending for highways in 1958 totaled $75,675,000, and 217 miles of new construction were completed.

Highways and roads in December 1958 totaled 67,687 miles (40,887 surfaced). Registered *motor vehicles* numbered 873,856 on Dec. 31, 1958, including 762,030 passenger cars. There were (1958) 23 *railroads* operating 3,479.43 line miles; and (1959) 8 regularly scheduled *airlines*, 174 *airports and airfields* (46 commercial and municipal and 128 private), and a heliport.

Communications media (1958) included 68 AM and 10 FM *radio stations;* 7 VHF and 1 UHF *television stations;* 20 daily *newspapers* (circulation, including Sunday, 1,351,684) and 119 other newspapers (220,722); and (Jan. 1, 1959) 189,400 business and 466,100 residential *telephones.*

Principal Events, 1959.—The highlight of the year was the statewide celebration of the 100th anniversary of Oregon statehood, with the focal point being the Centennial Exposition near Portland, which lasted 100 days and attracted some 1,300,000 visitors. An International Trade Fair, held in conjunction with it, drew more participating nations than any fair ever held in the United States. Nationwide television, press, and magazine features made more people than ever before aware of the state's heritage, culture, and resources. For the entire year, a record number (5,973,000) of visitors to the state stayed longer and spent more money ($176 million) than in any previous year.

The Dalles Dam, a $250 million multipurpose structure on the Columbia River, was dedicated on October 10 by Vice President Richard M. Nixon. Its eventual electric output of 1,743,000 kilowatts will make the dam second in capacity in the Northwest to Grand Coulee. When a deeper channel, now being dredged, is completed, the 675-foot lock will enable ocean-going vessels to reach the city of The Dalles.

In 1959 almost every major index of economic growth—timber products, agriculture, tourists, employment, retail trade, bank clearings, and port tonnage—showed marked improvement over 1958 and complete recovery from the 1957 slump. The cranberry industry, however, was hard hit during its seasonal peak shortly before Thanksgiving, when Secretary of Health, Education, and Welfare Arthur S. Flemming announced that a chemical weed killer, known to cause cancer in rats, might have contaminated much of the nation's 1958 and 1959 cranberry crops.

As far as state government and politics were concerned, 1959 was pretty much Republican Gov. Mark O. Hatfield's year. On January 12 he became the state's new chief executive. Following his inaugural address, a running battle developed with the Democratic-controlled legislature. During the year he traveled widely and won recognition as an outstanding young officeholder and as a prospective vice presidential candidate.

The legislature, which met for 115 days, balanced a $313 million biennial General Fund budget through tax revisions (see above, *Legislature*). Passage of a unique primary law, which provides that all nationally prominent candidates for president shall be on the primary ballot, promised to make the state a center of campaign activities for both Democratic and Republican candidates. In December, Oregon's Sen. Wayne Morse, reversing an earlier decision, further complicated the political situation by announcing his own candidacy for the presidential nomination. Earlier in the year Morse stated that he would use his influence to defeat his Senate colleague, Richard Neuberger, for re-election in 1960. On his own part, Neuberger stirred up a lively controversy with his proposal to make a 35,000-acre national park of the picturesque coastal sand dunes and nearby lakes which lie south of Florence. The State Natural Resources Committee issued a report opposing the proposal.

The worst disaster of the year occurred on August 7, when a dynamite truck blew up in the heart of downtown Roseburg, resulting in 13 deaths, many injuries, and property damage exceeding $10 million. At year's end, Roseburg was making ambitious plans to rebuild.

Principal Events by: ELIZABETH FINDLY,
Head Reference and Documents Librarian,
University of Oregon.

ORGANIZATION FOR EUROPEAN ECONOMIC CO-OPERATION (OEEC). See Index entry.

ORGANIZATION OF AMERICAN STATES. The Organization of American States is an intergovernmental institution of the 21 American Republics which functions under a charter signed at Bogotá, Colombia, in 1948. It carries on its activities through six agencies: (1) the Inter-American Conference; (2) the Meeting of Consultation of Ministers of Foreign Affairs; (3) the Council of the Organization; (4) the Pan American Union; (5) the specialized conferences; and (6) the specialized organizations.

In 1959 political tensions in the Caribbean resulted in three requests for the application of the Inter-American Treaty of Reciprocal Assistance

to preserve peace and order. On April 27, 1959, the government of Panama informed the Council of the Organization that its territory had been invaded and the peace of the continent thereby threatened. A committee of investigation appointed by the Council found that the invasion had been organized abroad, that the vessel carrying the invaders had sailed from a Cuban port, and that of the 92 persons comprising the force, 89 were Cubans and 3 were Panamanians. After the surrender of the invaders on May 1, the Council, on June 18, declared the incident terminated.

On June 2, 1959, the government of Nicaragua informed the Council of an invasion of its territory and requested the application of the same treaty. A fact-finding commission found that of the 110 members comprising the invading force, 107 were Nicaraguans and 3 were Costa Ricans. The committee's report revealed that the Nicaraguan case was essentially an internal matter and confirmed the impression held in many quarters that it was not one that came within the scope of the treaty.

On July 2, 1959, the government of the Dominican Republic likewise sought to invoke the treaty, alleging that its peace and security were threatened by forces proceeding from and supported by the governments of Cuba and Venezuela. Instead of acceding to that request, the Council, on July 17, convoked the Fifth Meeting of Consultation of Ministers of Foreign Affairs, which met in Santiago, Chile, on August 12–18. The conference adopted the Declaration of Santiago, which reaffirmed certain long-established basic principles—among them those on nonintervention, representative democracy, and respect for human rights—and delegated additional authority to the Inter-American Peace Committee, which would then report to the Eleventh Inter-American Conference at Quito, Ecuador. Originally scheduled for February 1960, the conference was indefinitely postponed in December by the Council of the Organization.

In the economic field, an agreement establishing the Inter-American Development Bank was opened for signature at the Pan American Union on April 8, 1959. By the end of the year, ratification totaling more than 85% of the capital stock was deposited, and the bank is expected to begin operations in 1960. It is capitalized at $1 billion, of which $850 million represents authorized capital stock that will be available for ordinary banking operations. A special fund of $150 million was set up for projects that would not be able to meet the usual banking requirements for a loan.

The Committee of 21, the special committee of the Council of the Organization which was created to study the formulation of new measures for economic cooperation, met in Washington, D.C., on Nov. 17–Dec. 12, 1958, and again in Buenos Aires on April 27–May 8, 1959. The committee approved a country-by-country study of the problems and possibilities for economic development, and also agreed that the procedure of consultation which heretofore has been limited to political issues should likewise be extended to economic questions whenever a government considers that its national welfare is seriously affected.

On Sept. 24, 1959, an International Coffee Agreement was signed in Washington by the 15 Latin American coffee-producing countries, as well as by France and Portugal; it was accompanied by declarations of Belgium and Great Britain of their intention to cooperate in the spirit of the agreement. The agreement fixed export quotas for signatory countries at 90% of exports during the best calendar year in the decade 1949–58.

Among other organs of the organization, the Inter-American Council of Jurists held its fourth meeting in Santiago, Chile, on Aug. 24–Sept. 9, 1959. The third meeting of the Inter-American Cultural Council was held in San Juan, Puerto Rico, on Nov. 22–Dec. 2, 1959. On November 18, Vicente Sánchez Gavito of Mexico and Celeo Davila of Honduras were elected chairman and vice chairman, respectively, of the Council of the Organization for the coming year.

(See also INTER-AMERICAN AFFAIRS.)

WILLIAM MANGER,
Honorary Counselor to the Council of the Organization of American States.

ORGANIZATIONS, American. See SOCIETIES AND ORGANIZATIONS.

ORGANIZATIONS, European Political. See EUROPEAN ORGANIZATIONS.

ORIENTAL RELIGIONS. See RELIGION.

ORKNEY ISLANDS. Separated from the northern mainland of Scotland by the Pentland Firth, the group forms a Scottish county and has an area of 375.5 square miles. The population in December 1957 was estimated at 19,900, as compared with 21,255 at the 1951 census. Some 34 of the 90 islands are inhabited, the most populous being Pomona, South Ronaldshay, Westray, Hoy, Sanday, Stronsay, Shapinshay, Burray, Rousay, Eday, North Ronaldshay, and Flotta. Kirkwall (pop., 4,348) on Pomona (Mainland) is the county seat. Fishing and stock raising are leading industries. Sandstone is quarried on several islands, and dairy farming and egg production are important.

ORNITHOLOGY. See the Index entry, *Birds.*

OSTEOPATHY. Osteopathic medicine is a system of medicine and major operative surgery that emerged in the United States in the late 19th century. Since then, the profession has grown in that country to include more than 13,000 osteopathic physicians. Doctors of osteopathy are now eligible for commissions as medical officers in the U.S. Army, Navy, and Air Force.

To become an osteopathic physician and surgeon, a student must successfully complete four years of high school, three years of preprofessional training in an accredited college or university, and four years of professional education in one of the six approved osteopathic colleges. Ninety-seven per cent of graduates serve internships in approved osteopathic hospitals. Certification in specialties in osteopathic medicine requires distinct 5-year postinternship programs that must be approved and accredited by The American Osteopathic Association.

Osteopathy emphasizes the fundamental importance of the musculoskeletal system as it interacts with the cardiovascular system, the nervous system, the respiratory system, etc. According to osteopathic theory, disturbances in the musculoskeletal system are factors in establishing and maintaining the disease process which lessens the human body's natural ability to withstand stress. Detection of these disturbances is basic to the distinctive approach of osteopathic physicians, and the treatment of these disturbances is widely known as an "osteopathic manipulative treatment."

Osteopathy, as a part of the continuum of medicine, claims and administers all the medical, surgical, immunological, pharmacological, psychological, and hygienic procedures that are of proven value in preventing the establishment of the disease process, or in treating the various syndromes or diseases that may arise therefrom.

The American Osteopathic Association has its headquarters at 212 East Ohio Street, Chicago 11, Ill. In 1959–60, Dr. Galen S. Young of Chester, Pa., was president; Dr. True B. Eveleth, executive secretary. The association publishes *The Journal of the American Osteopathic Association, Forum of Osteopathy,* and *Health.*

RAYMOND P. KEESECKER,
Editor, The American Osteopathic Association.

OTTAWA. The national capital of Canada, Ottawa lies on the Ottawa River, about 285 highway miles northeast of Toronto and 125 highway miles west of Montreal, in the Province of Ontario. With an area of 30,481 acres (about 28 square miles), the city had a population of 236,837 in 1959.

Greater Ottawa, including Hull, Quebec, across the river, has a population of 375,000. Ottawa is a bilingual city—French and English—with 60% of its residents speaking the latter.

The city government consists of a Board of Control and a City Council. The board comprises an elected mayor (George Nelms, re-elected in December 1958) and four elected controllers. The Council is composed of two aldermen from each of the city's ten wards. Administrative functions are vested in the Board of Control, which is fully responsible to the Council. Decisions taken by the board may be rejected by a two-thirds vote of the Council. The city falls within four federal constituencies and is represented by three members in the Ontario legislature.

The city budget for 1959 called for expenditures of $20,350,184, with $10,705,239 allocated for education and $9,644,945 for general purposes. Capital expenditures in 1959 amounted to $17,364,000. The taxable assessed property valuation was $442,973,000. Of this figure, business and commercial assessment amounted to $173,610,000, and residential assessment to $269,363,000.

The school system, which consists of public and separate (Roman Catholic) schools for primary education and public high schools for secondary instruction, is managed by elected boards operating under the jurisdiction of the provincial government. Pupil enrollment figures for 1959 were as follows: public primary schools, 23,569; separate primary schools, 22,276; and collegiate high schools, 10,876. Institutions of higher learning include the University of Ottawa (Roman Catholic) founded in 1848, and Carleton University, founded in 1942. In 1959 the former had an enrollment of 2,628 full-time students; the latter, 851.

The chief industries of Ottawa are printing and bookbinding; sash, door, and planing mills; scientific equipment manufactories; and metal-fabricating plants. In 1959 there were 307 industrial plants employing 10,681 persons; the value of manufacturing amounted to $121,845,000.

Ottawa's commercial life is overshadowed by the city's role as the federal capital of Canada. In 1959 there were almost 35,000 civil servants employed in the city. New buildings occupied in 1959 by the federal government included a new structure for the Department of Mines and Technical Surveys and a new center for the Recreational Association. The value of government construction in Ottawa in 1959 was $34,816,162.

The City Council was concerned during the year with the drafting of a bylaw restricting the commercial use of property in the Glebe residential area, but consideration of the measure was deferred until 1960.

The most important development to affect the city in some years was the federal government's announcement that the city's Union Station, serving Canada's two major railways, would be relocated within five years on the southeastern outskirts of the city. The move will allow a redevelopment of the central Confederation Square and eliminate many miles of railway tracks within Ottawa. The National Capital Commission opened a new parkway in the Gatineau Hills toward the end of 1959.

Queen Elizabeth II spent July 1 (Dominion Day) in Ottawa during her 1959 tour of Canada.

DAVID M. L. FARR,
Associate Professor of History,
Carleton University.

OUTER MONGOLIA. See MONGOLIAN PEOPLE'S REPUBLIC.

OUTER SEVEN. See EUROPEAN FREE TRADE ASSOCIATION.

PACIFIC ISLANDS. The term Pacific Islands commonly signifies the innumerable islands and island groups, chiefly of volcanic or coral origin, generally referred to as Oceania. Oceania is divided into three main classifications (although authorities sometimes differ in which of these classifications they place certain fringe island groups):

(1) *Polynesia,* in the central and southeastern Pacific, includes principally Hawaii, Samoa, Tonga, and Pitcairn Island (qq.v.); the Tuamotu Archipelago and the Society and Marquesas groups (see FRENCH POLYNESIA); and the Ellice and Phoenix groups (see WESTERN PACIFIC ISLANDS, BRITISH).

(2) *Melanesia,* in the western Pacific, includes mainly Fiji and New Caledonia (qq.v.); the Bismarck Archipelago, and the New Hebrides, Louisiade, Admiralty, Solomon, Loyalty, and Santa Cruz groups (see PAPUA AND NEW GUINEA, TERRITORY OF and WESTERN PACIFIC ISLANDS, BRITISH); sometimes Australia, New Zealand, and the Malay Archipelago are also included.

(3) *Micronesia,* in the central Pacific, includes chiefly Nauru and Guam (qq.v.); and the Caroline, Marshall, Mariana, Gilbert, and Bonin groups.

U.S. PACIFIC ISLANDS

The Pacific islands of the United States are important mainly as strategic bases and landing points for sea and air traffic.

Trust Territory of the Pacific Islands.—A United Nations trust territory comprising the Mariana (except Guam), Marshall, and Caroline island groups, scattered over some 3 million square miles in the western Pacific north of the equator. It includes over 2,100 islands grouped into 96 distinct units or atoll formations (only 64 regularly inhabited), with a total land area of 687 square miles. About three fifths of the population of 70,594 (June 30, 1958) live on the main islands of Truk, Yap, Ponape, Palau, and Majuro. The island peoples are broadly classified as Micronesian, and include 9 main linguistic groups.

PACIFIC ISLANDS OF THE UNITED STATES

(Not including islands belonging to Hawaii and Alaska, and the Trust Territory of the Pacific Islands. Asterisk indicates reference to separate article.)

Island or group	Area (sq. mi.)	Population
Baker[1]	1	...
Canton and Enderbury[1,2]	27	272[3]
*Guam	209	65,000[4]
Howland[1]	1	...
*Jarvis[1]	2	...
Johnston[5]	[6]	46[3]
Kingman Reef[5]	[7]	...
*Midway	2	416[3]
*Palmyra	2	...
*Samoa, American	76	22,000[8]
Swains	1	...
*Wake	3	349[3]

[1] Under the administration of the Office of Territories, Department of the Interior. [2] An Anglo-American condominium in the Phoenix group of the Gilbert and Ellice Islands, used as air and communications bases; Enderbury Island was uninhabited in 1950. [3] 1950 census. [4] Estimate, July 1, 1957, including armed forces stationed on the island. [5] Under U.S. Navy control. [6] Including nearby Sand Island; total area, less than 0.5 sq. mi. [7] About 150 feet long and 120 wide at high tide; area about 40 sq. mi., including submerged shoals. [8] Estimate, Dec. 31, 1958.

Bikini and Eniwetok atolls in the Marshalls have served as sites for United States nuclear weapons tests. In 1954, radioactive fallout required the temporary removal of the populations of nearby Rongelap and Utirik atolls. A United Nations visiting mission reported on May 21, 1959, that the Rongelap people (who had been returned to their

home atoll in June 1957) had recovered physically from the effects of the fall-out, but were under emotional strain through fear that their food and water had become contaminated. The mission also commended the United States for the emergency aid granted to islands devastated by typhoons in 1957, but urged that greater assistance be provided for economic development.

Government.—The trust territory is administered by the U.S. Department of the Interior, with the exception of Saipan, Tinian, and other islands of the Northern Mariana group (not including Rota), whose civil administration is responsible to the secretary of the navy. Delmas H. Nucker is high commissioner of the territory, with headquarters on Guam. Native self-government consists of elected congresses and councils on the district and regional levels. A conference of Micronesian leaders meets annually on Guam as the Inter-District Advisory Committee to the High Commissioner. The budget for the fiscal year ending June 30, 1958, totaled $7,548,855, of which $1,867,140 came from local sources and $5,681,715 from United States appropriations.

Education and Religion.—As of June 30, 1958, there were 186 elementary schools (11,501 pupils), 18 intermediate (1,548), and 7 secondary (273). About 91% of children aged 8 to 14 attended school. The population is predominantly Christian, although some native beliefs persist. Mission schools play an important role in education, particularly on the intermediate and secondary levels.

Economy.—Chief economic activities are subsistence agriculture, livestock raising, and fishing. Copra production, a major source of cash income, totaled 13,259 short tons in the fiscal year 1958; trochus shell, 392,402 pounds. Boats and handicraft items are also produced for sale. In the 1958 fiscal year, imports (chiefly foodstuffs, clothing, and building materials) totaled $4,338,394; exports (mainly copra, trochus shell, vegetables, and handicraft items), $1,652,975. Economic development efforts include the improvement of fishing techniques, encouragement of food-crops diversification, rehabilitation and improvement of coconut groves, and promotion of cocoa as a supplementary cash crop.

Islands Under United States Control.—Under the terms of the Japanese Peace Treaty of 1951, the United States exercises full power and jurisdiction (with Japan retaining residual sovereignty) over the Ryukyu Islands and the Daito Islands; the Bonin Islands, Marcus Island, Daito Island, and the Volcano Islands; and the island of Parece Vela. (The Tokara islands and the Amami Oshima group, both of the Ryukyus, reverted to Japan in 1951 and 1953, respectively.)

Ryukyu Islands.—The Ryukyu Archipelago extends some 500 miles southwest of Japan. The islands under United States control have a total area of 848 square miles and a population (est. Dec. 31, 1958) of 849,000 (excluding United States military and civilian personnel and their dependents). The largest island, Okinawa (579 sq. mi.; pop. 665,315) contains important United States airbases and has been the site for recent test firings of the Nike-Hercules missile. The U.S. high commissioner for the Ryukyus is Lt. Gen. Donald P. Booth. The native Ryukyu government includes a 29-member legislature elected by the people for a 2-year term, and a chief executive appointed by the high commissioner after consultation with the legislature. Seisaku Ota was named chief executive by General Booth on Oct. 21, 1959. The elections of March 16, 1958, resulted in the following party seating in the legislature: Democrats, 7; Social Masses, 9; Minren, 5; and independents, 8. The election results represented a gain for anti-American leftist elements, although the parties favoring cooperation with United States authorities retained a majority. Popular discontent has existed over United States land requisitions for military purposes and the manner of compensation. On July 30, 1958, General Booth announced a change to the rental system form of compensation, which did much to allay dissatisfaction.

An estimated 25% of the population 15 years of age and over was illiterate in 1950. In 1955 there were 231 primary schools (115,020 pupils); 195 secondary (65,739); 9 technical (5,870); and in 1954, 1 higher institution (1,258).

The economy is heavily dependent on the spending of United States military forces and personnel, and a considerable part of the native population is employed by United States forces. Agriculture engages about a fourth of the population. Chief crops are sugarcane, sweet potatoes, rice, and soybeans. Major industries are fishing and food processing; smaller industries include textiles, hats, candy, shell buttons, ceramics, woodworking, and tobacco products. Imports in 1956 totaled $77.9 million; exports, $19.6 million. In 1958, dollars replaced military B yen as the official currency.

The *Daito Islands* (area, 18 sq. mi.; pop. 1950, 2,691) form the easternmost group of the Ryukyus, about 200 miles east of Okinawa. Sugar and phosphate are produced.

Bonin Islands and Volcano Islands.—These groups lie about 800 miles east of the Ryukyus. The Bonins comprise 27 islands; total area, 40 square miles; pop. (1958) 190. The United States maintains a naval station on the main island of Chichi, which is a port of call for United States submarines. *Marcus Island* (1 sq. mi.), east of the main group, is usually classified as one of the Bonins. The Volcano group, south of the Bonins, comprises 3 islands (11 sq. mi.), including Iwo Jima, which has an excellent airstrip and is used as a refueling point for U.S. Air Force planes.

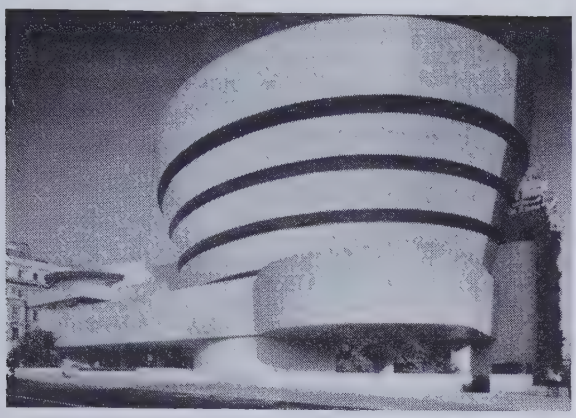
Rosario Island lies to the west of the Beechey group of the Bonins. *Parece Vela* lies some 400 miles southwest of Iwo Jima.

M. J. G.

PAINTING AND SCULPTURE. In the American art world, 1959 had all the ingredients of a typical year. At the American National Exhibition in Moscow during the summer (see FAIRS AND EXHIBITIONS), the public face of American art was presented in an exhibit that would have gone smoothly but for the previous opposition of some of the more conservative members of the art world, possibly on the grounds that their works were not represented among paintings chosen for showing at the fair. Politics became mixed with painting when Representative Francis E. Walter (D., Pa.), chairman of the House Committee on Un-American Activities, charged that many of the 67 artists represented had "records of affiliations with Communist fronts and causes." President Eisenhower stood by the selection of works, though he took a purely personal exception to a mordant painting by Jack Levine, which he called "more like a lampoon than art." Mrs. Edith Gregor Halpert, curator of the paintings and sculptures exhibited, stanchly defended the entire selection, including the Levine canvas. Despite a certain amount of feeling about the issues involved, the largely nonobjective paintings were eventually augmented by the works of 30 older painters, among them Gilbert Stuart, Frederic Remington, Albert Pinkham Ryder, Mary Cassatt, and John Singer Sargent. The entire exhibit was a revelation to the Russians who saw it, but the squabbling that preceded it was an unfortunate example of art versus officialdom.

As if to balance the scales, Congress passed into law bills liberalizing the import tariffs on works of modern art, a problem that has been vexing since the 1920's, when a customs inspector refused to accept Constantin Brancuşi's *Bird in Flight* as a work of art and taxed it as a metal object instead. Since then, any work of art put together out of unusual materials or simply outside the Bureau of Customs' legal definition of art has been at their mercy. Representative Frank Thompson, Jr. (D., N.J.) and Senators Paul Douglas (D., Ill.) and Jacob K. Javits (R., N.Y.) sponsored the bills in their respective houses.

During any typical year in the American art world, one big retrospective show is given of the works of an established American painter. In 1959, Winslow Homer was honored by a show in late winter that traveled from the National Gallery in Washington, D.C., to New York's Metropolitan Museum of Art. Paul Gauguin was the popular European master singled out for an exhibit which went to the Metropolitan Museum in April from the Chicago Art Institute. No single field of art replaced 1958's interest in German expressionism. Besides the Homer show, important exhibits were given of the works of Hans Hofmann, Louis Eilshemius, Raphaelle Peale, Arthur B. Carles, Attilio Salemme, Mark Tobey, and Max Weber. These showings pointed out the clearest trend in 1959: American art has grown up and is casting a rather complacent eye on its recent and, in the case of



STOLLER, FOR IVY LEE AND T. J. ROSS

Exterior and interior views of New York City's Solomon R. Guggenheim Museum for nonobjective art, designed by the late Frank Lloyd Wright and opened on October 21. (*Above*) The controversial museum's exterior, with the administration area at the left and the gallery at the right. (*Right*) The gallery is a continuous spiral ramp from which the paintings may be viewed as the visitor makes his ascent.

Peale, more distant past. Modern American painting, proudly exported to Europe, is as good as anything Europe now has to offer the United States. Current abstractions, however, indicate the growth of a cult of meaninglessness that has raised doubts even among people long sympathetic with abstract art. The abstractions of Mark Tobey, Barnett Newman, Josef Albers, Ad Reinhardt, and others seem to have reached a point where the canvas or paper is a sort of *objet trouvé,* colored or worked overall simply to generate an aura of influence—if anything at all. It is to be hoped that these paintings will clear the air for further progress rather than become an end to themselves.

The museum event of the year was the opening in October of Frank Lloyd Wright's Solomon R. Guggenheim Museum in New York, whose theatrical architecture and hordes of noisy sightseers almost overpowered a representative selection of nonobjective painting and sculpture. A remarkable discovery of classical statues in Piraeus, Greece, and considerable publicity over "discoveries" of Ming Dynasty imperial tombs in China (actually found in 1956) and of various treasures of the monastery of St. Catherine on Mount Sinai in Egypt were other notable events in 1959.

Major Exhibitions.—The Homer and other American retrospective shows, as noted above, typify any year in American painting, but interest was not confined to native American artists. A number of important public and private collections were seen.

Exhibits early in the year included the Larry Aldrich collection of 19th and 20th century works at the Virginia Museum of Fine Arts in Richmond and a traveling show of modern Dutch and other paintings from the Stedelijk Museum of Amsterdam. On view in New York City were masterpieces of Washington's Corcoran Gallery at the Wildenstein Gallery; a loan exhibition of the works of Odilon Redon at the Paul Rosenberg Galleries; the Pearlman collection of 19th and 20th century French art at Knoedler's; and the W. S. Glazier collection of illuminated manuscripts at the Morgan Library. "The Impressionist Mood in American Painting" was the theme of an early show at New York's Academy of Arts and Letters, and "A Family Exhibit" in April at Knoedler's displayed works from the various collections of the Rockefeller family. Spring and summer brought showings of the Lehman collection at the Cincinnati Art Museum and of *The Dial* collection of modern art (*The Dial* was an art magazine) at the Worcester (Mass.) Museum.

"Masterpieces of Impressionist and Post-Impressionist Painting," loaned by Washington's National Gallery, celebrated the 50th anniversary of the American Federation of Arts in New York.

Also notable in 1959 were three exhibits of drawings in New York: "French Master Drawings" at the Metropolitan Museum in February; "Master Drawings of Seven Centuries" at Knoedler's in October, including works from the Windsor Castle collection; and a parallel collection of "Five Centuries of Drawing" featuring the decorative arts at the Cooper Union in New York.

Large contemporary group shows included the Carnegie International at Pittsburgh; the 1959 Festival of Contemporary Arts, ninth in a series of biennial shows at the University of Illinois; "The American Muse," a centennial exhibition of the Corcoran Gallery in Washington, D.C.; and, at the Museum of Modern Art, "Recent Sculpture U.S.A.," "New American Painting," and, in the fall, the "New Images of Man" show of both painting and sculpture. "Art U.S.A.: 59," a more selective continuation of the 1958 "mile of art" show was arrayed at the Coliseum in New York. "Decorative Arts of the Italian Renaissance," early in the year at the Detroit Institute of Arts; "The Age of Elegance: The Rococo and its Effect," at the Baltimore Museum of Art in the spring; and a traveling show of Norwegian tapestries in the fall stressed the applied arts.

Abroad, the most interesting exhibits were the Jan Steen show at the Mauritshuis Museum in The Hague, Netherlands, especially interesting in view of the Metropolitan Museum's acquisition of a work by Steen; a traveling show of "New American Painting"; the Goldsmith's Guild treasures at the Fitzwilliam Museum, Cambridge, England, "The Romantic Movement," an immense survey sponsored by the Council of Europe, at the Tate Gallery, London; and a Hans Baldung Grien exhibition at Karlsruhe, Germany.

Exceptional one-man shows not fitting into the categories mentioned above were of the works of Jules Pascin at the Perls Gallery, Kurt Schwitters at the Janis Gallery, and Renoir at the Hammer Gallery, all in New York in the beginning of the year. Gustav Klimt was shown at the Galerie St.

Etienne, Joan Miró at the Museum of Modern Art, and Marcel Duchamp at the Janis Gallery in New York, and Pierre Bonnard at the Phillips Gallery in Washington, D.C., in the spring. A portion of the American paintings shown at Moscow were on view in the fall at the Whitney Museum in New York, along with a retrospective show of the sculpture of William Zorach.

Prizes, Awards, and Commissions.—The ten Ford Foundation grants of $10,000, announced early in the year, went to Josef Albers, Elmer Bischoff, Hyman Bloom, Edwin Dickinson, Philip Guston, Corrado Marca-Relli, and Adja Yunkers, and to the sculptors Raoul Hague, Reuben Nakian, and Theodore Roszak. Ford Foundation grants to the American Federation of Arts sponsored a series of traveling retrospectives on Milton Avery, Andrew Dasburg, José de Creeft, Lee Gatch, Mauricio Lasansky, Carl Morris, William Pachner, Walter Quirt, Abraham Rattner, Hugo Robus, Karl Schrag, and Everett Spruce.

The A. W. Mellon Educational and Charitable Trust gave the College of Fine Arts of Pittsburgh's Carnegie Institute of Technology $5 million, part of which will finance a chair of painting, design, and sculpture.

The Rockefeller Foundation gave $500,000 for a Conservation Center at the Institute of Fine Arts of New York University and a grant of $10,000 to the Boston sculptor Alfred Duca for research on casting.

The American Academy of Arts and Letters elected Charles Burchfield and Marc Chagall as members, and the affiliated National Institute of Arts and Letters made painter Edwin Dickinson a vice president and elected to membership Loren MacIver, Julian Levi, Philip Evergood, Walter Stuemfig, and sculptor Jean de Marco. Elizabeth Ames was given the institute's 1959 Award for Distinguished Service to the Arts for her management of Yaddo, the artists' colony, at Saratoga Springs, N.Y.; Leon Hartl, the Marjorie Peabody Waite Award of $1,000; and George Grosz, the 1959 Gold Medal for Graphic Art.

At the fifth São Paulo Biennial Exhibition of Modern Art, sculptor David Smith and painter Philip Guston had one-man shows, and Sam Francis, Helen Frankenthaler, Michael Goldberg, Reuben Kadish, Gabriel Kohn, Alfred Leslie, Marca-Relli, James Metcalf, Joan Mitchell, and Robert Rauschenberg were represented in a group exhibition. The Grand Prize went to England's Barbara Hepworth, the first prize in painting to Modesto Cuixart of Spain, and the first prize in sculpture to Somaini of Italy.

Twelve Americans shown at the first International Biennial Art Show of Paris, for artists under 35 years of age, were Carmen Cicero, Helen Frankenthaler (who won a six-month scholarship), Sonia Gechtoff, Nathan Oliveira, Billé Pritchard, Robert Rauschenberg, Richards Ruben, Harold Altman, Fred Berger, John Paul Jones, Carol Summers, and sculptor Peter Voulkos, who won the Rodin Museum Prize of 100,000 francs.

At the Carnegie International exhibition of contemporary painting and sculpture (December 1958) 1st and 2d prizes in sculpture went to Alexander Calder and Henry Moore. In painting the prizes went, in order, to Antoni Tàpies, Afro, Alberto Burri, Vieira da Silva, and Pablo Pazuelo. Top award winners in the Second Biennial of American Painting and Sculpture at the Detroit Institute of Arts were painter Lee Gatch and sculptor Lee Bontecou.

Other awards during the year included the Benjamin Altman prizes of $2,000 each to Edward Betts and Joseph Hirsch and of $1,000 each to Paul Wescott and John Koch, and a $3,000 Rome Prize fellowship from the American Academy in Rome to painter Wayne Begley.

Prizewinners in the summer arts festivals were Richard Talaber at the Chicago Art Institute and sculptor Gilbert Franklin at the Boston Arts Festival, where Gardner Cox' *Robert Frost* was the public favorite. Murals were completed by Thomas Hart Benton at the Truman Library in Independence, Mo., and by Nivola at Harvard University.

In December 1959, at the 63d American Exhibition of Painting and Sculpture in the Art Institute of Chicago, first and second prizes in sculpture went to Isamu Noguchi and Louise Nevelson, respectively, and prizes for painting were awarded to Joseph Cornell, Hans Hofmann, Franz Kline, and Philip Guston.

Museum News.—The most spectacular new museum of the year, as noted, was the Solomon R. Guggenheim Museum in New York City. The domed, spiral-ramped structure was opened to the public on Oct. 21, 1959. The controversy that had surrounded the museum from its beginnings continued unabated, some of it centering on the director's deviations from Frank Lloyd Wright's plans. The paintings were intended to hang on the slanted walls as on an easel, but James Johnson Sweeney, the director, hung them vertically from steel bars projecting from the canted walls. The natural lighting provided by Wright from a spiral strip of skylights above the wall was thus obviated and artificial light substituted. The building requires ingenuity on the part of the museum staff to overcome the limitations of an unadaptable structure. A reverential hush is the last thing that should surround the Guggenheim collection's lively abstractions, but some feel that the architect has reproduced the acoustics of a slum courtyard in a museum which structurally overwhelms the paintings and sculpture destined to be shown in it.

Other museum openings of 1959 included, early in the year, a new wing for the decorative arts at the Philadelphia (Pa.) Museum and the new Cullinan Hall of the Houston (Texas) Museum of Fine Arts. In May the Gertrude Vanderbilt Whitney Gallery of Western Art opened in Cody, Wyo.; and in September the Beaverbrook Art Gallery opened in Fredericton, New Brunswick. The new building of the Phoenix (Ariz.) Art Museum and the Dallas (Texas) Museum for Contemporary Arts were both opened in November. Also in the fall, New York City's Metropolitan Museum and Museum of Modern Art both announced plans for extensive expansion programs.

In Europe the art world gained a new gallery at the Acropolis Museum in Athens, Greece, and Rome's Palazzo Doria-Pamphili was reopened to the public. In Tokyo, Japan, the National Museum of Western Art housed its Matsukata collection in a new building designed by Le Corbusier.

At the Art Gallery of Toronto on Sept. 14, 1959, Rembrandt's *Portrait of a Lady with a Lap Dog* and *Portrait of a Lady with a Handkerchief*, Frans Hals' *Portrait of Isaak Abrahamsz Massa* and *Portrait of Vincent Laurensz van der Vinne*, Rubens' *Elevation of the Cross*, and Renoir's *Portrait of Claude* were cut from their frames and stolen. Works by Gainsborough and Van Dyck were slashed but not taken. On October 3 the paintings were recovered, only slightly damaged. Missing objects at the Egyptian Museum in Cairo resulted in a change of staff, a new inventory, and political accusations. Rubens' *Fall of the Damned*, valued at $1 million, was damaged with acid by a vandal at the Alte Pinakothek Gallery in Munich, Germany, and, to complete a roll call of misfortune, the Metropolitan Museum of Art, in New York,

was forced to close its doors on Mondays owing to a shortage of guards and an increase in attendance coincident with a pinch on operating funds from the city budget.

A 44-year-old dispute between Great Britain and Ireland was ended on Nov. 12, 1959, with the announcement by Prime Minister Harold Macmillan that the valuable art collection of the late Sir Hugh Lane will be shared by London's National Gallery with the Dublin Municipal Gallery. The noted Irish art collector and dealer, who died in the sinking of the *Lusitania* on May 7, 1915, had left an incomplete will which gave both governments grounds for claiming the collection. The collection will be divided and the halves alternately lent to Dublin for successive five-year periods over a total of 20 years.

Acquisitions.—Rubens' *Meeting of Abraham and Melchizedek* was given to the National Gallery in Washington by Mrs. Syma Busiel. The Worcester (Mass.) Art Museum acquired Rembrandt's *St. Bartholomew,* and the Metropolitan Museum in New York, Jan Steen's *The Merry Company.* (The Metropolitan also put on display for the first time El Greco's *St. John's Vision of the Mysteries of the Apocalypse,* which it acquired in 1956.) Goya's *Children with a Cart* went to the Toledo (Ohio) Museum; John Singleton Copley's *Col. Epes Sargent,* to the National Gallery in Washington; Philippe de Champaigne's *Charles II of England,* to the Cleveland (Ohio) Museum; and Mary Cassatt's *Alexander Cassatt and his Son Kelso,* to the Philadelphia Museum. The Philadelphia Museum was also given the valuable 17th century Barberini tapestries. Poussin's *Moses Sweetening the Waters of Marah* at the Baltimore Museum and a Gauguin bas relief, *Soyez Amoureuses, Vous Serez Heureuses,* at the Boston Museum of Fine Arts were other notable acquisitions of the year.

In Greece, eight classic sculptures were found during the summer by workmen excavating the streets of Piraeus, the port-suburb of Athens, in what is considered one of the greatest chance finds of the century. The group includes a magnificent bronze *kouros,* or statue of a young man, from the late 6th century B.C., and an eight-foot bronze statue of the goddess Athena from the 4th century B.C. (See also ARCHAEOLOGY.)

Appointments.—Evan H. Turner became director of the Montreal Museum of Fine Arts; Otto Wittmann, director of the Toledo Museum of Art; John Maxon, director of fine arts at the Art Institute of Chicago; and Samuel Hunter, acting director of the Minneapolis (Minn.) Institute. John Gordon became curator at the Whitney Museum in New York and Ralph T. Coe, curator of paintings and sculpture at the Nelson Gallery in Kansas City (Mo.).

Auctions and Sales.—Many records of previous years were broken at auctions during 1959. An all-time high of $10,208,879 in sales was set at New York's Parke-Bernet auction galleries for the season from September 1958 to June 1959, exceeding the previous season's total by $3 million. In a sale there in January, the Ralph M. Coe and other collections, including works by Van Gogh, Pissarro, Renoir, Morisot, and Redon were auctioned for a total of $447,575, and a record was set for a painting by the American Childe Hassam. The Woodner sale in April totaled $519,295 for works by Renoir, Braque, Modigliani, Pissarro, Sisley, and Picasso, and brought a record price for the work of Mary Cassatt. The sale in May of Mrs. Thelma Chrysler Foy's 17 famous paintings brought $1,166,400, including auction records for works by Renoir ($255,000) and Degas ($180,000), and a record-equaling $180,000 for a Toulouse-Lautrec.

Records were also broken at auctions during the year in England. In March, at Christie's in London, the auction record for a Turner watercolor was broken with a $32,340 sale price. On May 6 at Sotheby's, Picasso's *La belle hollandaise* brought a record $154,000. On June 24, also at Sotheby's, a new high was reached in an auction of old masters that brought a total of $2,074,184. At this sale Rubens' *Adoration of the Magi* sold for $770,000, a new world record for any painting sold at public auction. This was one of 18 paintings in the sale from the collection of the Duke of Westminster. Other sales of such art treasures during the year from similar estates demonstrated the competing auction activity in London as well as the severity of British taxes. Late in the year another auction record was set in a sale at Sotheby's on November 25, when a Gauguin work entitled *I Await the Letter* was sold for $364,000, the highest price ever paid for a painting by this artist.

WIDE WORLD

Leonard Koetzer, London art dealer, stands before Rubens' *Adoration of the Magi,* for which, on June 24, he paid a record-breaking $770,000 as agent of an undisclosed buyer.

Also in November, a sale of modern art in Stuttgart, West Germany, brought $738,000 in what was believed to be that country's biggest art auction since World War II.

Necrology, 1959.—Tarku Trajan (72), American sculptor and painter; in New York, March 17.

Albert Urban (50), German-born American abstractionist; in New York, April 4.

Paul Rosenberg (78), international art dealer who handled Braque, Matisse, and Picasso; in Paris, June 29.

George Grosz (q.v.; 65), German-American satirical artist; in Berlin, July 6 (three weeks after his return to Germany).

Sir Alfred J. Munnings (80), English painter; former president of the Royal Academy; in Dedham, Essex, England, July 17.

Germaine Richier (55), French sculptor; in Montpelier, France, July 30.

Sir Jacob Epstein (q.v.; 79), American-born English sculptor; in London, August 20.

Alfred Kubin (83), Austrian member of the "Blue Rider" group; in Zwickledt, Austria, August 20.

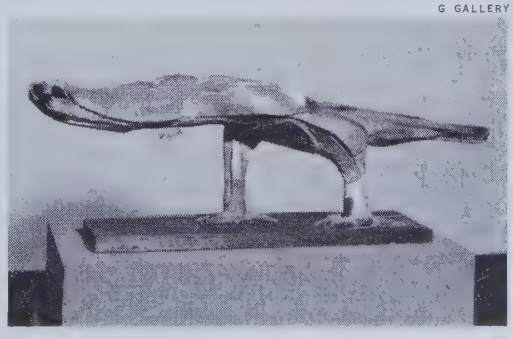
Theodore Brenson (67), Latvian-born abstractionist; in Peterborough, N.H., September 21.

Bernard Berenson (q.v.; 94), American expatriate critic; expert on Italian Renaissance painting; in Settignano, near Florence, Italy, October 6.

HERBERT D. HALE,
Art Critic.

***Bird,* by Lee Bontecou, which won the George D. Widener Memorial Gold Medal in the Detroit Institute of Arts' Second Biennial of American Painting and Sculpture, in 1959.**

G GALLERY



PAINTS, VARNISHES, AND LACQUERS. The year 1959 proved to be the brightest in the history of the paint, varnish, and lacquer industry. Month after month each segment of the industry produced record sales, and were it not for the prolonged steel strike a record $2 billion in annual sales might have been achieved.

Total sales of the paint, varnish, and lacquer industry for the first 11 months of 1959 were $1,642,000,000, or 8% above the total sales for 11 months in 1958, and greater than the total for all of 1958—a new all-time record. It was estimated that sales for the entire year 1959 would exceed $1,750,000,000. Total sales for 1958 were $1,629,300,000. Production of paints, varnishes, and lacquers in 1958 totaled 611.8 million gallons, including 333.1 million gallons of trade sales products and 278.7 million gallons of chemical coatings. The industry produced 612.2 million gallons in the first 11 months of 1959, an increase of 8.3% over the same period in 1958.

Chemical coatings manufacturers staged a remarkable comeback in 1959 from the recession in 1958, and their recovery was checked only by lack of steel for the manufacture of those products that are finished with chemical coatings. Biggest gains were in the trade sales division of the industry, which sells paint for conventional uses and application in homes, institutions, and other buildings. Here the industry made outstanding strides, primarily because of the development of new types of paints and coatings that are easier to apply, longer lasting, easier to clean, odor free, fume resistant, and fire retardant.

In 1959 the industry developed accepted methods for coating difficult surfaces. In cooperation with other interested industries, methods were developed for coating insulated siding, Southern yellow pine, swimming pools, asbestos cement products, new plaster, galvanized steel, hardboard, hardwood floors, aluminum siding, and other "difficult" surfaces. The National Paint, Varnish and Lacquer Association cooperated with the interested industries in publishing free booklets on each of these subjects.

JOSEPH F. BATTLEY,
President, National Paint, Varnish and Lacquer Association, Inc.

PAKISTAN. Formed in 1947 when British India was partitioned, Pakistan is the most populous Moslem country in the world. It is unique in its two halves: West Pakistan, mountainous and dry, with vast deserts and plains; and East Pakistan, situated 920 miles across India in the shortest direct line, with its heavy rainfall, dense vegetation, and huge population. Homogeneous with respect to religion, these two provinces differ fundamentally in languages, resources, and culture.

Area and Population.—Including Gwadar (ceded by Muscat and Oman in 1958), but excluding the disputed state of Jammu and Kashmir and the minor areas of Gilgit, Baltistan, Junagadh, and Manavadar, Pakistan has an area of 365,037 square miles. Of the total, 310,536 square miles (85%) are in West Pakistan, although its share of the population is about 44%. As of July 1, 1959, the total population was officially estimated at 86,823,000. Nearly 90% of the population is rural, but there has been a heavy influx to certain cities, notably Karachi. Until recently the capital and West Pakistan's leading port, Karachi has an estimated population of 2,000,000. The temporary new capital is Rawalpindi, which had a population of 237,219 at the 1951 census. Other large cities with their census populations are Lahore (849,476), Dacca (411,279), Chittagong (294,046), and Hyderabad (241,801). About 86% of the people are Moslems.

Government.—The governmental structure of Pakistan has undergone a number of changes since its inception in 1947. Since October 1958, it has been simply a military government under the leadership of President Mohammed Ayub Khan, who is assisted by an 11-man cabinet. Field Marshal Ayub has repeatedly emphasized his attachment to democratic principles and has promised the restoration of representative government. Only on the village level has this taken place, but plans have been announced for village councils to elect a second tier, called tehsil councils in West Pakistan and thana councils in East Pakistan. Ultimately there will be a succession of elected tiers, with increasing responsibilities. A new constitution is to be drawn up in 1960.

Education.—At the 1951 census about 81% of the population was illiterate. Despite such obvious handicaps as a diversity of languages and the lack of a suitable educational tradition, real strides have been made. In 1959 there were 43,497 primary schools, 5,840 secondary schools, 172 liberal arts colleges, 100 teacher training institutions, and 6 universities. The great bulk of these facilities were for males. Enrollment was as follows: primary students, 4,232,729; secondary students, 1,325,633; teacher training students, 9,361; and college and university students, 112,453. In 1958 there were 228,667 primary teachers and 105,857 secondary teachers, of whom slightly more than half were untrained.

Finance.—Perennial financial crises had been a causative factor in the 1958 revolution, and the revolutionary government has been pledged from the outset to restore financial stability. Some progress has been made. There are two budgets: the revenue budget, which is financed in the normal way and covers normal administrative expenditures, including defense; and the capital budget, which is designed to cover the economic development program and is financed largely, although not entirely, by foreign aid and loans. The 1957–58 revenue budget had a deficit of Rs.10 million (1 rupee = U.S.$0.21), the 1958–59 budget had a surplus of Rs.103 million, and the 1959–60 budget anticipated a surplus of Rs.70 million from revenue of Rs.1,584.5 million and expenditure of Rs. 1,514.5 million. The 1959–60 capital budget was Rs.1,797.4 million.

The revolutionary government was successful in getting many persons to file amended income tax returns, covering income unreported in the previous five years, and in obtaining the surrender of privately (and illegally) held foreign exchange abroad. Official gold and foreign exchange reserves rose from $258 million on Dec. 31, 1958, to $291 million on Sept. 30, 1959.

Pakistan has continued to fight inflation. While money in circulation rose from Rs.5,255 million at the end of 1957 to Rs.5,514 million at the end of 1958, it had risen by only an additional Rs.21 million by Sept. 30, 1959. The revolutionary government has experimented in several ways to reduce the cost of living, including arbitrary price cuts and the establishing of fair profit margins for manufacturers and retailers. As a result of these and other activities, the cost-of-living index for Karachi (1953 = 100) fell from 114 in September 1958 to 100 in December. By August 1959, however, it had risen to 108.

Transportation and Communications.—Pakistan has 7,044 miles of railways (5,335 miles in West Pakistan and 1,709 miles in East Pakistan), which carried nearly 170 million passengers and 17.7 million tons of freight in 1958. There are 68,391 miles of roads, of which about 10,000 miles are usable in all weathers. East Pakistan also has 2,670 miles of navigable waterways. There are three important seaports: Karachi, clearing 1,164 vessels and handling 3,853,000 tons in 1958; Chittagong, with 585 vessels and 2,210,000 tons; and Chalna, with 319 vessels and 803,000 tons. The domestic and international airline system is well developed. In 1958 there were 59,600 telephones.

Agriculture.—Maintaining self-sufficiency in food grains has become an almost insoluble problem for Pakistan. Its agriculture is unusually sensitive to climatic hazards, and in 1958 insufficient water (and floods in other places) affected the entire crop. The index of agricultural production (1949–50 to 1952–53 = 100) for food grains oscillated from 93 for 1955–56 to 112 for 1956–57, 106 for 1957–58, and 100 for 1958–59. The result has been dependence on cereal imports: in 1958, 1,093,000 long tons of rice and wheat were imported.

For the 1959 crop year foodstuff production was as follows (in thousands of long tons): rice, 7,485; wheat, 3,784; millet, 303; jowar, 215; gram, 662; corn, 446; barley, 144; and sugarcane, 13,127. In the same period there were produced (in thousands of long tons): jute, 1,071; cotton, 286; tea, 24; and rape and mustard seed, 310. Wool (35 million pounds in 1959) and hides and skins also are produced and exported.

Mining.—Great efforts have been made to increase mineral production. Since 1953 nearly Rs.376 million have been spent in the development of petroleum and gas wells. A new oilfield at Karsal and much natural gas were discovered in 1959. In 1958–59 nearly 2 million barrels of crude oil and 20 billion cubic feet of natural gas were produced.

Coal production in 1958 amounted to 597,000 tons; production of other minerals (in tons) was as follows: chromite, 23,767; limestone, 1,119,169; gypsum, 66,095; and iron ore, 8,097.

Industry.—The revised index of industrial production (1954 = 100) rose from 142 in 1956 to 152 in 1957 and to 167 in 1958. By March 31, 1959, it stood at an all-time high of 185. Much of this success has been due to the Pakistan Industrial Development Corporation (PIDC), founded in 1952. By 1959, in cooperation with private enterprise, the PIDC had completed 48 projects in the industrialization of Pakistan. The projects completed in 1958 included two jute mills, a fertilizer plant, two sugar mills, a gas line and a rosin and turpentine plant. By March 1959, the PIDC had invested Rs.898.8 million in these completed projects (Rs.258.3 million from private enterprise).

Production of cotton yarn in 1958 amounted to 345 million pounds (an increase of 8.8% over 1957), and that of cotton cloth to 576 million yards (an increase of 9.3%). The output of jute manufactures rose 15.6%, to 172,100 long tons, in 1958. The fertilizer ammonium sulphate was being produced in 1959 at a rate of 3,500 long tons per month. Cement production for 1958, at 1,069,000 long tons, was slightly off the 1957 figure.

Development Planning.—Pakistan has completed a Six-Year Plan (1951–57) and is about to complete a Five-Year Plan (1955–60). The latter called for an expenditure of Rs.10,800 million and was scheduled to result in a 15% increase in national income and a 7% increase in per capita income. In 1959, however, the rise in national income by the end of the plan was estimated at 10%, and because of a higher birth rate than had been anticipated the per capita income was expected to remain unchanged. Nonetheless, great efforts have been made to develop the country's resources, with emphasis on irrigation and power projects. One example is the Taunsa Barrage on the Indus River, which was inaugurated on March 3, 1959. It will irrigate 1.6 million acres of agricultural lands. A third development plan, to go into effect in 1960, calls for an increase of national income of 20%, a per capita income increase of 10%, and a 50% increase in industrial production.

Foreign Trade.—Pakistan's trade balance was generally favorable until 1956, but since then each year has witnessed an unfavorable balance. In 1958 exports were valued at Rs.1,417 million, and imports at Rs.1,888 million. The principal exports were raw jute (Rs.839.5 million), raw cotton (Rs.240.5 million), jute manufactures (Rs.108 million), raw wool (Rs.48.5 million), and raw hides and skins (Rs.40.9 million). The main imports were foodstuffs, including sugar (Rs.28 million), wheat (Rs.267.8 million), and rice (Rs.170.7 million), the bulk of which were financed through aid from the United States. Other important imports were machinery, metal ingots, coal, and chemicals. In the first half of 1959 exports were valued at Rs.672 million, and imports at Rs.719 million. Pakistan's chief customers in this period (in order of importance) were the United Kingdom, the United States, the Union of South Africa, Hong Kong, West Germany, and France; its main suppliers were the United States, the United Kingdom, West Germany, Canada, India, and Belgium.

Principal Events, 1959.—The first anniversary of Pakistan's revolutionary government was celebrated on October 27; it had been a year of quiet but major accomplishment. Inflation and other perennial financial ills were attacked by an austerity program, rigid price controls, and a largely successful drive on corruption. A land reform program designed to break up large estates and to increase the smallest holdings to economically feasible sizes was announced on January 24, and on September 27 the first holdings were distributed to former tenants. By August the new city of Korangi had been built near Karachi with 15,000 homes for the poorest of the refugees from India. As the apparent result of such efforts, President Ayub enjoyed substantial popularity.

For a decade, relations between India and Pakistan had been unsatisfactory and often tense. As late as April 10, 1959, Pakistan shot down an Indian Air Force plane, which it accused of photographic reconnaissance over Rawalpindi. The incident produced the usual recriminations, but only a week later, on April 17, India and Pakistan reached an interim settlement of a long-standing dispute on the distribution of Indus River waters for irrigation purposes. This preliminary settlement was largely the result of efforts by Eugene R. Black and the International Bank for Reconstruction and Development. Negotiations continued, and in July Black was able to obtain from both countries acceptance of lines of agreement on the distribution and use of these waters. The plan, scheduled to be embodied in a treaty in 1960, called for joint investment in power, irrigation, and flood control projects covering the entire Indus River system.

By late summer an even warmer atmosphere prevailed. Halting in New Delhi for a fuel stop on a flight between West and East Pakistan on September 1, President Ayub had a friendly meeting with Prime Minister Jawaharlal Nehru. Ayub was quoted as having said, "I am a military man, and I can see the danger if we continue with our squabbles and do not resolve our problems." On

(*Left*) Mrs. John Eisenhower, who accompanied her father-in-law, President Eisenhower, on his world tour in December, samples a local delicacy at a reception in Karachi, Pakistan, December 9. (*Center*) Some 750,000 Pakistanis welcomed President Eisenhower when he arrived in Karachi on December 7. (*Right*) With a turbaned bodyguard keeping a sharp watch, President Eisenhower (l.) and Pakistan's President Mohammed Ayub Khan stand outside the latter's residence on December 8.

UPI

May 10, he had suggested joint defense arrangements by India and Pakistan. By September, with Chinese activity increasing in the Himalaya, an Indo-Pakistani rapprochement had become more likely. This atmosphere of cordiality produced on October 23 the settlement of a long-standing frontier dispute in East Pakistan. Specifically, both India and Pakistan made concessions (involving about 50 square miles) relating to rich and strategic territories. On December 3, however, concern over the Sino-Indian dispute regarding the Ladakh section of Kashmir, which Pakistan claims, produced a request to the U.N. Security Council that it prevent any agreement between India and China to change the frontiers of Kashmir.

Pakistan continued in 1959 its close contacts with Great Britain and with the United States, with which a defense agreement was signed on March 5 and a treaty of friendship and commerce on November 12. President Dwight D. Eisenhower received an enthusiastic welcome when he visited Karachi on December 7–9 during his 11-nation tour, but he did not agree to President Ayub's request that he use his good offices in the settlement of issues dividing Pakistan from India and Afghanistan.

Relations with neighboring Iran, Burma, and Afghanistan during the year were uneventful. On November 18, President Ayub arrived in Ankara, Turkey, for a two-day visit.

On June 12, Pakistan announced the pending removal of its capital from Karachi to Rawalpindi. Eventually a new city was to be built near Rawalpindi. Meanwhile, several government departments made the move to the northern city in October. It was announced on October 26 that President Ayub had been promoted to the rank of field marshal.

(See also FAR EAST.)

CARL LEIDEN,
The American University at Cairo.

PALEONTOLOGY. See Index entry.

PALESTINE. A former League of Nations mandate, relinquished by Great Britain in 1948. The greater part of Palestine is now divided between Israel and Jordan (qq.v.). A narrow southern coastal strip, which has become known as the Gaza Strip, is administered by the United Arab Republic (UAR). The Gaza Strip has an area of about 125 square miles and a population of 345,000 Arabs (est. 1958), most of whom are refugees aided by the U.N. Relief and Works Agency for Palestine (see REFUGEES AND DISPLACED PERSONS). The strip is largely wasteland, although there is some citrus cultivation. Since 1957 a U.N. Emergency Force has been stationed along the Gaza Strip frontier with Israel to prevent border incidents. In 1958 a Legislative Council for the Gaza Strip was inaugurated to advise the UAR governor.

PALMYRA. An atoll of some 55 islets, included within the Line Islands of the central Pacific, situated about 1,000 miles south of Honolulu. Its area is about 488 acres. Palmyra was formerly within the Territory of Hawaii. Since it is owned by a single family, however, it was not included within the State of Hawaii when Hawaii became a member of the Union in 1959. Palmyra was administered by the Civil Aeronautics Administration which was absorbed by the Federal Aviation Agency in 1958.

PAN AMERICAN UNION. See ORGANIZATION OF AMERICAN STATES.

PANAMA. A republic occupying the isthmus between North and South America, Panama is divided by the 10-mile-wide Canal Zone (see PANAMA CANAL), which was granted to the United States in 1903. With a population of 1,024,000 (est. July 1, 1959), the 28,576 square miles of Panama are thinly populated. About a third of the population is clustered in two cities: the capital, Panama City, at the Pacific end of the Canal (1958 est. 221,900), and Colón, at the Atlantic end (58,000). The bulk of the population is mestizo, but there is also a large Negro population. Spanish is the official language.

Government.—The constitution of 1946 provides for a president and a unicameral National Assembly of 53 deputies, elected for 4-year terms by direct popular vote. The president (Ernesto de la Guardia, Jr., took office on Oct. 1, 1956) serves for four years and is not eligible for immediate re-election. The 9 provinces have governors appointed by the president.

Religion and Education.—Roman Catholicism is the predominant religious affiliation. Educational facilities have been expanded in recent years, but probably at least 35% of the population (age 10 and over) remains illiterate. Some 186,729 students registered for the 1958–59 school year, out of an estimated school age population of 215,060. Higher education is provided chiefly by the National University (1955–56 enrollment, 2,226).

Finance.—The balboa, the monetary unit, is at parity with the United States dollar. The government's fiscal position continued to worsen in 1958–59. Government expenditures on the ordinary budget items exceeded income in 1958 by at least $5 million. Continuation of this practice apparently was approved when the 1959 budget was set at $61.11 million, some $5 million above 1958. The 1959 supplemental budget, devoted to public works and financed outside ordinary revenues, was set at $54.79 million (an increase of $18.1 million over the previous year). The public debt rose from $54.58 million as of Dec. 31, 1958, to something more than $60 million in mid-1959. Debt service now is consuming a significant portion of government revenues.

Transportation and Communications.—Work continued in 1958–59 on the Inter-American Highway from the Costa Rica border to central Panama. This paved road, with its feeders, is expected to be of major aid in development of the national economy, but it will not be completed for several years. There is no highway connection in the other direction, between central Panama and Colombia. Work continued in 1959 on the high-level bridge over the Pacific end of the Canal. In 1958 Panama's merchant fleet, wholly foreign-owned, consisted of 563 vessels totaling 4,397,000 gross tons. Panama City is an important hub for inter-American air traffic. An average of 14,500 passengers arrive monthly on 16 scheduled international airlines.

Production.—Per capita income is very low, and government efforts to improve the economy have done little more than keep up with the rapidly increasing population. The bulk of the population is engaged in agriculture, much of it at the subsistence level. There is chronic unemployment in the towns. The government subsidizes local agriculture and industry by means of price supports and tariff protection. The United Nations' Economic Commission for Latin America, after a two-year study, in 1959 reported pessimistically on the immediate prospects of the Panamanian economy.

The 1958–59 crops were good, with the production of food adequate for domestic needs, and export surpluses available of some commodities. Banana production for export in 1958 was 6,686,000 stems, some 541,000 fewer than in 1957. The 1958–59 coffee crop was officially estimated at 80,000 quintals (1 quintal = 100 pounds), some 20% over 1957–58. This would give an exportable surplus of about 20,000 quintals. The 1958–59 corn crop was expected to be about the same as the 1,689,000 quintals of 1957–58. The 1958–59 rice crop was estimated at 2.5 million quintals, more than 500,000 over 1957–58. Production of refined sugar in 1958–59 amounted to 550,000 quintals.

The cattle and dairy industries have been growing in recent years. Herds now total about 1 million head, and about 20,000 pounds of deboned beef was being shipped weekly to the United States in 1959. In 1957, 4.1 million kilograms of condensed and evaporated milk was produced. A small steel plant, completed in 1958, is

the only heavy industry in the country. There is little mineral production. The shrimp industry, Panama's second leading industry, encountered difficulties again in 1958, and the catch was less than in 1957 (total catch for the year ending June 30, 1958, was estimated at nearly 10 million pounds). The building industry again operated at a high level in 1958.

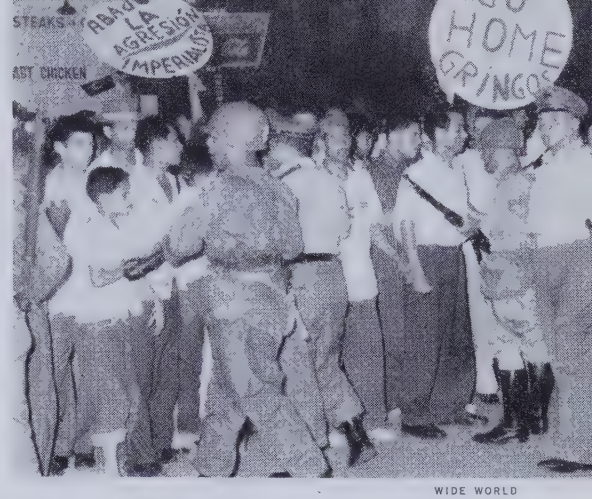
Foreign Trade.—Panama's commodity exports always are much less than her imports. Imports in 1958 totaled $92.85 million ($98.91 million in 1957), and 1958 exports were $33.61 million ($35.66 million in 1957). Bananas accounted for 67% of the value of 1958 exports. Smaller amounts are realized from exports of sugar, cattle, cacao, coffee, and corn, often at losses subsidized by the government. The United States is the country's most important trading partner, taking $24 million of Panama's exports and providing $84 million of her imports in 1958.

The customary large visible trade deficit was, as usual, closed by the income of Panamanians working in the Canal Zone, income from ship registrations (possibly $2 million a year), Colón Free Zone operations, and from expenditures in Panama by tourists and by residents and agencies in the Canal Zone. Income to Panama from Canal Zone operations in 1958 was about $61 million. In addition the United States pays Panama an annual annuity of $1.93 million. Over 16,000 Panamanians were employees of the Canal Zone agencies in 1958, and additional Panamanians worked in the Canal Zone in other capacities. The Colón Free Zone in 1958 handled some 41 million kilograms of merchandise, valued at $76.3 million. More than 120 firms are using Free Zone facilities.

Principal Events, 1959.—Most of the public events of the year, including the anti-United States rioting of November, had some connection with the presidential election scheduled for May 1960. Controversy over the number of registered members required in a party for it to offer a candidate led to a substantial reduction of the figure, thus increasing the hopes of various aspirants and the complexity of political maneuvering. By July the opposition parties were consolidating into a Frente Unico ("united front") against the government Coalición Patriótica Nacional (CPN).

One of the dramatic events of the year was the invasion of Panama on April 25 by a force of about 90 Cubans. The government of Cuba (q.v.) disavowed any connection with the invasion. Panama appealed to the Organization of American States (q.v.) for aid, and the latter sent an investigating team, which secured the surrender of most of the invaders on May 1. Some other invaders were captured by Panamanian forces, and some Panamanians were arrested. The United States supplied Panama with arms from stocks in the Canal Zone, and provided air and naval craft for observation purposes. In June most of the invaders were released by Panama. At the same time, Roberto Arias, member of a prominent Panama family, and supposed leader of this adventure to oust the government, was released from the embassy in which he had taken refuge in April, and was permitted to leave the country. His wife, Dame Margot Fonteyn, a British dancer, had been held briefly in April.

Several other events had important political implications. A scandal connected with the municipal council of the capital broke in January and agitated public opinion for months. It led to public protests, a general strike in February, arrests, and dismissals from the council. In March a plot by National Guard Officers to oust the government was frustrated by arrests of guardsmen and civilians. In April the government had to put down outbreaks against the regime in Veraguas and in Chiriqui provinces.



WIDE WORLD

Panama National Guardsmen hold back anti-United States mob which tried to force entry into Canal Zone, November 28. Several were injured in this outbreak and in another on Nov. 3, caused by sovereignty issue in the zone.

The campaign for the presidency did nothing to reduce Panamanian criticism of the United States. There were the usual Panamanian assertions that the 1903 treaty granted the United States the use, occupation, and control of the Canal Zone for canal purposes, but not sovereignty or ownership. Throughout the year official and unofficial voices asserted that the 1955 treaty was being violated, especially with regard to the wages of Panamanians working in the Canal Zone, and to United States purchases in Panama. In January the United States sent a protest (several other nations did likewise) over the December 1958 Panamanian declaration extending the limit of its territorial waters from 3 to 12 miles (the 1903 treaty gave the United States jurisdiction over 3 miles of sea at the canal approaches). Panama rejected the protests. Various Panamanian elements during the year developed enthusiasm for a proposition that Panama receive half the receipts (gross in some demands, net in others) of the Panama Canal. There was less enthusiasm for sharing the cost of maintaining and defending the waterway.

On November 3, Panama's Independence Day, in a move long promoted by former Foreign Minister Aquilino Boyd, one of the aspirants to the presidency of Panama, demonstrators tried to move into the Canal Zone to assert Panama's "sovereignty" there. This led to clashes with Canal Zone police and with United States armed forces (about 80 persons were injured), to mob attacks on the United States embassy in Panama City and on United States business establishments, to a formal United States protest, and to Panama's rejection of the protest and submission of countercharges. Livingston T. Merchant, United States deputy under secretary of state, arrived in Panama on November 20 for a series of conferences with President de la Guardia on the strained relations between the two countries. In another outburst on November 28, about 30 persons, including Panamanians and United States troops, were injured when a mob again tried to enter the Canal Zone. Rioting and pillaging ensued in Panama City, and property damage was high.

(See also INTER-AMERICAN AFFAIRS.)

ROBERT JONES SHAFER,
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PANAMA CANAL and **CANAL ZONE.** The Panama Canal, extending across the Isthmus of Pan-

ama, connects the Atlantic and Pacific oceans. The waterway was built by the United States and was opened to traffic in 1914. It extends 51.6 miles from deep water to deep water, or 40.27 miles from shoreline to shoreline. The Canal Zone is the area under United States jurisdiction that extends generally five miles on either side of the center line of the Panama Canal and three marine miles below low-water mark in the Atlantic and Pacific oceans, for a total of 648.01 square miles, including tidal waters. It is, in effect, a United States government reservation, with nearly all residents being United States government personnel, and with private business activities being restricted to categories directly related to canal operations.

In 1959 a $90 million construction improvement program was either under way or at the approved stage in the Canal Zone. Major projects included $20 million for a high-level bridge across the canal's Pacific entrance, $19 million for a canal improvements program, $6 million for new towing locomotives, $8 million for housing, and $6 million for new hospital facilities. Rebuilding was begun in 1959 of La Boca, the Zone's oldest townsite, which had been demolished the previous year. (See also CANALS.)

Population.—The federal census of 1950 showed a total population of 52,822. A local census of November 1954 placed the civilian population at 38,953. The civilian count in the larger towns was as follows: Rainbow City, 4,845; Paraiso, 3,008; Balboa, 2,709; Santa Cruz, 2,059; Margarita, 1,446; Ancon, 1,290; New Cristobal, 1,130; Diablo Heights, 1,124; and Gamboa, 1,018. (New Cristobal has since reverted to the Republic of Panama under terms of that nation's 1955 treaty with the United States, and most Cristobal residents have moved into the new Canal Zone civilian community of Coco Solo.)

Administration and Government.—The congressionally created Panama Canal Company operates the Panama Canal and its adjuncts in the Canal Zone. The company, which is a wholly owned United States government corporation, is self-supporting and operates on its current revenues (net income, 1957–58, $2,656,382).

The Canal Zone government, also established by Congress, maintains such functions as police and fire protection, schools, postal service, customs, immigration, magistrates' courts, hospitals, and public health and sanitation facilities. Its net operating expenses are reimbursed to the U.S. Treasury by the Panama Canal Company.

The joint functions of governor of the Canal Zone and president of the Panama Canal Company are held by Maj. Gen. W. E. Potter, USA, appointed by the president of the United States in 1956. Other officials in 1959 included George H. Roderick, chairman of the Board of Directors; Col. John D. McElheny, lieutenant governor and vice president; W. M. Whitman, secretary; Philip L. Steers, Jr., comptroller; P. M. Runnestrand, executive secretary; and Capt. W. C. Hughes, Jr., USN, marine director. Sigurd E. Esser is superintendent of schools; Guthrie F. Crowe, federal district judge; and William G. Arey, Jr., Panama Canal information officer.

Education.—School attendance is not compulsory for children living in the Canal Zone. Expenditures for public education in the fiscal year ending June 30, 1959, totaled $3,792,900. Teachers' average salaries ranged from $2,590 to $7,166 for the 1958–59 school year.

The Canal Zone maintains both United States schools and Latin American schools. The former, attended primarily by United States citizens, afford a program of education in the English language comparable with that of schools in the United States, and provide for the teaching of Spanish in every grade. The Latin American schools, attended by non-United States citizens, are conducted in Spanish, and the curriculum follows that of the schools of the Republic of Panama.

The accompanying table shows revised statistics for the 1958–59 school year. (Columns headed by "US" refer to United States schools; by "LA," Latin American schools.)

	Number		Teachers[1]		Students[2]	
Public schools	US	LA	US	LA	US	LA
Elementary (K–6)	10	4	134.25[3]	63.0[4]	4,438	2,054
Junior high	2	3	33.9	34.2	972	1,064
Senior high	2	2	52.5	26.3	1,474	775
Totals	14	9	220.65	123.5	6,884	3,893
Junior colleges[5]	1	...	7.4	...	178	...

[1] Include part-time expressed as equivalent of full-time. [2] As of Oct. 15, 1958. [3] Do not include 9 special teachers of Spanish. [4] Do not include 2 special teachers of Spanish. [5] Excluding extension division classes for adults.

Public Health and Safety.—The government operates several health and correctional institutions. These include Gorgas and Coco Solo general hospitals, the Corozal Hospital for the insane and indigent, the Palo Seco Leprosarium, and the Canal Zone Penitentiary.

Industry.—A few private business enterprises related directly to canal operations are permitted, and a few small vegetable gardens are operated by Chinese gardeners. An experimental garden of 320 acres, devoted chiefly to the development and propagation of tropical plants, is operated by the canal organization.

Canal Traffic.—In the fiscal year ended June 30, 1959, transits included 9,718 ocean-going vessels of more than 300 tons net, a new record for the 8th consecutive year. Cargo shipments for the year aggregated 51,153,906 long tons. Tolls of $45,529,000 were collected on merchant vessels, the highest figure for tolls in the canal's history.

Transportation and Communications.—Exclusive of thoroughfares in armed forces reservations there are approximately 130 miles of improved streets and highways serving some 13,300 registered motor vehicles. Railway transportation is furnished across the isthmus by the 48-mile Panama Railroad. Public transportation to various areas within the Canal Zone is provided by a consolidated bus company, and numerous small bus companies furnish service to various Zone areas from the cities of Panama and Colón in the Republic of Panama.

There are approximately 7,700 telephones in service in the Canal Zone, and an armed forces radio-television station functions at Fort Clayton.

WILLIAM G. AREY, JR.,
Panama Canal Information Officer.

PAPER INDUSTRY. Paper and paperboard production in the United States in 1959 moved to a new high of 34 million tons, an 8% increase above the previous record in 1956. Apparent consumption of paper and paperboard in 1959 was 435 pounds per person, the same as in 1956. The larger gain in production can be explained by (1) the 5% gain in population, (2) the trend toward greater use of domestically produced newsprint, and (3) the rising trend in exports of paper and paperboard.

Among the various paper grades, the fastest rates of growth in demand since 1956 were in machine-coated, fine, and sanitary papers. Coated papers find their major markets in magazines, pamphlets, and commercial printing; sanitary papers are used for such common household products as paper towels, napkins, facial tissues, and toilet tissues. Major growth in the paperboard grades was in container board and bending board. Growth in bending board stemmed from the increased use of board made from bleached kraft wood pulp. This board is used in such products as cartons for milk, frozen food, ice cream, margarine, and cigarettes, as well as in many nonpackaging products.

Domestic production of wood pulp in 1959 was 24 million tons, also a new high. About 90% of United States pulp consumption in 1959 came from domestic sources, as compared with 84% in 1947. This gain reflected the growing importance of integrated firms that produce wood pulp for their paper and paperboard mills. Much of this integration paralleled the successful development of pulpwood from Southern pine and the use of sawmill leftovers in the West and South.

New products that came into prominence in 1959 include stretchable paper and nonwoven fabrics. The new stretchable paper has greater strength with less weight than ordinary paper; it is presently used mainly as shipping sack paper, but many other uses are envisaged. Low-priced, disposable nonwoven fabrics have a wide range of potential uses, while many of the more expensive nonwoven fabrics have qualities that justify a premium price.

Sales of paper and allied products in 1959 totaled a record $12.2 billion, as compared with $10.7 billion in 1956 and $11.0 billion in 1958. The average level of prices in the industry showed virtually no change from 1958 to 1959. Wage rates

U.S. PAPER AND PAPERBOARD PRODUCTION
(In thousand tons of 2,000 pounds)

Category	1956	1957	1958	1959[1]
Newsprint	1,620	1,807	1,726	1,870
Groundwood, uncoated	972	846	824	900
Machine-coated printing and converting	1,512	1,537	1,559	1,640
Book, uncoated	1,820	1,650	1,670	1,870
Fine	1,575	1,516	1,539	1,720
Coarse (except shipping sack)	3,104	2,788	2,799	3,130
Shipping sack	844	867	814	850
Special industrial and absorbent	683	659	642	730
Sanitary tissue	1,621	1,665	1,700	1,850
Tissue, other	239	247	217	240
Total paper[2]	13,990	13,581	13,488	14,800
Container board	7,763	7,631	7,579	8,480
Bending boxboard	4,112	4,149	4,275	4,750
Nonbending boxboard	1,048	1,035	981	1,140
Cardboard	85	84	105	110
Other paperboard	1,226	1,163	1,199	1,210
Total paperboard[2]	14,234	14,062	14,141	15,690
Wet machine board	147	138	121	150
Building paper	1,428	1,329	1,389	1,400
Building board	1,642	1,558	1,635	1,960
Grand Total[2]	31,441	30,666	30,775	34,000

[1] Estimates. [2] Columns do not always add to total shown because of rounding of figures.

in the industry rose by 4.3% from 1958 to 1959. Employment in 1959 totaled 565,000, an increase of 3.3% above the 1958 level but slightly below the 1956 level of 568,000. Stability in employment reflected the gains in productivity of the industry, which, in turn, reflected the investment of $500 million per year in new plants and equipment in the 1948–58 period. Such investment totaled about $625 million in 1959.

BENJAMIN SLATIN,
Economist, American Paper and Pulp Association.

PAPUA AND NEW GUINEA, Territory of. Occupying the eastern half of the island of New Guinea, these two territories are administered as a unit by the Commonwealth of Australia in accordance with the Papua and New Guinea Act of 1949, and a trusteeship agreement for New Guinea approved by the United Nations in 1946. The combined area is 183,540 square miles. The aggregate population (mid-1958 est.) is 1,828,000, comprising a diversity of tribal groups, among which more than 500 languages and dialects are spoken. Administrative headquarters for the territory is at Port Moresby, Papua's chief seaport (1957 est., 16,000).

The administrator (Brig. Donald M. Cleland since 1953) is assisted by an Executive Council composed of at least nine officials, and a 29-member Legislative Council. Exports from the territory in 1957–58 totaled £A14,228,064; imports, £A18,414,806. All import licensing in the territory was abolished by Australia in September 1959 in order to encourage the territory's general development and to increase its trade.

Coconuts are the principal crop; production of copra for export in 1957–58 totaled 71,831 tons. New Guinea produced 14,802 tons of coconut oil, 8,705 tons of coconut meal and oilcakes, and 2,544 tons of cocoa beans. The chief mineral is gold, valued at £A851,506 in 1957–58. Papua's output of rubber in that year was 4,259 tons. Lumber production in the territory amounted to 43,861,637 superficial feet in 1957–58.

There is coastal and interisland steamship service, and shipping lines connect the territory with Australia and the Far East. Airline companies operate internal and external services from 154 airfields and seadromes.

Papua, Territory of.—The administrative area (90,540 square miles) comprises the southeastern portion of the island of New Guinea (87,540 square miles) and the Trobriand, Woodlark, D'Entrecasteaux, and Louisiade island groups (3,000 square miles). The mid-1958 population was estimated at 487,000. Revenue for 1957–58 was £A5,648,104; expenditure, £A5,858,841. Schools in 1957 numbered 941 (administration, 77; mission, 864), with 49,572 pupils. Total exports in 1957–58 were valued at £A2,776,052, including rubber (£A1,114,716) and copra (£A847,472); imports, £A8,786,758. There are 1,445 miles of vehicular roads.

New Guinea, Territory of.—This trust territory has a total area of 93,000 square miles, comprising North Eastern New Guinea (69,700 square miles), the Bismarck Archipelago (New Britain, New Ireland, Lavongai, and the Admiralty Islands, aggregating 19,200 square miles), and the northernmost Solomon Islands (Bougainville and Buka, 4,100 square miles), the rest of the Solomons constituting the Solomon Islands Protectorate (see WESTERN PACIFIC ISLANDS, BRITISH). The estimated population in 1958 totaled 1,341,000. Revenue and expenditure for 1956–57 each totaled £A8,150,696 (direct grant by the Commonwealth government, £A5,498,179). There were 3,301 schools (administration, 152; mission, 3,149) with 124,944 pupils in 1957. Exports in 1957–58 were valued at £A11,452,012, including copra (£A3,673,687), coconut oil (£A1,472,997), cocoa beans (£A814,633), coffee beans (£A222,794), and coconut meal and oilcake (£176,506); imports totaled £A9,628,048. There are 3,986 miles of vehicular roads.

PARAGUAY. Situated mainly in the temperate zone, and bounded by Argentina, Brazil, and Bolivia, the landlocked South American republic of Paraguay occupies an area of 157,047 square miles. Its only access to the sea is the Paraguay River, which divides the country into two distinct regions: the almost uninhabited Chaco grassland of western Paraguay (95,338 square miles); and fertile, well-watered eastern Paraguay, where 95% of the country's inhabitants reside. Its bilingual (Spanish and Guaraní) population of 1,677,000 (est. 1958) is largely mestizo. The capital city of Asunción has an estimated metropolitan population of 300,000. Other leading cities (with 1950 populations) are Encarnación (40,906), Coronel Oviedo (34,442), Concepción (32,556), and Villarica (27,795).

Government.—Paraguay is a unitary republic with a highly centralized form of government. The 1940 constitution vests executive power in a president (the incumbent is Alfredo Stroessner, re-elected to his second five-year term in 1958) and in a 10-man cabinet appointed by him. The Council of State, also appointive, acts as an advisory body to the executive. The 60-member Chamber of Representatives is chosen by proportional representation. Judicial power is exercised by a three-judge Supreme Court of Justice, a Tribunal of Accounts, and various inferior courts.

Finance.—The financial situation in Paraguay in 1959 was reported to be one of the soundest in Latin America as a result of the successful application of the stabilization program of the International Monetary Fund initiated in 1957. Free reserves have accumulated in the Central Bank, and the guaraní free market exchange rate of 122 per U.S. $1 held steady during 1959. Economic conditions will improve even more with the conclusion of a new treaty with Argentina, which will pay back a $3 million debt during 1960. The 1959 calendar year budget called for an expenditure of 2.6 billion guaraníes, the largest item of which is the defense allocation of 697 million guaraníes, followed by 414 million for education and 303 million for public debt retirement.

Education and Religion.—Although conditions are gradually improving in education, the shortage of schools is so great that many children in the 7–14-year age group (for which education is theoretically compulsory) are still unable to attend school. Latest available figures (1958) indicate that there were 2,092 educational institutions, as compared with 1,694 in 1953 and 2,219 in 1955. There were 10,186 teachers and 290,471 students in 1958, an increase of 3,472 students and 307 teachers over 1957. The rate of illiteracy for persons over 10 years of age is estimated at 31.4%. Government concern over education is reflected in the fact that 15.8% of the national budget is earmarked for education. The official state religion is Roman Catholicism, which is adhered to by the majority of the citizens. There are approximately 25,000 Protestants, including colonies of Mennonites and Hutterites.

Transportation and Communications.—With the completion of the Brazil Road, jointly undertaken by Brazil and Paraguay, the latter will have for the first time in its history a commercial land route to compete with the traditional river route through the Argentine capital, Buenos Aires. Plans are being studied for further joint road enterprises between the two countries. Apart from the Brazil Road, Paraguay has about 700 miles of improved highways (only 60 of which are hard-surfaced). The country is serviced by seven airlines; an eighth has been formed,

but has not as yet begun operations. The British-owned railway system, which controls 296 of the country's 713 miles of track, was in financial straits in 1959, and there were reports that the company would like to dispose of its holdings to the government. Spain contracted during the year to furnish Paraguay with river ships; negotiations were under way with Japan for additional vessels; and Scandinavian Shipping Enterprises inaugurated direct 30-day shipping service between New York and Asunción. In 1959, Paraguay had 6,000 registered motor vehicles, 8,000 telephones and 3 daily newspapers.

Agriculture and Industry.—Although endowed with fertile soil and good climate, Paraguay is one of the least developed countries in the Western Hemisphere, with only 1% of its land under cultivation. Agriculture supplies 51% of the national income; minerals, manufacturing, and construction account for another 14%. A record sugar crop was produced in 1959, increasing the surplus carried over from the preceding year's bumper crop. The Central Bank agreed to purchase surplus sugar from mill producers, allowing them a 0.5 guaraní profit per kilo. Cotton farmers suffered their second straight year of disaster; the crop, afflicted by bollworms and rains, was one of the poorest on record. The expected 1959 wheat yield of 10,000 metric tons will be under that of 1958. In a move that has been interpreted as indicating official recognition of the increasingly important role of the cattle industry in the Paraguayan economy, the government substantially increased the export quotas for cattle in 1959. The country's three packing plants were in full operation during the year despite a temporary setback caused by the prohibition in the United States of imports of cured and chilled meat.

Foreign Trade.—Imports in 1958 amounted to $32.6 million, while exports were $34.1 million. With imports of only $15 million in the first three quarters of 1959, the country enjoyed a favorable balance of trade of about $5 million—in sharp contrast to the negative balance of $1.6 million for the corresponding period of 1958, when imports were $18.6 million. Meat exports of 10,340 metric tons in the first half of 1959 were 59% greater than for the same period of 1958. The outlook for other important Paraguayan exports was not so bright: Argentina decreased its imports of lumber; cotton exports suffered from falling world prices and poor crops; and world prices for quebracho tannin continued to decline, causing pessimism about the future of the product. Although there was a large surplus of sugar on hand, only 5,000 metric tons were exported during the first half of 1959. The United States replaced Argentina as Paraguay's chief customer in 1959. Exports to the United States for the first six months of the year were 50% greater than for the corresponding period of 1958.

Principal Events, 1959.—The political atmosphere was characterized by tension throughout 1959. The Colorado Party (in power since 1947) showed signs of internal conflict. The minority wing of the party, in favor of continued dictatorship, was in eclipse briefly when President Stroessner in April acceded to the wishes of the majority wing by lifting the state of siege (in effect off and on since 1957) and promising a gradual restoration of constitutional government. A student clash with police in May brought a renewal of the state of siege, the dissolution of the Chamber of Representatives, and the arrest of 14 of its members after that body had condemned the police action in the affair. In June, President Stroessner arrested more than 100 members of his own party and many others fled into exile.

The party's internal troubles stemmed partly from disagreement over methods used by the police in their treatment of political opponents. Roman Catholic priests submitted a collective letter to their bishop urging him to take a stand on police brutality. Party dissension leaves President Stroessner with only half the support he had when he began his second five-year term in 1958, but the army apparently remains loyal. All political leaders of the Liberal Party were arrested in July, and the state of siege was extended.

President Stroessner announced in October that elections for a new legislature would take place in February 1960. A coalition opposition force of Liberals, *Febreristas,* and Federalists announced that they would not participate in the elections unless the government repealed all repressive laws and lifted the state of siege. The coalition also called for new elections for a constituent assembly which would write a new constitution.

Any possibility that the president would accede to these demands was shattered on December 11, when opponents of the Stroessner regime launched a large-scale but unsuccessful attempt from Argentina to overthrow the government. The opposition parties of Paraguay denied that the rebel movement had their support, and President Stroessner accused the Cuban government of Fidel Castro of providing financial and moral support to the rebels. Mopping-up operations were all but completed by the end of the year.

(See also INTER-AMERICAN AFFAIRS.)

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PARAPSYCHOLOGY (PSYCHICAL RESEARCH). The study of parapsychical (psi) abilities such as extrasensory perception, or ESP (telepathy, clairvoyance, and precognition) and psychokinesis, or PK (the direct action of mind on matter) has in recent years advanced in many ways as a branch of science. The *Journal of Parapsychology* (Duke University Press, Durham, N.C.) has entered its 24th year, and the Parapsychological Association (with which the *Journal* is affiliated) now comprises about 100 members and associates from many countries.

The Ph.D. degree was granted for research theses in parapsychology by the University of Bonn (Germany) in 1957 and by Rhodes University (South Africa) in 1959. In the United States two new research centers in parapsychology have been opened; courses in the subject are being offered in at least three colleges; a textbook has been published; a plan for research fellowships has been initiated; and an annual award, the William McDougall Award for Distinguished Research in Parapsychology, has been established.[1]

Research.—Some noteworthy advances in parapsychology research have occurred in recent years. Experiments in the public schools, initiated by J. G. van Busschbach, to test the ESP ability of pupils, have led to similar investigations in other countries. Workers at Duke University found that students at the high school level scored above or below the chance average in ESP tests conducted by the teacher, according to whether they liked or disliked the teacher. In card-calling tests of precognition, a girl in Paris to a significant degree predicted symbol order to be selected a year later at Duke by the experimenter, Margaret Anderson.

[1] The first award (for 1956) was made to J. G. van Busschbach of the Netherlands for his tests of extrasensory perception in the public schools in North Carolina. The second award (for 1957) went jointly to G. W. Fisk and Dr. D. J. West of London for their combined ESP and PK tests, based on dice throwing in an attempt to match distant targets selected at random. The third award (for 1958) was made to H. Forwald, a Swedish engineer, for his work at Duke University in psychokinesis.

Studies of apparitional experiences by Dr. Louisa E. Rhine of Duke have led her to the conclusion that the apparition is hallucinated by the individual who experiences it, even when it does bring a reliable message. Roughly speaking, a person *projects* the ghost he sees.

A high degree of control over ESP in card-calling experiments was reported in 1958 by two British workers, Samuel G. Soal and Henry T. Bowden. Two Welsh boys were encouraged to produce exceptionally high scoring (up to 100%) in the test by the lavish use of monetary rewards.

Recent years have been marked by the return of emphasis to the use of hypnosis in ESP tests (see the *Journal of Parapsychology*, 1958 and 1959), and a reconsideration of the question of post-mortem personal survival. A symposium held at Duke (June 9–12, 1959) to review the evidence indicated that the latter problem is thus far unsolved, but that the matter does warrant further research.

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J. B. Rhine,
Director, Parapsychology Laboratory, Duke University.

PARKS, National. See National Parks and Monuments.

PATENTS AND TRADEMARKS. During the fiscal year ending June 30, 1959, the United States Patent Office granted 54,990 patents, including 2,508 for designs, 128 for plants, and 170 reissues. This number, except for the year 1932, was the largest in history. The office received 83,357 new patent applications (including designs), in fiscal 1959, or 1,563 more than in 1958. Patent applications pending on June 30, 1959, totaled 198,248 (excluding designs), of which about 87,146 were before office examiners for consideration. The office had 2,232 employees on June 30, 1959.

The Patent Office registered 17,685 and renewed 3,249 trademarks in the fiscal year 1959; applications for registration (22,243) and renewal (3,321) totaled 25,564. On June 30, 1959, approximately 28,870 applications for registration and renewal were pending, of which 11,150 were awaiting action by the examiners.

By June 30, 1959, the Patent Office had granted more than 2,890,000 patents since the consecutive numbering system began in 1836.[1] During the 1959 fiscal year the Patent Office distributed over 10,200,000 copies of United States patents and trademarks, including over 7,000,000 sold, 1,153,486 deposited in libraries, and 2,127,458 shipped under exchange agreements to other countries.

Research and Development.—In the third year of operation, the Office of Research and Development acquired an electronic computer to aid in the development of usable search files in selected areas of technology. Use of the computer in searching will begin in the near future.

Lisbon Conference.—A United States delegation attended the Conference of Lisbon for the Revision of the International Convention for the Protection of Industrial Property at Lisbon, Portugal, Oct. 6–31, 1958. An English translation of the text of the convention as revised at Lisbon, so arranged that the changes over the London 1934 revision can be determined, was published in the *Journal of the Patent Office Society* (vol. 41, pp. 86–111, February 1959).

Information Services.—A separate unit was established by a commissioner's order dated Aug. 11, 1958, whose function is to plan, promote, conduct, and coordinate information programs fostering public knowledge and understanding of the American patent system.

Finances.—Net receipts for the fiscal year ended June 30, 1959, were $7,347,194. Obligations incurred under all Patent Office appropriations amounted to $20,779,186, compared with $19,525,854 for the preceding year.

Rules of Practice.—A rule to prohibit advertising for the solicitation of patent business by persons registered to practice before the Patent Office, initially promulgated to take effect Jan. 1, 1959, was put into force July 1, 1959.

Publications.—The pamphlets *Trademark Rules of Practice of the Patent Office* and *Trademark Laws* were issued Jan. 1, 1959, to replace the October 1956 printing of the *Trademark Rules of Practice of the United States Patent Office with Forms and Statutes*. A new 25-page booklet directed primarily to the independent inventor has been published under the title *Patents and Inventions, An Information Aid to Inventors*. Another booklet, *The Story of the United States Patent Office, 1790–1956*, highlights significant historical events, including various patent and trademark laws, noted patents, and famous inventors and inventions. Detailed statistical and other information concerning current activities and the operation of the Patent Office is available in the *Annual Report of the Commissioner of Patents*.

Robert C. Watson,
Commissioner of Patents.

[1] Information concerning the patents issued each week is contained in the *Official Gazette of the United States Patent Office*. Copies of patents may be purchased for 25 cents each; designs and trademarks cost 10 cents each.

PEACHES. See Fruits.
PEANUTS. See Nuts.
PEARS. See Fruits.
PEAS. See Vegetables.

PEAT. Although used as a fuel in some countries, in the United States peat is put to various agricultural uses, chiefly as a soil conditioner. World production figures, compiled by the U.S. Bureau of Mines, are shown in the accompanying table.

WORLD PRODUCTION OF PEAT
(In thousands of short tons)

	1955	1956	1957	1958
Canada	118	128	138[1]	147
Denmark	785	778	809	424
Finland	185	177	227	158
Germany, East[2]	550	550	550	550
Germany, West	1,645	1,664	1,588	1,467
Ireland	3,947	4,015	3,956	2,501
Korea, Republic of	448	450[2]	269	275[2]
Netherlands[2]	500	500	500	500
Norway	294	292	288[2]	97[2]
Sweden	358	357	355[2]	355[2]
USSR	56,000	48,800	59,600[2]	58,200[2]
United States	274	292	316	328
World Total	66,090	59,010	69,260[1]	65,670

[1] Revised. [2] Estimated.

Peat production in the United States increased in 1958 for the tenth successive year, with an output totaling 327,813 short tons, compared with 316,217 tons in 1957. Peat production of domestic origin included 282,872 tons used for soil improvement, or 90% of the total. Imports of peat for consumption totaled 269,096 tons in 1958.

PECANS. See Nuts.

PEDIATRICS. Progress in pediatrics and the present function of pediatricians are sometimes best visualized by comparisons with the past. Whereas several decades ago the most common causes of death among children after the newborn period were infections such as pneumonia, diarrhea, and contagious disease, the chief causes today are accidents, rheumatic disease, and malignancies such as leukemia and cancer. The principal causes of hospital admissions today are congenital defects.[1]

[1] The term is used here to include structural anomalies of limbs, heart, nervous system, etc., and also hereditary disorders in function such as diabetes, galactosemia, and the failure to make certain proteins (agammaglobulin and fibrinogen).

Serious illness and death are no longer encountered daily by most pediatricians. Prevention of death lies primarily in the fields of accident prevention and cancer research; and treatment of serious illness lies in an attack on the causes of anomalies—heredity, prenatal influences, and others. The principal function of the pediatrician lies in obtaining more precise information concerning common infectious disease and in better understanding the relationship of a growing child to a varying and complex environment.

Accidents, Leukemia, and Congenital Defects.—Although the field of accident prevention generally goes beyond the bounds of pediatrics, accidental poisoning (particularly by drugs such as aspirin) and household accidents are predominantly within the field of pediatrics. A bizarre but tragic new cause of death in 1959 was suffocation from plastic bags. Over 150 deaths were reported in the United States. Measures to alert parents to this danger have been taken.

The use of drugs in leukemia has extended survival in this disease appreciably, but there is no clue as to how the disease can be eradicated. Research in congenital defects, especially in functional disturbances, has been vigorous, and progress in this field has been cited repeatedly, notably surgical correction of congenital heart disease, galactose-free diet in galactosemia, and replacement treatment in agammaglobulinemia.

Antibiotics.—Increasing evidence accumulates that many prophylactic uses of antibiotics are undesirable. This includes their use in "clean" surgical procedures, in treating all common respiratory diseases, and in attempting to prevent infection in serious noninfectious disease. The principal harm resulting from these uses of antibiotics is the development of infections resistant to antibiotic treatment.

Observers have proposed that the organisms killed by the antibiotic normally serve a useful function in competing with the organisms resistant to the antibiotic. Destruction of sensitive organisms permits resistant ones to grow more vigorously. The use of antibiotics for children who have had rheumatic fever, on the other hand, is universally accepted. This acceptance stems from the close relationship between streptococcal infections and rheumatic fever and the apparent capacity of such prophylaxis to prevent streptococcal infections.

Common Infections.—Specific causes of some of the common infections that comprise most of the illnesses in our society, such as the common cold and three-day fever, have been identified. Among the viruses causing these infections are the adenoviruses, Coxsackie viruses A and B, and ECHO virus. Infections caused by these agents generally are short-lived and require no specific treatment, but epidemic infections frequently occur, and occasionally serious disease results. The possibility of developing effective vaccines exists. However, influenza vaccine has been available for ten years and its regular use remains restricted rather than general because of the limited period of immunity (one year) that is conferred by such immunization. It may develop with these infections, as it has with influenza, that incipient virulent epidemics can be identified in time to undertake immunization of most of the population against the identified infection to limit the epidemic. For example, if infection with ECHO (enteric cytopathogenic human orphan) virus were found to be assuming epidemic proportions, prompt immunization against the virus that year would be recommended.

Poliomyelitis.—Incidence of poliomyelitis in the United States increased in 1959 to almost twice the rate in 1958.[2] The figures indicate that the Salk vaccine affords a high degree of protection, but not complete protection.

The live virus vaccine for poliomyelitis developed by Dr. Albert Sabin had been administered orally in field trials to 6 million persons in the Soviet Union by mid-July 1959. Evidence as to the full effectiveness and safety of the Sabin vaccine could not be assembled until the trials were complete, but preliminary results were reportedly highly satisfactory. (See also MEDICINE.)

Diarrhea.—The reduction in mortality from diarrhea in infants is due in large measure to prevention—improvement in nutrition, sanitation, etc. However, a major factor in reducing mortality has been the development of parenteral or intravenous administration of salt, sugar, and water in amounts appropriate to the individual case. Mortality rates have decreased from 80% to less than 10% in most hospitals. A leading contributor to this development was Dr. James Lawder Gamble, professor emeritus of pediatrics at Harvard Medical School, who died on May 28, 1959. His work led to our understanding of the need for salt, sugar, and water as given intravenously. This information has been essential in the development of modern surgery and in treating any disease interfering with the intake of food and fluid by mouth.

International Congress.—The ninth International Congress of Pediatrics, held at Montreal during the week ending July 24, 1959, was attended by 1,600 delegates from 65 countries. Papers delivered at the conference stressed the significance of recent biochemical and biological research on the reproductive and other basic life processes.

(See also PUBLIC HEALTH; RESPIRATORY DISEASES.)

MALCOLM A. HOLLIDAY,
Associate Professor of Pediatrics,
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PENGHU (PESCADORES) ISLANDS. See TAIWAN.

PENNSYLVANIA. Middle Atlantic state, United States; one of the original 13 states. The "Keystone State" ranks 33d in area and third in population among the 50 states.

Area and Population.—Area: 45,333 square miles (land, 45,045; inland water, 288), divided into 67 counties. Population: (1950) 10,498,012; (est., July 1, 1958) 11,190,000. Incorporated places with populations over 15,000 in 1950 (unless another date is given) are:

Aliquippa	26,132	Harrisburg (*capital*)	89,544
Allentown	106,756	Hazleton	35,491
Altoona	77,177	Jeannette	16,172
Ambridge	16,429	Johnstown	63,232
Baldwin	21,693[1]	Kingston	21,096
Beaver Falls	17,375	Lancaster	63,774
Bethel	21,092[1]	Lebanon	28,156
Bethlehem	74,012[1]	McKees Rocks	16,241
Braddock	16,488	McKeesport	51,502
Bradford	17,354	Meadville	18,972
Butler	23,482	Monessen	17,896
Carbondale	16,296	Munhall	16,437
Carlisle	16,812	Nanticoke	20,160
Chambersburg	17,212	New Castle	48,834
Chester	66,039	New Kensington	25,146
Clairton	19,652	Norristown	38,126
Dunmore	20,305	Oil City	19,581
Duquesne	17,620	Philadelphia	2,071,605
Easton	35,632	Pittsburgh	676,806
Erie	130,803	Pittston	15,012
Greensburg	16,923	Pottstown	25,360[1]

[2] The U.S. Public Health Service reported that during the calendar year 1959 there were 8,577 cases of poliomyelitis reported in the United States, as compared with 6,029 in 1958. Of the 1959 total, 66% (5,694 cases) were of paralytic poliomyelitis (52%, or 3,122 cases, in 1959). Only two states—Idaho and South Dakota—reported no paralytic polio cases in 1959. Preliminary estimates indicated that about 150 deaths from polio occurred in the first 7 months of 1959, as compared to only 10 deaths in the comparable period of 1958, but much of this difference in numbers is probably due to the fact that polio epidemics occurred earlier in 1959 (in June), whereas substantial numbers of polio cases did not occur until July in 1958.

Pottsville	23,640	Uniontown	20,471
Reading	109,320	Washington	26,280
Scranton	125,536	West Chester	15,168
Shamokin	16,879	West Mifflin	26,450[2]
Sharon	26,454	Whitehall	15,480[1]
Shenandoah	15,704	Wilkes-Barre	76,826
State College	21,651[1]	Wilkinsburg	31,418
Sunbury	15,570	Williamsport	45,047
Swissvale	16,488	York	59,953

[1] Special census, 1957. [2] Special census, 1958.

Executive.—Chief state officers in 1959:
Governor: David L. Lawrence (Democrat)
Lieutenant Governor: John M. Davis
Secretary of State: John S Rice
Treasurer: Robert F. Kent
Attorney General: Anne X. Alpern
Auditor: Charles C. Smith
Supt. of Public Instruction: Charles H. Boehm

Constitution and Judiciary.—The present constitution went into effect in 1874. The Supreme Court comprises seven justices; chief justice in 1959 was Charles Alvin Jones.

Legislature.—The Pennsylvania General Assembly comprises a 50-member Senate (in 1959, 28 Republicans and 22 Democrats) and a 210-member House of Representatives (108 Democrats and 102 Republicans), which meet in odd-numbered years commencing the first Tuesday in January. (See below, *Principal Events, 1959.*)

Finance.—In the fiscal year 1958–59, state revenue of $2,145,178,355.79 comprised $1,488,098,245.66 from state tax sources, $232,583,363.55 from the federal government, and $424,496,746.58 from other sources. Tax revenue included $220,777,892.81 from a general sales tax, $582,459,939.48 from corporate income taxes, $171,192,792.99 from motor fuel taxes, and $109,518,293.69 from licensing. Expenditures of $2,210,037,156.64 consisted of $353,671,515.10 for education, $116,404,260.34 for health, welfare, and safety, $394,228,456.36 for highways, and $1,345,732,924.84 for other purposes. Net long-term indebtedness on May 31, 1959, amounted to $252,236,598.49.

Banking.—As of June 10, 1959, the state's 478 national banks had $8,768,987,000 in assets, $4,789,489,000 in demand deposits, and $2,911,540,000 in time deposits. The 262 state banks had assets of $8,496,853,380, demand deposits of $3,768,846,684, and time deposits of $3,721,371,506.

Education.—School attendance is compulsory between the ages of 6 and 17, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 fiscal year totaled $546,854,995 ($330.82 per pupil), comprising $296,789,176 from local school districts, $243,232,717 from the state, and $6,833,102 from the federal government. Outlays for construction and improvements amounted to $80,523,935, and teachers' salaries averaged $4,756 (high school, $4,943; elementary, $4,600).

PENNSYLVANIA SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–6; 1–8)	4,424	41,837[1]	1,148,439
Public secondary (7–12; 9–12)	1,156	34,276[1]	714,115
Private and parochial elementary and secondary	1,549	15,473[2]	544,827
Junior colleges	14	250[2]	2,282[3]
Teachers colleges	14	1,000[2]	19,483[3]
Colleges and universities	96	15,250[2]	153,770[3]
Other higher institutions	...	...	4,054[3]

[1] Includes administrative personnel. [2] Estimated. [3] 1958–59

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from state and federal funds (excluding institutional costs) totaled $148,124,289, including $35,119,548 for the aged, $59,993,421 for dependent children, and $13,263,186 for the needy blind. A monthly average of 328,192 persons received public assistance.

Labor Force.—Pennsylvania's labor force in June 1959 numbered 4,697,500, including 178,000 farm workers. Nonagricultural employment stood at 4,158,000, compared with 4,068,000 a year earlier and with an average of 4,067,000 for the intervening 12 months. Some 34.9% of nonfarm employees were engaged in manufacturing, 16.6% in trade, and 10.6% in service industries. June unemployment totaled 361,000, well below the 520,000 figure of June 1958, which was believed to account for the highest jobless rate in the nation. The steel strike which began on July 15 idled approximately 167,000 Pennsylvania steelworkers and some 45,000 employees in related industries by September. But with a growth in jobs in other sectors of the economy, the number of jobless dropped to 337,000 in the following month. As the year ended, with the steel mills reopened, only 17,000 of those thrown out of work by the strike remained jobless.

Manufacturing.—The state's 16,994 manufacturing plants in 1958 employed an average of 1,345,179 persons who received $6,174,428,800 in wages. Value added by manufacture amounted to $11,265,352,200, and outlays for new plant and equipment totaled $803,264,000. Production workers averaged $84.56 for an average workweek of 39.7 hours in August 1959.

MAJOR PENNSYLVANIA MANUFACTURES, 1958

Product or industry	Average no. of employees	Salaries and wages	Value added by mfr.*
Primary metal industries	223,298	$1,293,209,200	$2,194,773,800
Electrical machinery	119,824	616,414,100	1,171,220,300
Food & kindred products	119,981	488,792,300	1,077,869,100
Fabricated metal products	111,195	557,280,000	944,088,500
Nonelectrical machinery	103,861	550,146,100	937,078,500
Chemicals & allied products	45,635	240,303,900	723,028,300
Apparel & related products	157,479	398,966,500	587,891,300
Transportation equipment	56,887	320,373,600	549,476,900
Stone, clay, glass products	60,707	278,300,700	530,126,000

* Value of product less cost of materials, supplies, fuel, electrical energy, and contract work. (Source: Bureau of Statistics, Pennsylvania Department of Internal Affairs.)

Mining.—In 1958 Pennsylvania ranked fourth among the states in the value of its mineral output, with 5.33% of the national total. The state mined all the nation's anthracite and was first in output of beryllium metal and alloys, cement, coke, pig iron, stone, and dimension slate; second in fire clay, bituminous coal, cobalt, and pyrophyllite; and third in lime and crushed and broken slate. In 1958 Pennsylvania produced soapstone for the first time and resumed zinc mining after many years. Pennsylvania's steel mills consumed 25% of the nation's pig iron. Employment in the state's mineral industries during the year totaled 92,141 persons.

PENNSYLVANIA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	42,115,000	$142,399,000
Clays	3,318,000	17,051,000[1]
Coal, anthracite	21,171,000	187,898,000
Coal, bituminous	67,771,000	373,812,000
Cobalt (pounds)	564,000	...[2]
Coke	13,968,893	236,364,683[3]
Ferroalloys	377,601	95,089,000[3]
Iron, pig	14,348,322	869,097,000[3]
Lime	1,003,000	12,457,000
Natural gas (1,000 cu. ft.)	95,869,000[4]	27,131,000[4]
Petroleum (bbl.)	6,678,000[4]	27,380,000[4]
Sand and gravel	11,825,000	19,180,000
Stone and slate	40,049,000	69,694,000
Zinc	10,812	2,229,000
Other minerals	...	16,395,000
Total	...	$881,181,000[5]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Figure withheld to protect individual company's confidential data. [3] Values for processed materials are not included in the total. [4] Preliminary. [5] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 totaled $583,732,000, compared with $587,680,000 for the corresponding period of 1958. For the full year 1958, income comprised $606,828,000 from livestock and livestock products, $177,995,000 from crops, and $10,854,000 from government payments. Principal income sources in 1958 were dairy products, $303,969,000; eggs, $125,538,000; and cattle, $94,590,000.

There were 122,000 farms in the state in 1958. Total acreage (1954) of 13,162,000 included

PENNSYLVANIA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	6,118	6,400	7,500
Barley (1,000 bu.)	6,884	9,600	4,564
Buckwheat (1,000 bu.)	989	460	400
Cherries (tons)	10,200	12,300	11,300
Corn (1,000 bu.)	62,904	82,202	78,873
Grapes (tons)	21,280	29,000	29,000
Hay (1,000 tons)	3,364	3,828	3,816
Maple sirup (1,000 gal.)	99	93	90
Oats (1,000 bu.)	28,462	31,712	32,384
Peaches (1,000 bu.)	2,489	3,000	2,900
Pears (1,000 bu.)	159	115	100
Potatoes (1,000 cwt.)	9,223*	8,596	8,160
Soybeans (1,000 bu.)	381	330	414
Tobacco (1,000 lb.)	48,551	51,000	53,475
Wheat (1,000 bu.)	18,187	16,920	14,045

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

5,433,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,877,000 cattle, 508,000 hogs, and 21,735,000 chickens (excluding commercial broilers). There were 168,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal spending for Pennsylvania highway construction in the 1957–59 biennium totaled $356,563,855, and 862 miles of new highways were built in the 1957 and 1958 calendar years.

Highways and roads on May 31, 1959, totaled 108,139 miles (62,385 surfaced). Registered *motor vehicles* numbered 4,355,813 on May 29, 1959, including 3,506,224 passenger cars. There were (1958) 61 *railroads* operating 10,654 line miles; (1959) 13 regularly scheduled *airlines;* 478 *airports and airfields* (212 commercial and municipal, 5 military, and 271 private); and 1 commercial and 8 private heliports.

Communications media (1959) included 142 *radio stations;* 20 *television stations;* 125 daily *newspapers* (circulation, 4,166,670) and 285 other newspapers (999,160); and (January 1) 1,163,900 business and 3,551,800 residential *telephones.*

Principal Events, 1959.—David L. Lawrence, a long-time Democratic leader of Pennsylvania, was inaugurated as governor on January 20. He thus became the commonwealth's second successive Democratic governor and only the third Democrat to serve in that office during the 20th century. He proposed to pursue a compromise policy in dealing with legislation, since the state Senate was controlled by the Republican Party and the House of Representatives was Democratic.

The governor submitted to the General Assembly a record $1.9 billion General Fund budget for the 1959–61 biennium. Including the highway and other special fund budgets, total annual appropriations for all commonwealth purposes would exceed $1.25 billion. To meet the increased appropriations, the General Assembly raised the state sales tax to 4%. Another revenue-yielding measure of special interest, signed by Governor Lawrence in late December, authorized parimutuel betting on harness racing in counties where such betting is approved in a countywide referendum.

In November 1959 the voters elected a Democrat as Supreme Court justice and another as Superior Court judge in the only statewide contests. They also approved two constitutional amendments. One provides for annual sessions of the General Assembly in lieu of biennial sessions, and the other permits persons who have moved within 60 days prior to a given election to vote in their former voting district.

One of the most dramatic events of the year was the celebration (August 23–29) of the oil centennial at Titusville, where on Aug. 27, 1859, the Drake well, first oil-yielding well in the United States, went into production. A special commemorative stamp (see PHILATELY) was issued.

Prolongation of the nationwide steel strike (see IRON AND STEEL) had a depressing effect on Pennsylvania's employment picture. Mid-September employment was estimated at 4,136,700, or approximately 116,800 below that of September 1958. More than 200,000 Pennsylvanians were without jobs as a direct or indirect result of the steel work stoppage. (See also above, *Labor Force.*)

Despite serious unemployment, the state's economy showed strength in some areas. Weekly earnings for employed production workers or nonsupervisory employees in manufacturing, as of September 1, averaged $86.15, compared with $84.63 for the same date in 1958. In October the index of general business activity reached a record high for the month, although it was offset by the index of industrial activity which, reflecting the impact of the steel strike, had dropped to its lowest point since 1954. Indexes of specific industrial or business activity in August 1959, compared with a year earlier, showed anthracite and bituminous coal production down 15.4% and 31.5%, respectively; postal receipts and department sales off slightly; and bank debits up 13%.

In other industrial developments of 1959 the Philadelphia Electric Company announced it had signed a contract with the U.S. Atomic Energy Commission for construction of a $24.5 million nuclear power plant, the first to be built in eastern Pennsylvania. In the conventional power field the West Penn Power Company in September dedicated a new 350,000-kilowatt plant ten miles north of Kittanning on the Allegheny River.

Among the year's educational developments, Dr. Millard Gladfelter was officially installed as president of Temple University on December 14; Pennsylvania State University inaugurated a new graduate program of business administration; and the university announced that the Atomic Energy Commission had approved its new far-reaching program in nuclear physics research, following acquisition of a 5.5 million electron volt Van de Graaf positive accelerator.

(See also PHILADELPHIA; PITTSBURGH).

Principal Events by: JEWELL CASS PHILLIPS,
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PENSIONS. See Index entry.

PEPPERS. See VEGETABLES.

PERFUME. See COSMETICS, PERFUME, AND TOILET PREPARATIONS.

PERIODICALS. See MAGAZINES.

PERSIA. See IRAN.

PERSIAN GULF STATES. See ARABIA.

PERU. This Andean republic, the third largest country in South America, is bounded by Ecuador and Colombia on the north, by Brazil and Bolivia on the east, by Chile on the south, and by the Pacific Ocean on the west. Peru has an area of 514,059 square miles and a population (est. 1959) of 10,524,000. Lima, the capital, has a population (est. 1959) of 1,666,494. Other leading cities and their populations (est. 1959) are Arequipa (123,068), Callao (131,877), Chiclayo (54,390), Cuzco (71,907), Iquitos (54,316), and Trujillo (61,008). Official estimates of ethnic distribution are: white and mestizo, approximately 53%; Indian, about 46%; Asian (mainly Japanese) and Negro, about 1%. Although the official language is Spanish, it is estimated that about 51% of the people speak the Indian languages, Quechua and Aymara.

Government.—Under a semiparliamentary system, the president (Manuel Prado y Ugarteche, elected in 1956) has a cabinet of 12 ministers, headed by a prime minister (Pedro G. Beltrán), which is held accountable to the Congress. The Congress (a Chamber of Deputies, with 182 members, and a Senate, with 53 members, all elected by

direct suffrage for 6 years and renewed completely at the end of each term) is subservient to the executive, and strong presidential government exists. Peru has two vice presidents and a judiciary headed by a Supreme Court of 16 members, all elected by Congress. Suffrage has been extended to literate males 21 years of age (18, if married). Peruvian women first voted in the national elections of 1956.

Education and Religion.—In order to integrate the large Indian population into national life, the government has seen clearly in recent years the need to improve and expand educational facilities. In 1959, 16.84% of the budget (1,153,143,076.55 soles) was allotted for public education, while the armed forces were allotted 20.75%. (In the 1960 budget, however the proportions are reversed, with education slated to receive 1,329 million soles, the armed forces 1,147 million.) A new educational project was inaugurated in 1958 to teach adult Peruvians to read and write, but by 1959 only 168,000 had been aided. A large percentage of pupils in rural areas do not have access to educational facilities, and in the cities many boys and girls from poor families do not attend school. In addition to the University of San Marcos (founded at Lima in 1551), there are small public universities at Arequipa, Cuzco, and Trujillo, and a Catholic university at Lima. About 58% of the population over the age of 10 is illiterate, although the law provides for free, compulsory education between the ages of 7 and 16.

The constitution declares that ". . . the state protects the Apostolic Roman Catholic Religion," but freedom of worship is legally guaranteed. Peru is one of the Latin American countries in which the Catholic Church enjoys maximum influence in social, economic, and political affairs.

Finance.—The budget for 1959 was 6,846,347,312.37 soles, as compared with 5,359,082,000 soles for 1958 (about 28 soles = U.S.$1). The government admitted in October that there would be a deficit of at least 907,000,000 soles in 1959. From February 1958 to February 1959 the government printed 823,000,000 additional soles in paper money. In the budget for 1960, presented to the legislature on Aug. 27, 1959, government expenditures are estimated at 7,691 million soles, an increase of 12.3% over the 1959 figure, and are expected to exceed income by 550 million soles.

Transportation and Communication.—Motor vehicle registrations in Peru totaled 142,900 in January 1957. Railroads (est. 1955) had 1,752 miles of track. The government decided to abandon Limatambo airport near downtown Lima and to begin (on June 1) a $6,667,000 airport on 614 acres of land north of the port of Callao (8 miles from central Lima) which would accommodate jets by January 1960. A television station (6,000-watt transmitter) began operations in Lima in December 1958. Two new stations were inaugurated in August 1959, a second station in Lima and one in Arequipa. By April 1959 about 10,000 TV sets had been sold in Lima. The number of radio receivers in use in the country is estimated at 750,000. There were 93.811 telephones in 1958, as compared with 81,438 in 1957.

Agriculture and Forestry.—Peru's principal economic activities are agriculture and forestry, employing nearly two thirds of the working population and accounting for about 34% of the total national income. However, only 4,500,000 acres are under cultivation—about 0.45 cultivated acre per person, as compared with 2.5 acres per person in the United States. The country must import foodstuffs each year. Drought reduced prospects for a large grain crop in 1959, and freeze damage in Cajamarca and Ancash departments meant that the cotton, rice, and sugar crops for 1959 will be substantially lower than in 1958. Another step was taken toward completion of the Quiroz River Project in 1959, and about 125,000 acres in the Piura area (on the coast) were irrigated with water from the new San Lorenzo Dam on the Chipillico River.

Manufacturing and Mining.—Manufacturing industries are devoted principally to the production of consumer goods for domestic consumption and include food, tobacco, rubber, metals, leather, paper, construction, shipbuilding, textiles, and chemicals. Exports of iron ore from the newly developed Acari mine, 350 miles north of Lima, began in August 1959. The development of the Toquepala copper deposit by the United States-owned Southern Peru Copper Corporation (total investment about $230 million) continued in 1959. The first shipments of copper from the port of Ilo were expected in late 1959 or early 1960.

Foreign Trade.—The United States usually supplies from 45% to 50% of Peru's imports and buys about 35% of the country's exports. Low prices in 1959 for major exports, such as cotton, sugar, lead, copper, and zinc resulted in a decrease in the value of foreign trade. Peru had a trade imbalance of only $4,800,000 in the first 8 months of 1959, compared with $50,200,000 for the same period in 1958, but the cumulative effect of recent years' imbalances has been a loss of gold and foreign exchange reserves. Total imports in the first six months of 1959 were 4 per cent below those of January–June 1958, while the value of exports for this period increased by 21 per cent. The rapid development of the country's fishing resources has been a major factor in this improvement. Exports of fish and fish products nearly doubled in the first half of 1959. Among the chief imports are machinery, vehicles, and transportation equipment, wheat, and meat.

Principal Events, 1959. *Economic Developments.*—In the first part of 1959 the then premier and minister of finance, Luis Gallo Porras, attempted to achieve prosperity for the country through price controls, government regulations and subsidies, deficit financing, and printing more paper money. One of the consequences of these policies was continued inflation. By August 1959 the cost-of-living index in the Lima-Callao area was 16.2% above that of 1958. The cost of living rose 9% in the urban areas in 1958, as compared with 7% in 1957 and 6.5% in 1956.

On February 18, some 13,000 workers of the Cerro de Pasco Company struck, shutting down metallurgical and copper mining operations in La Oruya and Morochocha in central Peru. The labor leaders demanded a 48% wage increase plus additional welfare benefits. Early in March they accepted a settlement based on a 22% wage increase. However, the first half of 1959 was characterized by a continuing wave of strikes. When 12,000 bank employees went on strike demanding 10%–30% wage increases and greatly increased welfare benefits, the government suspended constitutional guarantees (April 16) for 30 days and arrested some of the union leaders. The strike was settled on June 3 under an agreement which permitted the bank counters to be open to the public only in the morning hours.

The inflationary policy of the government was in violation of Peru's agreement with the International Monetary Fund, which finally suspended Peru's $13,000,000 in standby credit. This action had the additional effect of blocking a $17,500,000 credit agreement between the U.S. Treasury's stabilization fund and the government. The Export-Import Bank of Washington announced on June 30 that no more applications for loans in Peruvian currency would be accepted by the bank. The sol was further weakened by these developments.

As a result of the heavy attacks on his fiscal policies, Premier Gallo Porras resigned on July 4 and was succeeded in mid-July by Pedro G. Beltrán, editor of Lima's liberal newspaper *La Prensa* and former ambassador to Washington. Premier Beltrán announced his cabinet on July 18. Beltrán immediately endeavored to free the economy from some of the controls imposed upon it by the previous premier. He removed controls on meat prices, increased bus fares 20%–30%, and raised the price of gasoline, which had been 8¢ a gallon, to 24¢ a gallon. Prices for most petroleum derivatives were increased about 100%. The introduction of a measure of competitive capitalism, combined with governmental austerity, was designed to produce price stability, greater production, a sound currency, and new domestic and foreign

investments. Although there were serious strikes in July and August, Beltrán received a vote of confidence (26–12) in the Senate on August 28. By the fall there were signs of some progress toward financial and economic stability.

Political Developments.—The government arrested Fernando Belaúnde Terry, head of the left-wing Partido Acción Popular (PAP), the principal opposition party, and about 40 of his supporters on May 28 for allegedly attempting to hold a political meeting in violation of the law. Belaúnde was released from El Frontón prison early in June.

Other groups which opposed President Prado's government—which is a coalition of his conservative party, Movimiento Peruano Democrático, and the leftist Aprista movement—included the Catholic ,party, Partido Demócrata Cristiano, the Communists, and certain extreme right-wing organizations. Although several attempts were made to oust the government by force, none attracted wide popular support.

(See also INTER-AMERICAN AFFAIRS.)

WILLIAM S. STOKES,
Professor of Comparative Political Institutions, Claremont Men's College.

PESCADORES (PENGHU) ISLANDS. See TAIWAN.

PETROLEUM. The petroleum industry celebrated its 100th birthday in 1959 and began its second century with ample reserves to meet the world's rapidly rising energy requirements for many years to come. Because of recent major discoveries in North Africa, it was thought that no oil-producing nation could create a dangerous shortage by withholding its petroleum from world markets, and that there could not be another oil crisis such as that created by the closing of the Suez Canal in 1956.

In its first century the industry had produced 62,870 million barrels of oil, of which over 7 billion barrels were lifted in the final year of the period. Known reserves in the non-Communist world exceeded 250 billion barrels, and competent authorities suggested that supplies readily available in the next 20 years would reach 450 billion barrels.

Demand for petroleum increased by 6.9% in 1959, and despite keen competition most oil companies enjoyed a more profitable year than in 1958. Some of the companies reported record earnings.

Production.—World production of crude petroleum increased by 6.3% in 1959, to 19,300,800 barrels daily. The rise of 1,150,200 barrels was almost three times as great at that of the recession year 1958, when output increased by only 2.8%, with most of the rise attributable to the USSR. Production of natural gas liquids rose by 10% in 1959, to 1,100,000 barrels daily.

Government restrictions on imports of foreign oil by the United States were tightened with the imposition of mandatory controls effective March, 11, 1959. As a result, domestic production rose from 6,709,200 barrels daily in 1958 to 7,050,000 barrels in 1959, or 5.1%. The USSR enlarged its output by 11.6%, to 2,550,000 barrels daily, but other countries in the Soviet bloc registered only small changes in production. While Venezuela maintained its place as the second largest producing nation by increasing its output by 6.3%, the USSR was gaining at a rate which suggested that it might take second place in 1960. Development work in Venezuela was slow because of a lack of new markets. Drilling in Argentina brought good results following the invitation extended in 1958 to foreign companies to participate in development work. Output rose by 19.7% in 1959, and eventual self-sufficiency was predicted.

WORLD CRUDE OIL PRODUCTION
(Thousands of barrels daily)

	1956	1957	1958	1959[1]
North America:				
Canada	475.9	492.2	453.5	500.8
Mexico	257.1	261.5	256.2	266.4
United States	7,151.0	7,170.0	6,709.2	7,050.0
Total	7,884.0	7,923.7	7,418.9	7,817.2
South America and West Indies:				
Argentina	85.1	93.6	98.2	117.5
Bolivia	8.8	9.8	9.4	8.4
Brazil	11.1	27.7	51.8	64.5
Chile	9.5	11.8	15.3	17.3
Colombia	120.4	121.6	131.4	142.5
Cuba	1.5	1.0	0.9	0.6
Ecuador	9.8	8.7	8.5	8.0
Peru	49.9	52.7	51.3	50.2
Trinidad	79.3	93.2	102.3	112.0
Venezuela	2,456.8	2,779.3	2,604.9	2,769.4
Total	2,832.2	3,199.4	3,074.0	3,290.4
Total, Western Hemisphere	10,716.2	11,123.1	10,492.9	11,107.6
Europe (excluding USSR and satellites):				
Austria	63.7	59.2	53.6	45.3
France	24.1	28.1	27.4	27.7
Germany, West	68.5	76.7	88.0	98.6
Italy	11.5	20.6	28.7	31.0
Netherlands	20.6	29.6	31.0	32.0
United Kingdom	1.3	1.7	1.6	1.7
Yugoslavia	6.0	8.4	8.9	10.1
Total	195.7	224.3	239.2	246.4
USSR and Satellites:				
Albania	6.0	9.0	9.3	9.0
Bulgaria	...	...	5.5	5.9
Czechoslovakia	3.0	2.6	2.6	2.6
Germany, East	...	0.8	0.8	0.8
Hungary	21.9	14.1	14.0	14.1
Poland	7.0	3.7	3.7	3.7
Rumania	230.6	228.3	229.0	231.0
USSR	1,565.0	1,956.8	2,285.6	2,550.0
Total	1,833.5	2,215.3	2,550.5	2,817.1
Africa:				
Algeria	0.7	3.6	9.7	16.6
Angola	...	...	0.9	0.8
Gabon	...	1.6	9.4	13.5
Morocco	2.0	1.6	1.5	1.8
Nigeria	...	...	5.4	8.4
Total	2.7	6.8	26.9	41.1
Middle East:				
Bahrain	30.0	32.0	40.8	45.1
Iran	534.4	714.4	825.7	855.0
Iraq	641.8	445.4	729.1	826.0
Israel	0.5	1.2	1.8	2.5
Kuwait	1,075.2	1,139.9	1,396.3	1,390.0
Neutral Zone	32.0	62.7	80.7	114.7
Qatar	122.4	139.8	173.7	172.1
Saudi Arabia	986.2	992.1	1,015.0	1,070.1
Turkey	5.7	6.3	6.5	6.9
United Arab Republic	36.6	42.1	60.6	58.8
	3,464.8	3,575.9	4,330.2	4,541.2
Far East and Oceania:				
Brunei and Sarawak	116.1	117.1	108.4	104.3
Burma	4.1	7.7	9.5	10.2
Communist China	19.3	40.0	40.0	60.5
India	7.9	9.1	9.4	8.9
Indonesia	254.1	314.7	325.3	341.0
Japan	6.1	6.2	7.0	7.6
New Guinea	7.1	6.3	5.1	5.1
Pakistan	5.9	5.9	6.2	9.8
Total	420.6	507.0	510.9	547.4
Total, Eastern Hemisphere	5,917.3	6,529.3	7,657.7	8,193.2
World Total	16,633.5	17,652.4	18,150.6	19,300.8

[1] Preliminary. (Source: *World Petroleum.*)

North Africa was the focal point in 1959 for the world's latest oil rush, and Libya was established as a leading petroleum reserve. Of the 62 wells drilled thus far in Libya, 14 are oil producers and 2 are gas wells. The best strike, at Zelten, was estimated to have about 10 billion barrels of reserve, with a high recovery factor. Reserves in Libya as a whole may reach 50 billion barrels, particularly since the second largest strike in the kingdom, at Beda, appears to be nearly as good as that at Zelten. Because depths are only about 5,700 feet, the crude oil is cheap to produce.

Development of fields in the Saharan departments of Algeria continued in 1959, and a 24-inch, 415-mile pipeline from Hassi Messaoud to the port of Bougie was completed on December 5. Its

PERCENTAGE DISTRIBUTION OF WORLD CRUDE OIL PRODUCTION

Country or region	1957	1958	1959
Principal countries:			
United States	40.6	37.0	36.4
Venezuela	15.8	14.4	14.3
USSR	13.2	12.6	13.2
Kuwait	6.5	7.7	7.2
Saudi Arabia	5.7	5.6	5.5
Iran	4.0	4.5	4.4
Iraq	2.3	4.0	4.3
Canada	2.9	2.5	2.6
Indonesia	1.8	1.8	1.8
Mexico	1.4	1.4	1.4
Rumania	1.2	1.3	1.2
Qatar	0.8	1.0	0.9
Western Hemisphere:			
North America	44.6	40.9	40.5
South America and West Indies	18.1	16.9	17.1
Total	62.7	57.8	57.6
Eastern Hemisphere:			
Europe (including USSR)	14.5	15.4	15.9
Africa	...	0.1	0.2
Middle East	20.0	23.9	23.5
Far East and Oceania	2.8	2.8	2.8
Total	37.3	42.2	42.4

(Source: *World Petroleum.*)

initial capacity of 100,000 barrels daily could be trebled with additional pumping stations. Development work was also being forwarded at Edjelé. Reserves there total about 1.5 billion barrels, as compared with 3 billion barrels at Hassi Messaoud, but none of the producing wells is deeper than 4,750 feet, while the depth at Hassi Messaoud is 11,500 feet. Another 24-inch pipeline was under construction to carry the Edjelé crude to the Tunisian coast, together with that from Tigentourine–La Reculée and Zarzaitine fields. It was to have a capacity of 160,000 barrels daily, which could be raised to about 340,000 barrels by means of additional units. Several gas fields with remarkable reserves have also been found, and the French government estimates that there are recoverable reserves of 700 million metric tons of oil and 750 billion cubic meters of natural gas in the Sahara.

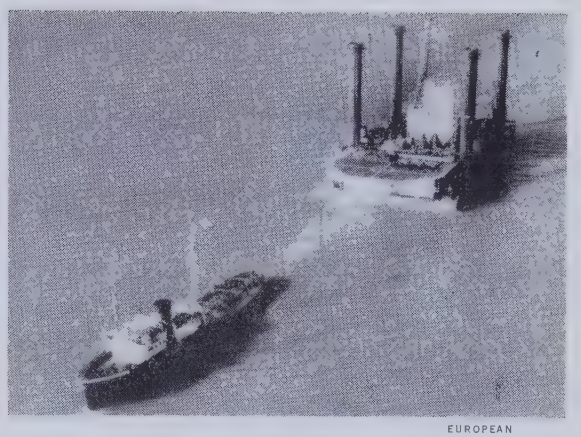
Consumption.—World demand for petroleum, including crude oil and other liquid hydrocarbons, rose by 6.9% in 1959, to 20,490,000 barrels daily. With the general business improvement, demand in the United States increased by 4.8%, and that of Canada by 8.5%. While the rate of growth in European markets slowed down, it was still about 10% over that of 1958. United Kingdom demand rose by 12%, and West German consumption by 20%. Consumption in the Soviet bloc increased by about 11.6%. Total demand in the Far East and Oceania was 8% higher than in 1958. The resurgence of industrial activity in Japan raised its domestic consumption by 19%. The demand for bunker oil, however, was low in all areas.

U.S. PETROLEUM SUPPLY AND DEMAND
(Daily averages in thousands of barrels)

	1957[1]	1958[1]	1959[2]
Supply:			
Crude petroleum	7,170	6,710	7,050
Natural gasoline and other products	809	808	875
Imports, all oils	1,574	1,700	1,740
Total supply	9,553	9,218	9,665
Demand:			
Domestic demand	8,818	9,083	9,516
Exports, all oils	568	275	232
Total demand	9,386	9,358	9,748
Refinery crude runs	7,919	7,642	7,990
Total stocks (December 31)[3]	841,317	788,796	753,526

[1] Revised (source: U.S. Bureau of Mines). [2] Preliminary (sources: American Petroleum Institute; Independent Petroleum Association of America). [3] Thousands of barrels.

Refining.—World refining capacity rose to 21,697,100 barrels daily in 1959. Most of the increase



EUROPEAN

The *Orient Explorer*, first mobile oil-drilling platform to be built in the United Kingdom, is towed from Southampton (February 21) on the start of a journey to British Borneo where it will drill for oil in bed of the South China Sea.

of 876,000 barrels occurred in the Eastern Hemisphere. At the end of the year two new refineries, which would add 40,000 barrels daily to crude capacity, were nearing completion in Canada. No new refineries were built in the United States in 1959, and the enlargement of existing plants added only 100,000 barrels daily. Most construction consisted of specialized processing units.

Two new catalytic hydrocracking processes, with yields in excess of 100% of liquid charge, were announced by California refiners in 1959. They are designed for use in areas where competition with natural gas creates a surplus of middle distillates and in refineries where hydrogen is available from re-forming operations. A continuous method of superfractionation with molecular sieves was offered to refiners who need to eliminate certain hydrocarbons from their pool gasoline in order to improve knock ratings. While a new process for the isomerization of pentanes and heavier hydrocarbons also was announced, refiners still prefer to obtain any necessary improvements through alkylation.

Petrochemicals constitute the fastest-growing segment of the manufacturing branch of the industry. More than 80% of the organic chemicals produced in the United States are derived from

U.S. CRUDE OIL PRODUCTION BY STATES
(Thousands of barrels)

State	1957[1]	1958[1]	January–September 1959
Alabama	5,406	5,887	3,676
Arkansas	31,047	28,700	20,431
California	339,646	313,672	230,311
Colorado	54,982	48,736	34,379
Florida	461	449	317
Illinois	77,083	80,275	58,458
Indiana	12,662	11,864	9,029
Kansas	123,614	119,942	89,468
Kentucky	17,029	17,509	20,218
Louisiana	329,896	313,891	259,446
Michigan	10,169	9,308	7,469
Mississippi	38,922	39,512	34,713
Montana	27,172	27,957	22,491
Nebraska	19,586	20,373	17,400
New Mexico	94,759	98,515	78,640
New York	2,677	1,763	1,479
North Dakota	13,259	14,259	13,448
Ohio	5,478	6,260	4,231
Oklahoma	214,661	200,699	146,709
Pennsylvania	8,179	6,472	4,529
Texas	1,073,867	940,166	745,229
Utah	4,367	24,811	30,109
West Virginia	2,215	2,186	1,622
Wyoming	109,584	115,572	93,854
Others[2]	180	209	223
Total, United States[3]	2,616,901	2,448,987	1,927,924

[1] Revised. [2] Arizona, Missouri, Nevada, South Dakota, Tennessee, Virginia, and Washington. [3] Includes some field condensate. (Source: U.S. Bureau of Mines.)

petroleum. Expansion is at the rate of 12% annually, or twice that of the chemical industry as a whole. Although less than 4% of the hydrocarbons produced in the United States are employed as chemical raw materials, the value of petrochemicals in 1958 totaled $5.2 billion, or 56.6% of that of the national chemical output.

In Europe petrochemical plants are being built to operate on olefins produced by the steam cracking of paraffinic naphthas, whereas in the United States most plants are based on natural gas or uncondensed effluent gases from oil refineries. Because of its great gas reserves at Lacq, however, France is an exception to the European pattern.

Natural Gas.—Marketed production of natural gas in the United States increased from 11,030 billion cubic feet in 1958 to 11,472 billion cubic feet in 1959, or 4%. The number of gas customers rose at a faster rate than consumption, and at the end of 1959 there were 32,220,000 customers of natural, mixed, and manufactured gas utility companies, as compared with 31,242,100 on Dec. 31, 1958. The homes served included 11,800,000 with central gas heating, as compared with 10,798,100 at the end of 1958.

As had been the case in recent years, the use of oil for home heating expanded at a slower rate than that of gas. It is estimated that 9,600,000 homes were equipped with oil-fired central heating plants at the end of 1959; the total at the end of 1958 was 9,281,349. (See also GAS.)

(See also ARABIA; CHEMISTRY; GEOLOGICAL SURVEY; MIDDLE EAST; MINING; and the Index entry, *Petroleum.*)

J. C. CHATFIELD,
Editor, "World Petroleum."

PHILADELPHIA. Pennsylvania's largest city and, in 1950—with a population of 2,071,605—the nation's third-largest city, Philadelphia had an estimated 2,250,000 residents in 1959 and a land area of approximately 127 square miles.

Philadelphia's home-rule charter, effective since January 1952, provides for a "strong mayor" type of government with an elective mayor, a managing director appointed by and responsible to the mayor for direction of ten major departments of city government, and a City Council of 17 members. The mayor, managing director, and councilmen all have four-year terms.

For 1960, the mayor's operating budget called for a total of $266,077,891 and his capital budget, for $140,686,692. The city's six-year (1960–65) capital improvements program totaled $867,926,959. Philadelphia's funded debt, as of July 1, 1959, was $640,752,800, of which $257,608,997 was self-supporting. No new city taxes or tax increases were recommended.

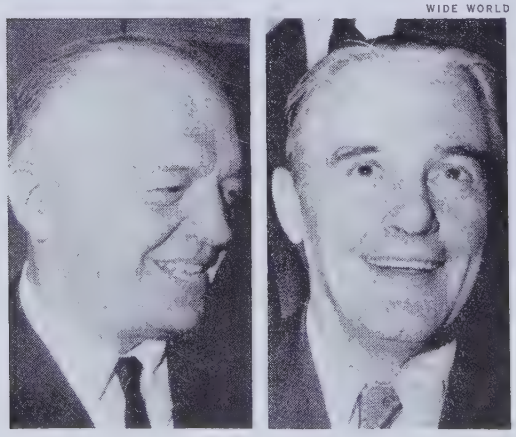
Public school enrollment (September 1959) was 243,500, and parochial school enrollment was 144,660. The tentative public school budget approximated $95 million, but increases were anticipated if the Pennsylvania General Assembly approved a two mill increase in the school district's realty tax rate.

Principal sources of city revenue are the real estate tax of $2.06 per $100 of assessed valuation, the 1½% income tax, the four mill personal property tax, and the three mill mercantile license tax, in addition to water and sewer rental income. Public school revenues are derived principally from a $1.40 realty tax on each $100 of assessed valuation, a four mill personal property tax, a one mill gross receipts tax on businesses other than financial institutions, and state grants-in-aid.

As of July 1959 there were 1,687,000 persons employed in the Philadelphia eight-county area and about 110,000 unemployed. The total value of manufactured products in 1957 was in excess of $5.5 billion, and the most important classes of products were metals, petroleum, textiles, chemicals, paper and printing, and food. Bank clearings in 1958 approximated $66 million, and retail sales in the city exceeded $2.7 billion. In the same year the Port of Philadelphia handled approximately 104 million tons, of which imports accounted for 42.4 million.

Harold E. Stassen (*left*), former Minnesota governor, was defeated in the Philadelphia mayoralty election, November 3, by Richardson Dilworth (*right*), the Democratic incumbent.

WIDE WORLD



Redevelopment activities began in 1959 on the 2,500-acre Eastwick project, the largest of its kind in the nation. More than $400 million of private and public funds are expected to be invested in the project's 10,000 to 12,000 planned new dwellings. Demolition began in the Washington Square East area early in 1959, and food markets from the area were relocated in the new $100 million Food Distribution Center, the first section of which was opened for occupancy in June. With the completion of the $25 million Torresdale Filter Plant in August, Philadelphia is said to have the first completely "push-button" type of filtration plant in the nation. Library Hall, the new $2 million home of the library of the American Philosophical Society situated in Independence National Historical Park, was dedicated on November 11.

Significant steps have been taken to solve the city's number-one traffic and transportation problem through the extension of the $65 million Schuylkill Expressway into the heart of the city and the establishment of routes for the Delaware and Crosstown expressways. The final major Schuylkill Expressway link was opened on Nov. 18, 1959, and on June 1 the new Pennsylvania Boulevard Bridge, connecting with the expressway, was opened to traffic over the Schuylkill River.

Extraordinary results have been achieved through cooperation of the city, the railroads, and the local transit company by reducing fares and improving services to northwestern portions of the metropolitan area. At the end of the first year (1958–59) of Operation Northwest, use of public transportation facilities had increased 40%—380,000 more riders. An even larger project has been launched for the northeastern sections.

In the municipal election of Nov. 3, 1959, incumbent Mayor Richardson Dilworth defeated his nationally known Republican opponent, Harold E. Stassen, by a 2-to-1 majority. The mayor's plurality of 205,000 votes was the largest ever accorded a Democratic candidate for mayor of Philadelphia. Democratic candidates from all 10 councilmanic districts were elected by comfortable margins, and five of the seven at-large councilmen were elected on the Democratic ticket by substantial margins. The only Republicans to be elected were two at-large councilmen, one city commissioner, and four magistrates, made possible by the city's system of limited voting. Two public improvement loan proposals for the city, involving outlays of $40 million, were approved by the voters. Election results were quite generally interpreted as a popular endorsement of good city government under two successive Democratic administrations.

JEWELL CASS PHILLIPS,
Professor of Political Science,
University of Pennsylvania.

PHILANTHROPY. Total philanthropy in the United States in 1959 was estimated at $7.3 billion, $200 million more than the 1958 estimate. Of the total, the highest in history, individuals contributed about $5.8 billion, or 79.2%; corporations, $540 million; foundations, $518 million; and bequests, $460 million. Distribution was as follows: religion, $3.7 billion; health and welfare causes, $2.4 billion; education, $875 million; foundation endowments, $220 million; and other causes, $146 million.

Records of publicly announced giving in ten major cities in the United States show that for the year 1959 there were 739 benefactions of $100,000 or more, totaling $469.4 million. Of the amount, 121 gifts totaled $77.4 million; 120 bequests, $143.6 million; 43 corporate gifts, $20.3 million; and 455 foundation grants, $228.1 million. Educational institutions received $259.6 million; health and welfare causes, $125.3 million; religion, $22.6 million; fine arts, $23.4 million; and foreign organizations, $29.5 million. In addition, $9 million was given to promote better international relations, including $6.2 million from the Ford Foundation to the United Nations for construction of a new library.

The largest sum recorded was a $20 million grant by the Leonard C. Hanna, Jr., Fund of Cleveland to Western Reserve University and allied university hospitals for endowment and buildings. Also in 1959, the wills of the late Vincent Astor and Edward J. Noble, both of New York, and Michael L. Benedum, of Pittsburgh, left most of the deceaseds' vast estates to foundations bearing their names.

CHARLES A. ANGER,
Chairman, Board of Directors,
John Price Jones Company, Inc.

PHILATELY. United States Stamps.—In 1959, 28 new stamps were issued in the United States, many of which directed attention to the nation's history and heritage and to current happenings.

Postmaster General Arthur E. Summerfield continued his "Champion of Liberty" series, paying tribute to the South American soldier and statesman, José de San Martín (1778–1850), and to Ernst Reuter (1889–1953), the post-World War II mayor of West Berlin.

There follows a list of United States issues in 1959, with places of first-day sales in parentheses:

January 3—7-cent blue airmail, in honor of Alaska's admission to the Union (Juneau, Alaska).

February 12—1-cent green, commemorating the sesquicentennial of Lincoln's birth (Hodgenville, Ky.).

February 14—4-cent green, commemorating the centenary of Oregon's statehood (Astoria, Oreg.).

February 25—4-cent blue and 8-cent red, blue, and ocher, honoring José de San Martín; for the "Champion of Liberty" series (Washington, D.C.).

February 27—3-cent purple, commemorating the sesquicentennial of Lincoln's birth (New York, N.Y.).

March 16—4½-cent green, with Andrew Jackson's home, The Hermitage; for the regular series (Hermitage, Tenn.).

April 1—4-cent blue, commemorating the 10th anniversary of NATO (Washington, D.C.).

April 6—4-cent light blue, honoring Arctic exploration, particularly Admiral Peary's discovery of the North Pole in 1909 (Cresson, Pa.).

April 20—8-cent maroon, with the inscription "World Peace Through World Trade" (Washington, D.C.).

May 1—4½-cent green in coil form, with Andrew Jackson's home, The Hermitage; for the regular series (Denver, Colo.).

May 30—4-cent blue, commemorating the sesquicentennial of Lincoln's birth (Washington, D.C.).

June 6—12-cent red, with a portrait of President Benjamin Harrison; for the regular series (Oxford, Ohio).

June 8—4-cent silver, commemorating the centenary of the discovery of silver in Nevada (Virginia City, Nev.).

June 17—2½-cent blue, with an illustration of the Bunker Hill Monument; for the regular series (Boston, Mass.).

UPI; WIDE WORLD

New stamps of 1959: (*Left, top and bottom*) commemorative issues mark statehood for Alaska (January 3) and Hawaii (August 21); (*right, top and bottom*) Canada and United States observe opening of St. Lawrence Seaway, June 26.

June 26—4-cent red, white, and blue, in honor of the opening of the St. Lawrence Seaway (Massena, N.Y.).

July 4—4-cent, illustrating the 49-star American flag in natural colors on a white background (Auburn, N.Y.).

August 17—7-cent red, white, and blue airmail, commemorating the centennial of the ascent of the balloon *Jupiter*, which carried U.S. mail (Lafayette, Ind.).

August 21—7-cent red airmail, in honor of Hawaii's admission to the Union (Honolulu, Hawaii).

August 26—4-cent yellow, green, and blue, publicizing the national soil conservation program (Rapid City, N. Dak.).

August 27—10-cent red, white, and blue airmail, commemorating the 1959 Pan American Games (Chicago, Ill.).

August 27—4-cent brown, commemorating the centennial of the discovery of petroleum in Pennsylvania (Titusville, Pa.).

September 9—2½-cent blue in coil form, with an illustration of the Bunker Hill Monument; for the regular series (Los Angeles, Calif.).

September 14—4-cent green, commemorating the centennial of the American Dental Association (New York, N.Y.).

September 29—4-cent bronze-green and 8-cent red, blue, and ocher, honoring Ernst Reuter; for the "Champion of Liberty" series (Washington, D.C.).

November 20—15-cent black and orange on white airmail, with the Statue of Liberty and the inscription "Liberty for All"; for a new regular airmail series (New York, N.Y.).

December 3—4-cent maroon, commemorating the world's first successful ovarian operation, performed by Dr. Ephraim McDowell in 1809 (Danville, Ky.).

In line with the postmaster general's "history and heritage" theme for stamps, an announcement was made that a new series, to be entitled "American Credo," will be released. These items are not pictorials; rather, each stamp will be inscribed with a quotation by a famous American of the past. For example, the first of the series, scheduled for issue in January 1960, will carry words from Washington's Farewell Address: "Observe good faith and justice toward all nations."

Mr. Summerfield predicted that American stamps in 1960 will be more colorful than ever. Fulfillment of this prediction will be facilitated by the second multicolor press which the government imported from Switzerland.

Foreign Stamps.—In Africa, each of the former French possessions that are now autonomous republics within the French Community (q.v.), plus French Togoland, which is scheduled for self-rule in 1960, and newly independent Guinea, has issued or will issue stamps as a republic (*république*).

Several popular stamps with religious themes were issued during 1959. West Germany released a 20-pfennig stamp commemorating the display in Trier Cathedral of a garment that is reputedly Christ's robe for which the Roman soldiers cast lots at the Crucifixion. Nicaragua issued a series in honor of an earlier visit by Francis Cardinal Spellman of New York. In Australia a 5-pence

purple Christmas stamp was distributed; this item illustrates the Magi on their way to Bethlehem.

Miscellaneous.—The renowned United States 1918 airmail invert—a sheet of 100 24-cent stamps on which the center design, an airplane, was printed upside down—continued to make philatelic news in 1959. A copy of the stamp was sold at auction in December for $6,400. According to Henry M. Goodkind, the stamp's recognized authority, the whereabouts of 88 of these items has now been traced.

Canada produced a similar error in 1959. A number of its Seaway commemoration stamps, released on June 26, were printed with an inverted center design. No definite value has been determined for copies of this stamp, reportedly limited to two sheets of 200 each.

Another invert was discovered by a New Jersey schoolboy. In this case, one copy of a design-inverted 1954–55 stamp from Kenya-Uganda-Tanganyika was brought to light. Again, no definite value was placed on the find.

KENT B. STILES,
Stamp Editor, "The New York Times."

PHILIPPINES. The Republic of the Philippines, comprising about 7,100 islands and islets in the western Pacific, lies north of Indonesia. It covers a total area of 115,600 square miles. The largest islands are Luzon (40,420 square miles), Mindanao (36,537), Samar (5,050), Negros (4,905), Palawan (4,550), and Panay (4,446).

Population.—As of July 1, 1959, the estimated population of the Philippines was 23,563,000. The most densely populated provinces and their 1958 estimated populations are Cebu (1,350,130), Negros Occidental (1,248,730), Leyte (1,210,240), Pangasinan (1,106,560), Iloilo (981,410), and Samar (910,280). The principal cities and their 1958 estimated populations are Manila, the former capital, (1,182,790), Cebu (201,362), Davao (133,754), Iloilo (132,362), Quezon City, the new capital (129,304), and Zamboanga (124,202).

Government.—The chief executive of the republic is Carlos P. Garcia (Nacionalista), who was elected to a 4-year term on Nov. 12, 1957. The vice president is Diosdado Macapagal (Liberal). There is a bicameral Congress, consisting of a Senate of 24 members elected at large for overlapping 6-year terms, and a 102-member House of Representatives chosen by congressional districts for a 4-year term. A Council of State, composed of members of the cabinet, the Senate president, the speaker of the House, and some distinguished Filipinos like former Commonwealth President Sergio Osmeña, acts as an advisory and consultative body to the government.

Education.—In the 1957–58 school year there were 29,096 public schools, with an enrollment of 3,805,562; and 3,538 private schools, with an enrollment of 801,262. The state-supported University of the Philippines enrolled 16,301 students at the opening of the 1957–58 academic year. English is the medium of instruction, but Tagalog, the national language, is taught in all schools. A new secretary of education, José E. Romero, assumed office in June 1959, succeeding Manuel Lim.

Religion.—The constitution guarantees freedom of worship and permits religious instruction in the public schools. About 83% of the people (1948 census) are members of the Roman Catholic Church. 8% are Aglipayans (Philippine Independent Church), 4% are Moslems, 2% are Protestants, and 3% belong to other denominations.

Finance.—In the 1957–58 fiscal year the national government expended 1,176.7 million pesos,[1] including 461.9 million for economic development, 354.8 million for social development, 176.9 million for national defense, and 114.8 million for general government. The national income in the calendar year 1958 was 9,232 million pesos, and the estimated per capita income 399 pesos. The cost-of-living index in Manila (1953 = 100) rose from 102 in 1957 to 105 in 1958. (See also below, *Principal Events, 1959.*)

Transportation and Communications.—The 711-mile railway network carried 10,035,236 passengers and 1,362,609 tons of freight in 1958, and domestic airways carried 477,600 passengers and 17,285 pounds of freight. There were 6,990 coastwise vessels with a gross tonnage of 2,871,357. Registered motor vehicles included 77,983 passenger cars and 77,962 trucks, and there were 21,875 miles of highways. Of the 2,903 radio stations in operation, 1,286 were owned and operated by the government. Publications numbered 769, with a combined circulation of 4,917,583. As of 1957, there were 63,400 telephones.

Production.—In 1958 the gross national product was valued at 10,464 million pesos. The index of manufacturing (1953 = 100) averaged 170, and there were 3,120 manufacturing establishments, which produced goods worth 2,004 million pesos. Leading manufactured products and their value in millions of pesos were as follows: chemicals, 315.07; foodstuffs, 290.19; tobacco, 215.82; textiles, 178,33; electricity, gas, and fuel, 116.6; metal products, 114.6; and wood and cork, 110.07. Mineral production included gold (422,833 fine ounces), silver (497,987 fine ounces), mercury (3,321 flasks), and, in metric tons, copper (47,030), chromite ore (416,310), lead (1,284), manganese ore (22,308), and iron ore (1,098,732). Electric power production totaled 1,280.4 million kw.-hr. In 1958, 37,750,000 bushels of corn and 195.9 million pounds of abacá were produced; in the crop year 1958–59, 1,436,240 short tons of centrifugal sugar and 7,709.9 million pounds of palay (rough rice). Output of root crops amounted to 1,330,000 metric tons in 1957–58; that of fruits and nuts, to 678,400 metric tons.

Foreign Trade.—The foreign trade of the republic in 1958 totaled 2,026.1 million pesos, of which 1,106.5 million represented imports and 919.6 million exports. Leading countries trading with the Philippines and the percentage of the share of each in the country's foreign trade were: United States (53.76), Japan 15.76), Netherlands (4.87), Indonesia (4.25), West Germany (3.97), and Great Britain (2.35). In the first 6 months of 1959, Philippine imports amounted to 465 million pesos; exports, to 540 million.

TEN LEADING PHILIPPINE EXPORTS AND IMPORTS, 1958

Export items	Value (million pesos)	Import items	Value (million pesos)
Coconut products	340.71	Machinery	147.52
Sugar	240.29	Mineral fuels	120.00
Logs and lumber	117.69	Textiles	114.90
Minerals	78.12	Cereals	104.11
Fibers (abacá)	62.63	Base metals	88.00
Cotton textiles	19.08	Dairy products	54.78
Wood manufactures	18.48	Transport equipment	53.91
Tobacco	16.41	Machinery appliances	42.20
Fruits	10.36	Paper	33.99
Chemicals	2.61	Metal manufactures	32.53

Principal Events, 1959. *Domestic Affairs.*—The biggest budget in Philippine history went into effect on July 1, 1959. It called for an outlay of 1.1 billion pesos, of which 980 million pesos were for ordinary public services and 241 million for development projects. Of the latter, 87 million, to be raised from a special margin tax on foreign exchange (see above, *Finance*), was for public works. President Garcia explained that the huge budget was needed to provide the people in rural communities with essential public services. Other notable measures enacted in the 1959 session of Congress were a civil service reform bill, designed to promote honesty and efficiency in the public service; a barrio charter bill, granting inhabitants of rural communities a large measure of self-government; a local autonomy bill, relieving provincial and municipal governments of unnecessary supervision and control on the part of the central government; and a bill giving residents in all but a few specified cities the right to vote for mayor and city councilors in their respective cities.

On November 10, 1959, regular elections were held for provincial and municipal officials and for eight new members of the Senate. Besides the two leading political parties, the Nacionalista and the

[1] At the official selling rate, U.S.$1 = 2.015 pesos. On July 17, 1959, however, a 25% margin over this rate went into effect for sales of exchange for most payments, resulting in an effective rate of $1 = 2.519 pesos.

Liberal, a third group, the Grand Alliance, organized by prominent personalities from the leading political parties, vied for elective posts. Main issues brought up in the campaign were nationalism, the status of the country's economy, and corruption in the government. Of the eight contested Senate posts, the Nacionalistas won five and the Liberals three. One of the Nacionalista winners was Congressman Genaro Magsaysay, younger brother of the late President Ramón Magsaysay.

Foreign Affairs.—In January 1959, Prime Minister Abdul Rahman of the Federation of Malaya paid a five-day visit to the Philippines. In private conferences he and President Garcia discussed the need for mutual cooperation in the endeavor to "meet the challenge of Communism in this region." In April, President Garcia in turn made a five-day state visit to South Vietnam. Reporting on the result of his visit, the president stated that his trip convinced him "of the wisdom of our policy of forging closer ties with our Asian neighbors." On September 7, the Philippines and Japan signed a $47.8 million agreement for the undertaking, within the framework of the Philippine-Japanese reparations treaty, of two important projects: construction of a multipurpose dam near Manila, and expansion of the Philippines telecommunications network.

On October 12, after extended talks between Felixberto M. Serrano, the Philippine secretary of foreign affairs, and United States Ambassador Charles E. Bohlen, a memorandum of agreement was signed in Manila on the revision of the 1947 military bases agreement between the two countries. Under the terms of the new agreement, the United States would retain only four major bases in the Philippines: Sangley Point and Subic Bay naval stations, Clark-Stotsenberg Air Force Base, and Camp John Hay. The areas of these bases were delimited. In addition, the United States agreed to consult the Philippine government before establishing long-range missile sites at the bases. While Ambassador Bohlen and Secretary Serrano were in general agreement on jurisdiction over American military personnel who commit offenses in the Philippines, further negotiations were to be undertaken by Bohlen's successor, John D. Hickerson. Meanwhile, the question of Philippine financial claims against the United States remained unsettled. The United States position was set forth in a note of August 4, at which time payment of $23,862,751 was made in settlement of a Philippine claim arising from the revaluation of the dollar in 1934.

The Philippines played host to approximately 12,000 boy scouts from 51 nations who participated in the Tenth World Scout Jamboree, held at Mount Makiling National Park in July 1959. This was the first international scout jamboree held in Asia.

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PHILOLOGY. See LINGUISTICS.

PHILOSOPHY. Throughout 1959, many meetings, books, and articles commemorated the 100th anniversaries of the births of the noted philosophers John Dewey, Edmund Husserl, and Henri Bergson, and observed the centenary of the publication of the *Origin of Species* by Darwin (see also GENETICS). The death in late 1958 of G. E. Moore (b. Nov. 4, 1873; d. Oct. 24, 1958), an English philosopher who had many followers in the United States, was also noted in 1959.

Dewey's birthday was especially celebrated in the United States. Most notable in this connection were several meetings of the American Philosophical Association. The APA's Eastern Division met at the University of Vermont in Burlington, Dewey's birthplace (December 1958), and papers were read on "The Background of Dewey's Philosophy." The Western Division convened at the University of Wisconsin (April 1959), where the topics discussed were "Dewey's Philosophy of Morals, Religion, Metaphysics, and Value Theory." The Eastern Division again held meetings in honor of the philosopher at Columbia University (December 1959), where Dewey taught for many years. Dewey's achievements represented the high-water mark of a philosopher's influence on practical affairs in many fields—education, morals, and politics. His educational philosophy and liberalism, however, have been recently undergoing considerable attack.

The year 1959 reflected the renewed interest of philosophers in both practical and international issues. The Third East-West Philosophers' Conference was convened at the University of Hawaii (June 22—July 31), where some 80 scholars from all over the world sought to develop the "implications of philosophy East-West for practical affairs and world understanding." The conference significantly tried to build a bridge between the East (primarily Asia) and West, and it afforded a wide basis for contacts among many leading thinkers from India, the Islamic countries, Japan, Taiwan, Europe, and the United States. Asians are rapidly becoming modernized and Westernized in 20th century philosophy, but more recently many Western philosophers have become interested in Asian philosophy, comparative philosophy East-West, and Zen Buddhism. The journal *Philosophy East-West,* in the last decade, has devoted itself to this theme, and a great number of reprints of Oriental philosophical documents are being published in the United States. One result of the conference was the agreement that to form a basis for world cooperation people of one civilization need to understand the philosophical traditions of other civilizations.

Philosophical interest in contemporary problems was also shown in other meetings. The Sixth Inter-American Congress of Philosophy, held at Buenos Aires (August), had on its agenda the theme, "The Mission of Philosophy in the Present World; Philosophy and Contemporary Crises." The Western Division of the APA discussed the special study brought out under its auspices, *The Public Interest,* by W. Leys and C. Perry, in which the role of philosophy in society is examined. The general theme of the American Catholic Philosophical Association at its meetings in New York (March 31–April 1) was "Contemporary American Philosophy." Another meeting of importance was that of The International Congress for Logic, Methodology, and Philosophy of Science, held at Stanford University (August).

The year 1959 saw the publication in English translations of a number of books by contemporary European philosophers who have had great influence in the United States. These included *Introduction to Metaphysics* by Martin Heidegger, *Distinguish to Unite; or, The Degrees of Knowledge* by Jacques Maritain, *The Philosophy of Space and Time* (late 1958) and *Modern Philosophy of Science: Selected Essays* by Hans Reichenbach. *The Logic of Scientific Discovery,* written a generation ago, was newly translated and revised by its author, Karl Popper. Also appearing were the preliminary studies for the important work, *The Blue and Brown Books* (late 1958), by the

British analyst, Ludwig Wittgenstein; *Logical Positivism,* a book of readings edited by A. J. Ayer; and Bertrand Russell's *Wisdom of the West,* a history of philosophy. Two volumes of papers in tribute to two European philosophers also appeared: *An Etienne Gilson Tribute* and *Theology of Culture,* for Paul Tillich.

Many books on ethical and social philosophy were published during the year under review. *Anthropology and Ethics* by M. and A. Edel traced the implications of cultural anthropology for ethics. *Psychoanalysis, Scientific Method and Philosophy* (edited by Sidney Hook) brought together psychoanalysts and philosophers to explore the bearings of psychoanalysis on science and human life. *Education in the Age of Science* (edited by Brand Blanshard), a symposium of findings of philosophers and educators, dealt with contemporary educational philosophy. And *Nomos II: Community* (edited by Carl J. Friedrich) was a symposium prepared by the American Society for Political and Legal Philosophy. *The Human Condition* (late 1958) by Hannah Arendt was widely reviewed. Paul Weiss presented his social philosophy in *Our Public Life,* Patrick Gardiner a book of readings in *Theories of History,* and Richard Brandt a textbook called *Ethical Theory.*

Other noteworthy publications were the long-awaited Carus Lectures of Jacob Loewenberg, *Reason and the Nature of Things,* reflections on the cognitive role of philosophy, and George Boas' *The Inquiring Mind,* a study of the ways in which ideas are formed. Also appearing were John H. Randall's *The Role of Knowledge in Western Religion* (late 1958), a naturalistic and functional account, and Percy W. Bridgman's *The Way Things Are.*

Paul W. Kurtz,
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PHOSPHATES. See Index entry.

PHOSPHORUS. See Index entry.

PHOTOGRAPHY. The optimism expressed early in 1959 by the photographic industry has been justified. There was a healthy increase during the year in the sales of nearly all photographic materials and equipment in the United States; production and sales also increased in other countries; and imports and exports increased generally. Of interest is the growth of the Japanese photographic industry, which in 1958 produced about 1.5 million cameras, of which 40% were exported. Japan is one of the world's major exporters of cameras, lenses, and optical equipment, and the United States is one of her largest customers. Russian-made cameras appeared in the European market.

Automation was more evident than ever, not only in miniature cameras, but also in roll-film and larger cameras, in enlarging and printing equipment, and in processing systems. New high-speed films with improved sharpness and grain characteristics became available for both black-and-white and color photography.

The amateur market continued to show strong growth, primarily because of the increased use of color negative materials which provide either slides or color prints, and because of the availability of both still and motion-picture cameras having essentially automatic operation. Increased interest in 8-mm. color movies and in available light photography was evident.

Strong growth was also evident in 1959 in the broad field of scientific and applied photography. Many new uses for photographic processes were described, ranging from the identification of subatomic particles to pictures of the far side of the moon. Special sensitized materials, new exposing devices, and more efficient processing systems were introduced.

Still Photography.—New cameras and lenses have set mechanical and optical standards exceeding the highest previously considered possible, particularly precision miniature cameras. Generally the design improvements have made it possible to make exposures at higher shutter speeds and smaller lens apertures, resulting in new action-stopping power, optical quality, and depth of field. Other developments included high-speed emulsions and super-fine-grain 35-mm. films which, when developed with new high-energy fine-grain developers, provide image quality approaching that of larger negatives. These improvements have brought about an increase in the use of roll-film, 70-mm. and miniature cameras in press, industrial, commercial, and professional photography.

During recent years, simplification and automation in the operation of camera equipment have been predominant in design. Probably the most widely adopted design was automatic or semiautomatic exposure control, obtained by mounting on the front of the camera a photoelectric cell which measures the illumination of the scene. In fully automatic exposure control systems the aperture or the shutter speed is set without attention from the camera operator, while in semiautomatic systems the meter reading indicates the shutter speed required for a given film, and the setting is made manually.

A new trend involves automatic setting of the shutter rather than the diaphragm. The Polaroid Photoelectric Shutter No. 400, the Gauthier Pronton SLK, and the Deckel Synchro-Compur shutter are coupled with the exposure meter. The Minolta V-2 35-mm. camera contains the first leaf shutter to provide a shutter speed of 1/2,000 second.

The interchangeability of complete lenses necessitated the use of focal plane shutters until recently, when some cameras were equipped with "behind-the-lens" shutters. Spring-loaded automatic diaphragms are being replaced by the new instant reopening ones, which open immediately after the exposure, regardless of how long the shutter button is depressed.

The instant-return reflex-mirror principle, said to have been originated by the Asahi Optical Company, has been incorporated in several cameras, including the Nikon Automatic Reflex. The automatic diaphragm of this camera has a preview control device which enables the photographer to precheck the depth of field at any given f-stop.

A new design which may initiate a trend was introduced in 1959 in the Iloca Electric 35-mm. Camera. A battery-powered motor located in the film spool automatically winds the film and cocks the shutter after each exposure. The power from two small pen-light batteries is said to be sufficient for 1,000 exposures. The Graphic 35 Electric, based on the same principle and manufactured in Germany was also announced.

The Konica III-M 35-mm. camera is designed to provide a choice between single-frame (24 x 18-mm.) and standard double-frame (24 x 35-mm.) negative sizes; it is also equipped with a fully self-correcting viewfinder system.

Several small twin-lens reflex cameras were marketed, including the 4 x 4-cm. Sawyer Mark IV with f/2.8 lens, the Mamiya C2 (said to be the first twin-lens reflex camera with interchangeable sets of lenses), and the new, fully automatic Zenza Bronica 2¼ x 2¼ reflex camera, with a Nikkor 75-mm. f/2.8 lens.

The simplicity of the box-camera with automatic exposure control was evidenced in the Bell & Howell Infallible and the Kodak Brownie Starmatic cameras. Electric-eye exposure control was also built into the Super Ikonta IV.

Canadian Applied Research Limited's new 70-mm. Studio Camera–Type 320 provides the portrait photographer with a potential increase in the production of high-quality 1⅞ x 1⅞-inch negatives.

Amateur Motion Picture Cameras.—Camera automation has had a marked effect on the quality of 8-mm. amateur movies. Two systems of photoelectric exposure control are used: direct control of lens aperture by a photoelectric cell, and indirect control by means of a battery whose current output is controlled by a light-sensitive cell. It is said that the indirect system can handle a wider range of film speeds ("follow pointer exposure control"). This system is used in the Konica Zoom 8 camera, combined with variable-focal-length lens, prism-reflex viewing, and electric drive.

Photoelectric-cell exposure meters coupled directly to the diaphragm have been incorporated in the Elgeet Synchronex-8, the Sekonic 8-mm., the Wollensak Electric Eye-Matic, in Revere and Bell & Howell cameras, and in three 8-mm. Kodak motion picture cameras: the Brownie Automatic Movie Camera (f/2.3 lens); the Kodak Cine Automatic Camera (f/1.9 lens); and the Kodak Cine Automatic Camera, Turret (f/1.9 lens). The directly coupled exposure controls are operated by one-billionth horsepower motors powered by the energy of light. A variable-focal-length or "zoom" lens is featured on the Automatic f/1.9 Kodak Zoom 8 Camera, a feature introduced earlier by Revere.

The 8-mm. Bolex B-8L represents a radical departure in automatic exposure control with its light meter behind the lens, thereby permitting computation of the exposure only on the actual scene being photographed. The Yashica Turret 8 with its f/1.4 lenses and variable speeds provides filming under virtually any lighting conditions.

A trend seems to be in progress with respect to electric-drive motion-picture cameras. The new models of the Eumig Electric camera provide full lens interchangeability by accepting any standard D-mount movie lens. Four makes of battery-powered 8-mm. motion-picture cameras were imported for the United States market from Austria and Japan.

New accessories were announced for the Camex Reflex 8 (a single-lens reflex movie camera), including a Pan-Cinor 10-to-30-mm. f/2.8 Varifocal Zoom lens, electronic flash synchronization, an anamorphic wide-screen attachment, and a new Angenieux Retrofocus 6.5-mm. f/1.8 wide-angle lens.

More efficient projection became available in 1959 because of new projector lamps of low wattage and high efficiency, projection bulbs with built-in mirrors which direct maximum light through the aperture, and automatic threading of the film. The Photo-Tronic Model 800 unit combines a projector and a high-fidelity tape recorder.

Lenses.—Variable-focus or zoom lenses became more prominent in 1959, particularly for use on motion picture cameras. Once regarded as a special-purpose tool, the zoom lens is now being featured as standard equipment on several 16-mm. and 8-mm. cameras. The focal length varies over a 3-to-1 or 4-to-1 range on most zoom lenses, while through-the-lens focusing and viewing permits an exact view of the scene without parallax. The Som Berthiot Pan Cinor-30 DV lens is said to be the first zoom lens to add reflex viewing to 8-mm. cameras. Perhaps this trend will apply to the miniature camera field in the future, especially in view of the announcement of the Voigtlander Zoomar f/2.8 lens designed for 35-mm. single-lens reflex cameras.

Many new wide-angle and telephoto lenses were introduced in 1959, a considerable number of them having automatic diaphragms. Significant design improvements, especially in "retrofocus" lenses, were made by Japanese, German, and French manufacturers. The Brooks-Plaubel Veriwide 100 camera is equipped with a Schneider Super-Angulon lens that covers an angle of 100°. The Steinheil Auto-Quinaron 35-mm. f/2.8 lens is both a 7-element wide-angle lens of 62° and a close-up lens.

Enna Werk of Munich introduced its automatic-mount Magic Mount for single-lens reflex cameras in 1959. This mount contains a single mechanism which actuates the diaphragm in each of a series of lenses.

Flash.—Electronic flash units with transistorized power-generating circuits were introduced in 1958. In some 1959 designs a transistorized voltage-monitor circuit is employed to turn on the power only when needed, and thereby reduce the continuous high battery drain. The light output varies very little from the first flash to the last. This design is featured in the Braun Hobby Speedlight, the Multiblitz Color SL, and in the Mecablitz Models 101 and 200. The Heiland 72A Strobonar offers a rapid cycling of 2 to 5 seconds.

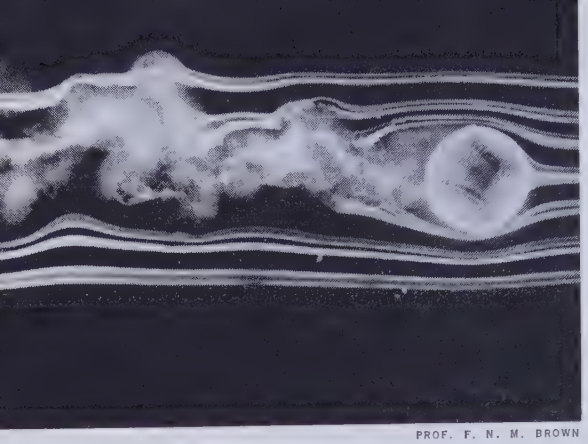
The use of zirconium has allowed manufacturers to make flash lamps smaller and smaller. In 1958, Sylvania introduced the M-5 and M-25 lamps with a lumen-second output of 16,000, which is about four times that of a No. 5 lamp. The tiniest flash lamp available is the new General Electric AG-1, which is about 1¼ x ⅜ inch in size, is made completely of glass, and has an output of 7,000 lumen-seconds for the clear type and 4,000 for the AG-1B lamp. It is equivalent to the M-2 in light output, but is only one fourth as large.

The Sylvania Floodflash FF-33 lamp has a flash duration of 1.75 seconds, which is more than 100 times longer than the duration of amateur flash bulbs. With this lamp it is possible to expose 37 feet of motion picture film at 1,000 frames per second or 75 feet at 2,000 frames per second.

Enlargers and Projectors.—Slide projectors marketed in 1959 incorporated various automatic features, including predetermined cycling at specified time intervals, and controls which enable the operator to repeat, skip, or hold slides at will during automatic projection, as well as to reverse the sequence. E. Leitz, Inc. introduced its Ultrasonic Remote Control Unit. The remote unit controls the projector by means of a high-frequency note (not audible to humans) which is detected by a receiving unit attached to the projector control. The Magnematic Sound Slide Projector is the Keystone 510 projector with a 500-watt lamp and an automatic tape cartridge.

The Minox Slide Projector was designed especially for ultraminiature slides in Minox mounts, and is equipped with a 35-mm. f/1.6 lens and a special condenser system.

The Simmon Brothers' new Chromega D-4 Enlarger features a novel incandescent illumination system which furnishes high light output at moderate wattage and has the correct continuous spectrum for color. The system consists of two lamps set in hollow jackets from which the light is reflected through small apertures into an "integrating sphere" where the light is thoroughly mixed and evenly illuminates the entire negative,



PROF. F. N. M. BROWN

Photograph of wind tunnel experiment showing that baseball curve is no optical illusion. Smoke streamers show path of wind coming from right at 60 feet a second against a ball spinning at 1,000 rpm. Air is speeded up at the surface of the ball which moves in the direction of the wind, resulting in lowering of pressure (in accordance with the Magnus effect); similarly, pressure is increased at opposite side of ball, where ball's surface moves against wind. The difference in pressure makes the ball curve.

which may range from 35-mm. to 4 x 5 inches.

Professional Motion Pictures and Television.—Motion picture exhibitors in the United States have shown a definite interest in ultrawide screen processes such as Cinerama, Cinemiracle, and Todd-AO, but there is a need for a single-camera, single-projector, 35-mm. system adaptable to all theaters. The Carney-Smith system is a promising process of this kind. It places three scene segments within each standard 35-mm. frame. A standard 35-mm. camera is fitted with an auxiliary lens attachment which encompasses a 180-degree field. The optical attachment breaks the scene into three parts. The two side areas of the scene (each 45 degrees wide) are recorded side-by-side in the upper half of the frame, while the third area (encompassing the central 90 degrees of the scene) is recorded across the lower half of the frame. In projection the 45-degree segments are "criss-crossed" so that the projected scene is normal. The aspect ratio is 4½-1. There is said to be no appearance on the screen of overlap, separation, or jumping between segments. (See also MOTION PICTURES; RADIO AND TELEVISION.)

Photographic Sensitized Materials.—The advent of high-speed films such as Ansco Super Hypan and Kodak Royal-X Pan has made the ASA exposure index unrealistic, and the trend has been to remove the safety factor of 2½ times and to state practical exposure indexes. Ansco has published a list of films in which the exposure indexes were roughly doubled. Kodak has recommended more practical exposure indexes since 1958, but it will not publish revised indexes until changes are made in its rating system by the American Standards Association.

A new panchromatic sheet film, Versapan, introduced by Ansco in 1959, is said to combine ultrafine grain, medium speed, and complete contrast control by regulation of development. The professional 35-mm. Kodak Plus-X Pan Film announced in 1958 became available in 1959 in 120 and 160 roll film sizes with ASA exposure indexes of 80 daylight and 64 tungsten and with practical indexes twice these values.

The Polaroid Corp. introduced a "high-speed program" based on a new black-and-white film called 3000 Speed Polaroid Land Picture Roll with exposure indexes of 3,200 daylight and 2,400 tungsten (about 15 times faster than Polaroid Pola-Pan 200 Film). To provide an "available light system," Polaroid has also marketed a "wink" light for the illumination of shadows, an especially sensitive exposure meter (Model 625), a plug-in repeating-flash unit taking the new AG-1 flash lamps, the Photoelectric Shutter No. 440 mentioned above, and a special filter to reduce the film speed to approximately ASA 200 for outdoor photography.

Two high-speed color films were introduced by Eastman Kodak, namely Kodak Color Reversal Film SO-260 and Kodak Color Reversal Film Type B SO-270, having exposure index ranges of 160 to 500 and 125 to 375, respectively. The exceptional speeds, combined with more than adequate sharpness, grain pattern, and color reproduction, make them suitable for all kinds of scientific and industrial recording, under a wide variety of natural and artificial lighting conditions unsuitable for conventional films.

A new enlarging and contact printing material, Polylure Paper, which combines warm image tones with a contrast range controllable by suitable filters, was announced in 1959 by Eastman Kodak Co. The new Kodak PolyToner provides a variety of image tones with this paper.

Color Photography.—The use of color film continues to grow rapidly, not only in amateur photography and the motion picture business, but in highly specialized industrial, scientific, and engineering applications. Because of its versatility, the color negative has played an important role in this growth. It is available in sizes for roll-film and miniature cameras, and provides a negative for making contact prints and enlargements in color or black-and-white, and also for making positive color transparencies. Automation and simplified operation in camera equipment, as well as an improvement in color processing and printing services, also have been significant factors in the growth of color photography.

Probably the outstanding technical developments in color photography in 1959 were represented by the introduction of higher-speed color products. Ansco announced its 8-mm. Ansco Moviechrome 8 Film with exposure indexes of 20 daylight and 10 tungsten, and Kodak High Speed Ektachrome Films, Daylight and Type B, with exposure indexes of 160 and 125, respectively, were introduced. An improved, faster Kodak Ektachrome Film for professional use was made available in sheet and roll film sizes for Process E-3 processing; the 120 and 620 Daylight Type has an exposure index of 50, and the Type B an index of 32. The new 35-mm. Eastman Color Negative Film, Type 5250, for professional motion pictures, has exposure indexes of 50 tungsten and 32 daylight (when used with a conventional conversion filter)—about twice as fast as previous films.

Manufacturers are supplying improved processing and printing equipment for amateurs as well as for color-processing studios and photofinishers. The Simmon Omega Tri-color Computer, using a guide test, automatically provides correct exposures, compensating for color balance, negative density, color temperature of the source, and other factors. The LogEtronic K-5 Enlarger offers automatic dodging, exposure control, and automatic color correction. Technicolor Products, Inc. has described a high-speed color printer with a capacity of about 5,000 prints per hour. The Kodak Roll Paper Color Printer, Model 5S, produces about 1,000 prints per hour for all negative and print sizes up to 5 x 7 inches.

Photographic Processing.—More convenient processing in compact automatic equipment is a prominent requirement in photographic processing generally. Immediate production of images is almost mandatory in many scientific and engineering

applications of photography, and often increased production rates are desirable.

Simplification of processing may be achieved by combining the developer and fixer functions in a single "monobath" formula. During 1959 the Cormac Chemical Co. introduced the Unibath series for processing films and papers; Itek Corp. has reported on a mathematical approach to monobath kinetics; and the Avco-Everett Research Laboratory has reported on formulas that give improved photographic characteristics.

Processing industrial radiographs automatically within 13 minutes was made possible in 1959 by the introduction of a six-tank version of the Kodak X-Omat Processor. Kodak also announced a new, smaller medical X-ray film processor, the Model M-3 X-Omat Processor, which delivers dry radiographs in 7 minutes; and the Oscar Fisher Co. introduced a small automatic processor for X-ray films, called the Fisher FaX-Ray Processor, which is said to deliver dry radiographs in 7 minutes.

Fisher marketed in 1959 a spray-immersion processor, Processall, which automatically processes film or paper up to 12 inches in width at machine speeds up to 40 feet per minute; and the Mark 16/35 semiportable, automatic, continuous film processor, capable of processing speeds up to 3,000 feet per hour. Kodak announced its first continuous paper processor specially designed for professional black-and-white papers—the Kodak Continuous Paper Processor, Model 40P. The 40P can be converted for processing Kodak Ektacolor or Ektachrome Roll Papers.

The Cine Speed Instant Film Processor for 16-mm. film, developed by J. A. Maurer Co., has commanded some interest. Designed to be attached to a camera, the processor operates at 36 feet per minute to provide dry-to-dry processing in 9 seconds. Chas. A. Hulcher Co. announced a small processor (Gilco) for processing 100-foot rolls of 70-mm. film either manually or electrically. A phototransmission system dependent on rapid processing was described in *Electronics* (June 5, 1959, p. 47) as capable of delivering a high-quality aerial photograph from a manned aircraft or a surveillance drone to the ground within 2 minutes after taking the picture.

Among new developers announced in 1959 were the Edwal FG7 concentrate, which produces different developers with entirely different characteristics when diluted and used as recommended; two new Ilford, Ltd. X-ray developers, Phenisol and Phen-X, based on the use of Phenidone and hydroquinone; and the Kodak Durafin Developer Replenisher for the photofinisher, replacing the Durol 7 system.

Documentary and Industrial Photography.—Film Library Instantaneous Presentation (FLIP), an information-recall system manufactured by Benson-Lehner Corp., is designed to locate and display any desired frame on a reel of processed 16-mm. film. To find a frame, the machine scans binary code elements occurring as density bars adjacent to each frame. Magnavox Research Laboratories has reported that its Digital and Pictorial Electronic Recorder, a film data-recording system, combines the advantages of pictorial and digital recording; it has high readout rates and high data storage per cubic foot (6,000 bits per inch of film). Some experimental work has indicated systems approaching 1 million bits per square inch and readout rates as high as 2-megacycles.

A new Collins-Peerless Neoflow Enlarging Camera, of interest in photocopy work and particularly in engineering drawing reproduction, will enlarge opaque or translucent originals on a continuous-flow basis. Kodagraph Autopositive Projection Papers, announced by Eastman Kodak Co., represent an important new tool in direct positive copying of documents and drawings, providing positive intermediates of drawings and enlargements from microfilm positives. Kodagraph Autopositive Translucent Paper has 60% greater speed, higher effective contrast, and increased tolerance to room light, as compared with regular Autopositive paper.

A new photographic system for reproducing documents

WIDE WORLD

What appears to be a missile approaching the moon is actually the telescopic effect produced by a 96-inch focal length lens in this Army photograph of a Lacrosse missile flying over New Mexico, with the moon in the background.

rapidly in quantities from 10 to 1,000 is the Ektalith Method, announced by Eastman Kodak Co. It can make inexpensive paper masters for offset printing, or a limited number of direct copies without using the offset process.

Haloid XeroX, Inc. demonstrated an automatic printer which makes a finished print every 2¼ seconds from aerial negatives in roll form. The first print requires 22 seconds. The machine was built for the U.S. Air Force to print 9 x 9-inch negatives, but the design principle is applicable to document reproduction, especially where high-speed, high-volume printing is required.

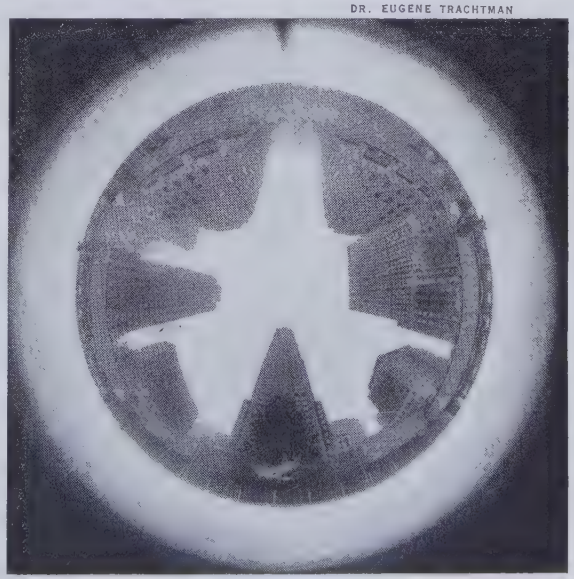
Kodak Metal-Etch Resist is a light-sensitive etch-resistant material of particular interest in chemical milling where many metals are treated. The product has at least three major applications: in small-parts manufacture; in making special name plates that require deep etching; and in weight-reduction work in aircraft, missile, and rocket fabrication.

The detection of perforations, weld defects, ground formation, and many other factors in the maintenance of water wells is being accomplished by the Laval Underground Surveys Co. in Fresno, Calif., through stereophotography. A stroboscopic light source provides $\frac{1}{1,000}$-second exposures on 35-mm. Kodak Plus-X Film used in two devices designed to photograph the sidewalls or the bottom of wells. High-speed cameras are being used as analytical instruments to develop a new explosive foxhole digger for Army combat troops.

Scientific and Applied Photography.—Scientists at the University of Michigan have described a luminescent chamber used to photograph the light from the path of a single electron or other atomic particle. The tiny flash, lasting only a millionth of a second, is given off as the particle speeds through a scintillating crystal. Kodak Research Laboratories described a new three-dimensional technique for studying air turbulence. The new technique can pinpoint the moving pockets of air which deviate light rays and

Circular photograph of Rockefeller Center, New York City, was taken with the Circlescan Hemisphere Camera invented by a Red Bank, N.J., optometrist. Camera covers a view of 225° and provides good clarity. Film and five special lenses rotate while shutter is open for total of $\frac{1}{25}$ second.

DR. EUGENE TRACHTMAN



thus impair the quality of aerial and other long-distance photographs.

The application of a strong electric field (about 4 million volts per centimeter) simultaneously with a light pulse was claimed by Edgerton, Germeshausen, and Grier, Inc., to enhance dramatically the sensitivity of a photographic emulsion when it is exposed to light.

On May 12, 1959, a tiny 16-mm. movie camera placed in the nose cone of a U.S. Air Force Thor missile provided the first photographic record of the separation of a nose cone from a rocket. One sixth of the earth was photographed from an altitude of 700 miles on August 24, 1959, using a 16-mm. camera in the nose cone of an Air Force Atlas intercontinental missile during a 5,100 mile flight over the Atlantic missile range. (See METEOROLOGY AND CLIMATOLOGY; SPACE FLIGHT.) On Dec. 5, 1958, at an altitude of about 86 miles, two cameras in the tail of a special U.S. Navy rocket took movies of an extensive weather system. A composite print made from the movies, covering an area of 1.5 million square miles, may hold the key to better hurricane detection and weather forecasts. The sharpest pictures of sunspots ever made were taken at 80,000 feet in a high-altitude balloon on Aug. 17, 1959, as part of the Stratoscope project sponsored by the National Science Foundation and the Office of Naval Research. (See ASTRONOMY.)

A new type of camera was described by the U.S. Naval Observatory as potentially important for spotting proposed "winking" satellites equipped with powerful flashing lights. The camera simultaneously tracks a satellite and its surrounding stars at their respective rates of motion, thus obtaining sharp images of both.

The U.S. Air Force has developed an infrared camera said to be capable of measuring in thousandths of a degree the heat contrasts of objects. When used as a reconnaissance device, the new camera may render the usual camouflage measures relatively ineffective.

Benson-Lehner Corp. has developed a new aerial strike camera which fits into the thin leading edge of a Convair F-106 wing to take 20 pictures per second during a target strike. A Zoomar-Trulex device for automatic exposure determination, used with phototheodolites and tracking cameras, depends on signals fed from measuring and reference photocells to a built-in computer. Amplified electrical impulses drive two counter-rotating optical-wedge discs to regulate the amount of light.

Life magazine for Nov. 9, 1959, reproduced in color a remarkable picture of the coastal waters off Marblehead, Mass. Taken by the Circlescan Hemisphere Camera, which takes in a view of 225° and gives a clear image to the edge of the photograph, the picture was shot from a jet flying upside down at 30,000 feet. The camera shutter opens to expose a pie-shaped sliver of film, and remains open while the film and 5 special lenses turn for a total of $\frac{1}{25}$ second to expose the rest of the film.

The Traid Corporation announced a 70-mm. rotary prism camera with a reported speed up to 360 frames per second. Known as the Photo-Sonics 70mm-10B, it is useful in long-range industrial photography, missile photography, and high-resolution streak photography.

Electro-Optical Instruments, Inc. developed an ultra-high-speed Kerr-cell camera that has an effective exposure time of 5 billionths of a second. The equipment consists of a Crown Graphic "45" camera, an electronically gated Kerr-cell shutter unit, a power supply, and a millimicrosecond electronic modulator. Luminous phenomena such as combustion detonation, fuse and explosive setups, arc formation, and cathode-spot phenomena may be studied with this equipment.

(For further references, see the Index entry, *Photography.*)

GEORGE T. EATON,
Assistant Division Head,
Kodak Research Laboratories.

PHYSICS. Physicists may come to remember 1959 as the year in which information theory emerged as a full-fledged discipline comparable to electromagnetic theory and physical optics in status and importance. Two major achievements announced in 1959—radar contact with the planet Venus and a new theory of color perception—came about as applications of information theory.

Radar Contact With Venus.—In 1929, Dr. Ellis A. Johnson, then a graduate student at the Massachusetts Institute of Technology (MIT), showed that no communication equipment, however carefully constructed, could transmit information exactly—that any information which came through was inevitably mixed with spurious information originating within the apparatus itself. He derived a formula which related the volume of the spurious information to the friction (or electrical resistance) of the apparatus, the width of the band of frequencies it would pass, and the absolute temperature of the apparatus. The unwanted, spurious signal has come to be known as Johnson noise and is an essential concept in present-day information theory.

During the following 30 years it came gradually to be realized that the central problem of communications was the distinction of signal from noise, and that the possibility of making this distinction depended on the ratio of true signal output to noise generated within the apparatus used. Since signal strength can be increased by stepping up power, with little increase in noise, it was possible for many years to ignore the problem, overriding noise by high power. It came to be thought impossible to transmit accurate information except at signal-to-noise ratios substantially exceeding unity. The range of power available made it possible to accomplish this at distances as great as that of the moon, from which faithful radar echoes have been received.

The nearest planets, Venus and Mars, never come closer to the earth than 100 times the distance to the moon. Since the signal strength of a radar return from an object diminishes as the fourth power of its distance from the radar station, the radar return from these planets is only one one-hundred-millionth of what it would be from the moon. To override this factor by brute force and obtain even a one-to-one signal-to-noise ratio would require a radar transmitter consuming more than the total power generated in the world. Thus the problem of radar contact with these planets appeared hopeless.

Paralleling the development of new radar techniques, however, the efforts of many physicists in the field of information theory had developed a method, known as autocorrelation, which offered hope of detecting a radar signal deeply buried in Johnson noise. The method involves the correlation of each element of the signal beamed out by the transmitter with an element of the incoming signal picked up by the receiver at the end of an interval of time on the order of the expected return time for the signal. The process is repeated for various time intervals, all on the order of the expected return time. If a significant correlation between outgoing and incoming signals is discovered for one of the time intervals, it may be inferred that the interval in question represents the time required for the signal to make the round trip from the radar station to the object aimed at. The process of determining whether a significant correlation exists for any of the intervals selected is simple in principle, but involves an extremely large number of separate computations; it became feasible only with the development of modern electronic computers.

The development of the new method encouraged a group of physicists (led by Robert Price and Paul E. Green, Jr.) to try for radar contact with Venus, using apparatus having a high signal-to-noise ratio but modest power. Initial calculations indicated that the project was nearly—but not quite—feasible. The balance was turned by the development of a new type of amplifier, the maser, which is limited only by Johnson noise and has a very narrow band pass. The few decibels of signal-to-noise ratio by which this amplifier was superior to those previously available promised to provide the difference between success and failure. The maser used was a crystal of potassium cobalticyanide cooled in liquid helium.

The dish-shaped, 84-foot-wide radar antenna, adjustable in declination and continuously rotated to cancel the effect of the earth's rotation, was located at Millstone Hill near Westford, Mass. The

gain of this antenna is 37.5 decibels at 440 megacycles per second, the frequency used in the experiments. Transmitter power (300 kilowatts peak) was supplied by a klystron. The radar experiments were performed in February 1958, but a year was needed to analyze the tape-recorded signals to discover whether contact had been made with Venus.

Significant cross-correlations were found twice in four tries. In each of these two cases, the signal's round-trip time was approximately 300 seconds, differing by only 0.002 second from the round-trip time calculated from the relative positions of the earth and Venus given in the *American Ephemeris and Nautical Almanac*. This time difference corresponds to a discrepancy of approximately 200 miles (out of about 28,000,000 miles) between the distance of Venus as measured by the radar and the distance as computed from astronomical tables based on optical observations. It is believed that the radar determination of Venus' distance is the more accurate of the two, and that the presently accepted value of the unit of interplanetary distance used by astronomers (based on optical surveys using the diameter of the earth as base line) is too small by 0.0013 per cent. Should this belief prove to be correct, values for distances in the solar system will have to be decreased by 0.0013 per cent. (See also ASTRONOMY; ELECTRICAL DEVELOPMENTS.)

Color Perception.—The other major 1959 event bearing on information theory was the discovery by Dr. Edwin H. Land, the inventor of the Polaroid photographic process, that normal color perception can be stimulated under experimental conditions by means of light of only two colors. Before this discovery, no scientific theory seemed more firmly established than the three-color theory of vision, first propounded by Hermann von Helmholtz (1821–1894) and thoroughly explored by Lord Rayleigh (1842–1919). According to the three-color theory, any color distinguishable from others by the eye could be simulated perfectly by a mixture of three primary colors. Artists' paints and printers' inks are made up on this principle, which has served for more than 50 years to solve the practical problems of industry. Dr. Land's discovery does not diminish the utility of the three-color theory, but it does show that it is a special case of a more general and potentially far more useful theory of color vision.

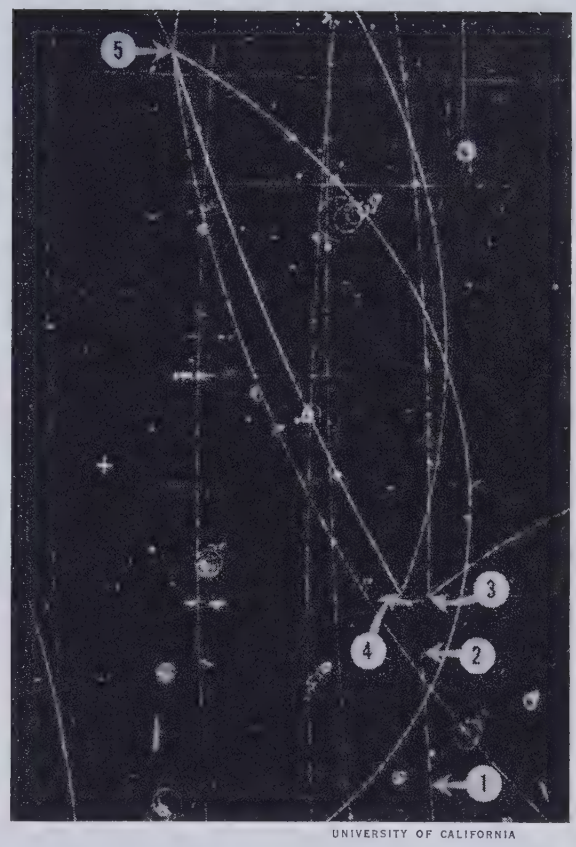
Students of information theory had long realized that colors readily distinguishable by spectroscopy were indistinguishable by eye, and had explained this by postulating that the eye takes an arbitrary average of the physical information contained in a real color—an average which throws away most of the information actually reaching the eye and retains only a small fraction for use by the brain. The effect of Dr. Land's discovery is to show that this theory oversimplifies the combined action of the eye and nervous system.

The phenomenon was demonstrated by taking two photographs of an assembly of colored objects, one with a red filter over the lens and one with a green filter. The negatives so obtained were then printed to form black-and-white positive transparencies. When the two transparencies were projected together on the same screen, one illuminated with red light and one with white, all the colors of the objects appeared to the eye.[1]

Perhaps the most surprising result of Land's experiments was the discovery that within very broad limits any pair of differently colored filters could be used to make the black-and-white transparencies, and any pair of differently colored lights could be used in the projectors, so long as the transparency made with the filter of longer wave length was projected with the light of longer wave length. In one experiment, a wide range of color perception was obtained when the two transparencies were projected with two different shades of yellow light (with wave lengths of 579 and 599 millimicrons).

There is much about the phenomenon which is not yet clearly understood. Dr. Land's present conclusion is that "the rays are not in themselves color-making. Rather, they are bearers of information that the eye uses to assign appropriate colors to various objects in an image." It is clear, however, that under certain conditions the eye can see as well with two packages of information (corresponding to the two colors used in the experiment) as it can with three such packages under normal conditions.

[1] Full details of the demonstration of the new effect, together with color photographs illustrating it, will be found in an article by Dr. Land in the May 1959 issue of *Scientific American*.



UNIVERSITY OF CALIFORNIA

This University of California photograph provides the first complete record of the creation and decay of a rare antilambda particle. An antiproton enters the picture on a straight track (1) and decays (2) into a lambda particle and an antilambda particle, which, since they have no electrical charge, leave no tracks. The ordinary lambda decays (3) into a proton and a negative pi meson, forming a characteristic V; while the antilambda decays (4) into a positive pi meson and an antiproton. The antiproton product of the antilambda decays (5) into a four-pronged pi meson star.

Nuclear Physics.—Early in 1959 it was announced that the so-called neutral Xi (or Xi zero) particle, whose existence had been predicted two years previously, had been observed by a team of scientists led by Dr. Luis W. Alvarez of the Lawrence Radiation Laboratory at the University of California. With the observation of the neutral Xi particle, the existence of every particle of ordinary matter predicted by nuclear theory has now been confirmed. A few particles of so-called antimatter remain to be detected by experimenters.

The search for the neutral Xi had been stimulated by a scheme of classification for nuclear particles derived independently by Dr. Murray Gell-Mann of the California Institute of Technology and by a Japanese physicist, Dr. Kazuhiko Nishijima. It was inferred from this scheme that the already-discovered negatively charged Xi particle should have a companion particle without an electrical charge: the neutral Xi particle. The particle interactions which demonstrated the existence of the new particle were produced by the Lawrence Radiation Laboratory's 6.2-billion-electron-volt bevatron, the most powerful particle accelerator in the United States. Some 70,000 photographs were examined before the scientists discovered a pattern of particle tracks indicative of the creation of a neutral Xi particle.

The bevatron was also used in the series of experiments which led to the detection in 1959 of an antilambda particle. A photograph recording for the first time a complete reaction involving an antilambda particle was shown by United States physicists at the International Conference on High Energy Physics at Kiev, in the Ukraine. The antilambda is one of the particles which make up antimatter. The antiparticles have similar properties to their corresponding particles of ordinary matter, but when an antiparticle comes in contact with its companion particle of ordinary matter, both particles are annihilated and a tremendous quantity of energy is released. The photograph demonstrating the presence of an antilambda recorded such a collision between lambda and antilambda particles.

At the annual meeting of the American Physical Society, held in New York City in January 1959, Dr. Robert E. Marshak of the University of Rochester and Dr. E. C. G. Sudarshan of the Tata Institute of Fundamental Research in Bombay, India, proposed a universal rule governing the behavior of the so-called weak forces involved in the spontaneous decay of some of the 30 particles and antiparticles known to physicists. In addition to the weak forces associated with the Fermi (beta-decay) process, the rule covers the much stronger forces associated with the Dirac (electromagnetic) interaction and the much weaker gravitational forces. The new theory does not explain the strongest of the four forces known to be involved in particle reactions: the Yukawa or nuclear interaction which holds nucleons (protons and neutrons) together in atomic nuclei.

Gravity.—Ever since Albert Einstein showed that gravitational forces stem from the structure of the four-dimensional space-time manifold, physicists have looked toward a more comprehensive theory showing that gravitational forces, like the much stronger electromagnetic forces, consist of waves traveling at a finite speed, and that gravitational fields are made up of indivisible quanta of energy. At the 1959 meeting of the American Physical Society, Prof. Paul A. M. Dirac of Cambridge University described a new mathematical approach to the problem. Professor Dirac has demonstrated that for very weak forces Einstein's field equations will yield both waves and quanta. Thus, a moving mass should generate gravitational waves, just as a moving charged particle generates electromagnetic waves. According to Professor Dirac's theory, the earth in its motion about the sun should produce waves at a frequency of one per year with a wave length of one light year. Although present techniques are inadequate to detect the extremely weak gravitational waves, other experimental testing techniques are under study.

EDWARD S. GILFILLAN, JR.,
Professor and Head of the Nuclear Engineering Department, Lowell Technological Institute.

PINEAPPLES. See FRUITS.

PIONEER SPACE PROBES. See SPACE FLIGHT.

PITCAIRN ISLAND. A British colony situated in the Pacific Ocean between Easter Island and French Polynesia. Pitcairn (area, about 2 square miles) was discovered in 1767 but remained uninhabited until *Bounty* mutineers and Tahitian natives landed in 1790. The mid-1958 population was 143 inhabitants, chiefly descendants of the first settlers. The group includes other small volcanic islands (uninhabited Henderson, Ducie, and Oeno). The colony is administered by the governor of Fiji (q.v.), assisted by a 5-member Island Council (chief magistrate, Warren Christian). Principal sources of revenue are the sale of Pitcairn Island postage stamps, curios, and vegetables and fruits, and the export, chiefly to New Zealand, of oranges and pineapples.

PITTSBURGH. Fifteenth most populous city in the United States, Pittsburgh, Pa. (area 55.5 square miles) is the center of a 3,053-square-mile area (Allegheny, Beaver, Washington, and Westmoreland counties) which stands eighth in population and economy among such areas in the nation. Latest population estimates (1959) are 674,726 for the city and 2,442,811 for the metropolitan area. Since the 1950 census, when Pittsburgh ranked 12th among the nation's cities, it is estimated that its population has decreased by 2,080, and that of the metropolitan area has increased by 229,575.

City government: a mayor and a nine-member council, all Democrats in 1959. On Nov. 3, 1959 State Sen. Joseph M. Barr was elected mayor to replace Mayor David L. Lawrence, who became governor of Pennsylvania in January 1959.

Budget (1959): $54,499,398. Real estate tax: 3.7% of assessed land valuation ($403,312,483, an increase of $1,712,827 from 1958) and 1.85% of assessed building valuation ($744,563,684, up $7,631,650 from 1958). Other taxes: a $5 "head tax" on city residents of voting age; income tax of 0.5% on city residents and nonresidents whose incomes originate in the city and are not subject to a similar tax in their own municipalities; 10% amusement tax; and 0.2% personal property tax. School tax: 1.4% on both land and buildings; 0.4% personal property tax; and 0.1% retail and 0.05% wholesale mercantile tax. Value of bonds retired in 1959, $4,877,900; new bonds issued, $4,100,000.

Total public school enrollment (1959–60): 78,885; teachers and other professional staff: 2,682.

Transportation data (1958): freight by river, 42.48 million tons, a decrease of 11.82 from 1957; by rail through the city, 65.63 million tons, a loss of 32.88 million. Air cargo (mail, express, freight), 34,877,424 pounds, down 3,284,845. Air travel: flights, 263,498; passengers, 2,037,832. Greater Pittsburgh Airport added a $3 million wing to its terminal in 1959 and neared completion of a new $10 million runway, 9,000 feet long. Greyhound opened a new $4 million bus station.

Steel output in Pittsburgh district (1958): 24,422,030 tons. Coal production: in metropolitan area, 19,333,292 tons; in Western Pennsylvania Coal District, 37,043,864 tons.

Employment (metropolitan area, September 1959): 767,700, of whom 214,900 were in manufacturing, mining, and primary metals; 109,300 in retail trade; and 174,600 in services, government, and miscellaneous employment. Unemployment stood at 8.9% of the total civilian labor force.

Other metropolitan area economic data: estimated per-family income (1959), $6,882; home construction (1958), 6,800 dwelling units ($128,000,400); industrial capital expenditures (1958), $180,177,000 by 37 representative firms.

Among distinctive city events of 1959 were the visit to Pittsburgh on September 24 of Soviet Premier Nikita Khrushchev and the celebration of Pittsburgh's Bicentennial Year, which ended in November.

Pittsburgh's "renaissance," begun in 1946, continued to make progress on many fronts in 1959. State legislation was passed permitting the Port Authority to set up a unified transit system, and it began a two-year preliminary study. City and

county smoke-control programs were unified. ACTION (American Council to Improve Our Neighborhoods) completed a 210-unit apartment program and launched another.

The highways program progressed, with work begun on the new Crosstown Boulevard and the 62nd Street Bridge; the opening of the new Fort Pitt Bridge and Boulevard (see BRIDGES); studies made for the Ohio River Boulevard inner-city link; the break-through on Fort Pitt Tunnel (see TUNNELS); and with the $30 million Etna Bypass and new Fort Duquesne Bridge entering the second phase of construction.

In Gateway Center the new Conrad Hilton Hotel, Gateway Park, and an underground parking garage were opened; work pushed forward on the new Gateway Center Four office building; and a 23-story executive apartment building was announced.

Despite the long steel strike (see IRON AND STEEL), progress was continued on the new stadium and the Civic Auditorium, but the start of a 20-story fraternal insurance building was delayed. Work continued on two urban renewal programs totaling $73 million. The Mellon Institute (q.v.) opened its new Bushy Run Laboratories, and several massive educational programs of physical expansion continued to progress.

GEORGE SWETNAM,
Staff, "The Pittsburgh Press," and Author of "Pittsylvania Country" and other books.

PLANTS. See BOTANY; HORTICULTURE; and the Index entry, *Plant Research.*

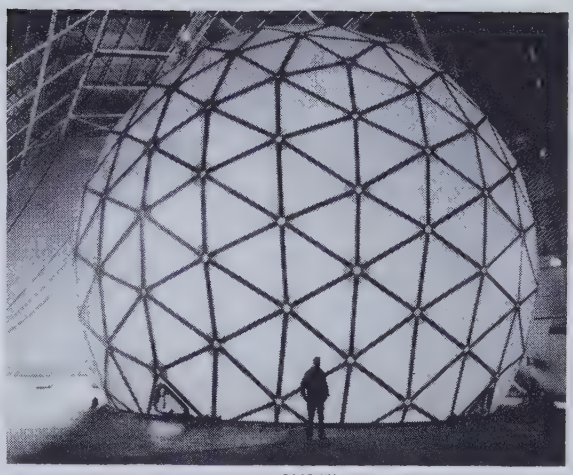
PLASTICS. In 1959, with major chemical companies making substantial investments in plastics production facilities, the amount of plastics produced continued to rise. Polyethylene and polypropylane plastics, closely paralleling the production rates of the longer-established vinyl series of resins, are bidding fair to become the first plastics to register an annual production volume of one billion pounds. Production figures for 1958, released by the U.S. Tariff Commission, are shown in the accompanying table.

U.S. PRODUCTION OF PLASTICS, 1958

Material	Pounds
Cellulose ester plastics	141,360,000
Phenolic and other tar acid resins	487,862,000
Urea and melamine resins	349,214,000
Styrene resins	763,057,000
Vinyl resins	869,419,000
Polyethylene resins	864,728,000
Polyesters	117,246,000
Cumarone-indenes	267,940,000
Alkyds (phthalics)	416,837,000
Total	4,277,663,000

Uses for plastics are becoming increasingly diversified. In 1958, for example, 29.6 million pounds of reinforced plastics were used in the construction of transportation facilities; 18.5 million pounds went into aircraft and missiles; the construction industry accounted for 31.5 million pounds; 37 million pounds were used in boat building. According to an official of Monsanto Chemical Company, structural plastics in 1958 accounted for 21% of total plastics volume. Well over 110 million pounds of plastics, mostly thermoplastics, are used in the manufacture of toys.

Research in the industry resulted in important developments in 1959. Du Pont brought out superior weather-resistant films of polyvinyl fluoride. An improvement in the stability of cellulosic fibers, wet or dry, was obtained by using longer, more compact cellulose chains. Shell Chemical Company commercially produced a synthetic "natural" isoprene rubber, and General Electric developed a nitrile-silicone rubber for high-temperature stability. A new polyester fiber, Teron, will soon join Dacron in the synthetic materials market. Dycril, a photopolymer plate introduced by Du Pont, is being offered on a commercial basis for use in the printing industry (see GRAPHIC ARTS). B. F. Goodrich Company has developed a magnetic plastic by impregnating its Koroseal vinyl plastics with a "powder sensitive to magnetism."



GOODYEAR AIRCRAFT CORPORATION

World's largest fiberglass radome, 68 feet in diameter and more than seven stories high utilizes hundreds of plastic panels bolted together. The radome may be transported by air, and can be erected by a six-man crew in 80 hours.

The use of plastic film bags, especially by the dry cleaning and laundry industries, made available to the public a number of plastic films. Their use as a protective covering for clothes, as playthings, or as mattress covers was discouraged due to a few tragic cases of suffocation that were associated with the plastic bags. In cooperation with other organizations, the plastics industry waged an intensive publicity campaign to acquaint the public with the proper use and possible danger of polyethylene film. (See also PEDIATRICS.)

(See also CHEMISTRY.)

JOHN DELMONTE,
President and General Manager, Furane Plastics, Inc.

PLATINUM GROUP METALS. According to the U.S. Bureau of Mines, recovery of new platinum group metals by refiners increased from 47,228 troy ounces in 1957 to 48,195 ounces in 1958, of which 16,062 ounces were from domestic sources and 32,133 ounces were from imported crude metals. Total recovery in 1958 included 35,409 ounces of platinum, 5,913 ounces of palladium, 3,146 ounces of iridium, 1,014 ounces of osmium, 1,229 ounces of rhodium, and 1,484 ounces of ruthenium. Secondary recovery decreased from 87,521 ounces in 1957, to 81,514 ounces in 1958. The latter included 36,426 ounces of platinum, 38,883 ounces of palladium, 1,223 ounces of iridium, 335 ounces of osmium, 2,639 ounces of rhodium, and 2,008 ounces of ruthenium. Imports decreased from 686,983 ounces in 1957 to 670,431 ounces (a preliminary figure) in 1958. The principal sources of the 1958 total were Switzerland (184,784 ounces), United Kingdom (144,396), Canada (121,140), USSR (93,583), France (52,857), Netherlands (27,726), and Colombia (22,638). The metals imported from Switzerland, France, and the Netherlands were reported to be largely of Soviet origin.

Total sales decreased from 744,025 ounces in 1957 to 690,373 ounces in 1958. Sales of platinum to domestic consumers were 264,361 ounces in

1958 (347,983 ounces in 1957), amounting to 38.3% of the total sales of platinum group metals. Sales to domestic consumers were 24% less in 1958 than in 1957, chiefly due to the drop in demand from the chemical industries, including petroleum refining.

In the first nine months of 1959, sales of the platinum group metals declined. New and secondary platinum metals recovered by refiners in the United States during this period included: platinum, 70,594 ounces; palladium, 51,296 ounces; iridium, 2,309 ounces; osmium, 750 ounces; rhodium, 2,471 ounces; and ruthenium, 2,020 ounces.

(See MINERAL PRODUCTION for table showing output of major producing countries).

F. E. HARRIS,
Former Publications Editor,
"Mineral Trade Notes," U.S. Bureau of Mines.

PLUMS. See FRUITS.

PNEUMONIA. See RESPIRATORY DISEASES.

POETRY. See the Index entry, *Literature.*

POISONS. See the Index entry, *Toxins and Antitoxins.*

POLAND. The Polish People's Republic, so called since the end of World War II when the Soviet Union forced on the Poles a Communist-controlled regime, has an area of 120,359 square miles and a rapidly growing population which was estimated in 1959 at nearly 30 million, of whom 7.5 million live in the former German territories in western Poland and well over 1 million in the capital, Warsaw. The limited liberties which Poland gained after the October crisis of 1956 have been gradually reduced, and in the fall of 1959 the tightening controls of the Communist Party, not only in foreign and internal politics but also in economic and cultural affairs, reached an alarming climax, obviously under pressure from Moscow.

Government in Exile.—Under the circumstances it was important to assure the continuity of Free Poland's legitimate authorities who reside in London. Accordingly, the president of the republic, August Zaleski, on Sept. 3, 1959, designated as his successor in case of death the foreign minister, Alexander Zawisza, and on September 12, five new ministers were named to the legitimate government, which has been headed since 1955 by Premier Antoni Pająk. Contrary to rumors spread at the beginning of 1959, the Vatican continues to recognize the embassy of Free Poland.

Warsaw Government.—The Parliament or Sejm consists of 458 members who are popularly elected to 4-year terms. It selects a Council of State and a Council of Ministers or cabinet, which are the chief governmental organs. The power of Władysław Gomułka, first secretary to the Central Committee of the United Polish Workers' (Communist) Party since 1956, is now practically dictatorial, although Alexander Zawadzki continues to act as nominal head of state in his position as president of the Council of State, and Józef Cyrankiewicz remains premier. The foreign minister is Adam Rapacki. A far-reaching reorganization of the cabinet, announced on Oct. 27, 1959, involved the appointment as vice premiers (supplementing the three existing ones) of Eugeneiusz Szyr and Julian Tokarski, both Stalinists who had been dismissed from the government after the Poznań riots in 1956. In addition, Tadeusz Gede, ambassador to the USSR and, before October 1956, a vice premier, became deputy chief of planning; the minister of education, Władysław Bienkowski, who was considered too "liberal," was replaced by his deputy, Wacław Tyłodziecki; and the minister of agriculture, Edward Ochab, was succeeded by his deputy, Mieczysław Jagielski. The dismissal of Ochab, who had played a decisive part in the October revolution of 1956, is particularly significant, although he received a new position in the party's Central Committee.

Religion and Education.—The Roman Catholic Church was the first to suffer in 1959 from the consequences of stricter Communist controls. The Rev. Marian Pirożyński, editor of a Roman Catholic publication, and 14 associates were accused of using bribery and blackmarket dealings to obtain newsprint, and he was sentenced on Feb. 9, 1959, to two years in jail. The bishop of Kielce, Czesław Kaczmarek, who had been liberated from prison and fully rehabilitated in 1956, was informed on June 2, 1959, that the government had decided not to allow him to continue his functions and had renewed the old charges made against him. Although only the Holy See can remove a bishop, the state refused to recognize the bishop as head of his diocese. The repeated protests of Stefan Cardinal Wyszyński to the government's repressive measures against the church were completely disregarded.

The number of schools without religious instruction was tripled during 1959. The government has not yet returned to a policy of open interference with the universities and colleges. In 1959 more than 96,000 students were enrolled in universities and colleges, and the total number of pupils in all schools was over 5 million. About 140 scholars were permitted to accept fellowships from the Ford and Rockefeller foundations in 1959.

Finance.—On Feb. 12, 1959, the Sejm, whose role is otherwise insignificant, approved a well-balanced budget showing an income of 186.5 billion zlotys and an expenditure of 182.5 billion. The official rate of exchange is 24 zlotys to U.S.$1.

Economy.—At the beginning of 1959 the economic output was still rising, and it was announced later that in the first half of 1959 the economic plan for industry had been fulfilled by 103%. Industrial production increased 9.5% in 1958 over 1957, and it was up 9.1% in the first half of 1959 over the same period in 1958. Production in the basic industries for 1958 was as follows: electric power, 23.9 billion kw.-hr. (up 13% over 1957); bituminous coal, 94.9 million tons (up 1%); crude steel, 5.6 million tons (up 6%); rolled steel, 3.7 million tons (up 3%); petroleum, 175,000 tons (down 3%); zinc, 163,000 tons (up 2%); and cotton fabrics, 598 million meters (up 5%). Output of grains in 1958 was about 10% higher than the annual average in 1954–57 of 13.9 quintals per hectare. Unlike those of other Communist countries, about 90% of Polish farms are privately owned.

Although the congress of the Communist Party held in March 1959 was still optimistic about economic matters, the Central Committee, as early as February 22, called for action against the economic crisis which had been created, according to Gomułka, because the people did not work hard enough and were not obeying orders. The growing trend toward strict government control had drastically reduced the opportunities for private enterprise and favored a return to the collectivization of agriculture, as was evidenced by the deliberations at the second plenum of the Central Committee on June 22–23, when a special fund for the development of agriculture was created.

The economic crisis became initially apparent in the scarce supply of meat; its sale was limited on Sept. 22, 1959, and its price was increased by 25% on October 17, when about 1,000 persons were arrested in connection with the shortage of deliveries. The difference of opinion as to the responsibilities for that situation accounted principally for the aforementioned dismissal of Edward Ochab as minister of agriculture. The government, which, during Ochab's absence on a visit in October to the United States, had considered drastic changes in agricultural policies, decided to reduce by 2 billion zlotys the investments for 1960 (particularly for construction), and on November 18 the Sejm met in order to approve an economic plan reducing employment in the ministries and public enterprises, and coordinating industries.

Foreign Trade.—Poland's exports in 1958 were estimated at 4.2 billion zlotys (up 8% over 1957); imports, 4.8 billion (down 4%). About 60% of Poland's trade is with the Communist countries and 40% is with other nations. In 1958, Poland's major trading partner, the Soviet Union, supplied 74% of Poland's imported iron ore, 90% of imported crude oil, and 44% of grain imports.

On May 13–16, 1959, Poland participated in the meeting of the Soviet bloc's Council for Mutual Economic Assistance at Tiranë, Albania. Poland's integration with the bloc was evidenced by the fact that most of its trade agreements were signed in 1959, as in the preceding years, with

Communist governments, although some trade agreements were reached also with African and Asian nations, such as Ghana, Guinea, Iraq, and Israel. Among the protocols extending earlier agreements was one signed on February 14 with West Germany.

There was a special desire for economic aid from the United States similar to the nearly $100 million received annually in 1957 and 1958. Negotiations started at the end of February 1959, and on March 6 the American ambassador, Jacob D. Beam, began negotiations in Warsaw regarding the claims of American citizens and companies for compensations resulting from the nationalization of their property in Poland. The slow progress of these negotiations, coupled with Gomułka's earlier anti-American statements, helped account for the fact that a first agreement signed in Washington on June 10 granted to Poland only $44 million in sales of surplus goods and $6 million in credits. After further talks, however, the total amount was raised to over $61 million. Furthermore, after the USSR was reported to be sending meat to Poland (originally, only 3,000 tons, but later, 40,000–60,000 tons), the United States decided, on November 3, to sell to Poland 200,000 tons of fodder grains, with the price to be paid in Polish currency.

Principal Events, 1959. *Domestic Affairs.*—Although there was no return to police terror in Poland during the year, stricter control of the people was enforced. The year began with official statements that all cultural policies must follow strictly "socialist principles," which the intellectuals are required to support actively. In March, Gomułka declared that literature and art had to be "realistic in form and socialist in content," and that there would be no retreat from these objectives. In connection with cabinet changes, Julian Hochfeld, who had been close to the liberal wing, lost the directorship of the Institute of Foreign Affairs. Also, a poet who had written too critically about the situation was sentenced to three years in prison.

After careful preparation the Communist Party's third national congress—the first to be held since Stalin's death and under the Gomułka regime—met in Warsaw from March 10 to 19. Over 1,400 delegates elected the 12 members of the Politburo, all of whom were supporters of Gomułka. At the opening session on March 10, Gomułka made a 7-hour speech, mostly on foreign affairs, in which he threatened to sign a separate peace treaty with Germany and stressed the determination to retain Poland's western lands. He barred any return to Stalinism, but declared that the party would repress antisocialist activities. He also outlined the plan of economic development for 1960–65. The Stalinists remained silent, and the "revisionists" were obviously suppressed. The party's biggest problem seemed to be how to overcome the public's growing apathy.

It was not until the economic troubles in October 1959 that there appeared a crisis in the Polish Communist Party, although in the summer there were indications that the influence of Ochab, hitherto Gomułka's close associate, and of the "liberal" wing was declining. After the drastic changes in the composition of the government, Jerzy Morawski, one of the top leaders in the Politburo, reportedly decided on October 28 to resign from that leading body. Without being really a liberal, he was, however, opposed to the extreme tightening of economic and intellectual control. His resignation was accepted by the plenum of the party's Central Committee, and on November 20 it was announced that he had received a minor position as deputy chairman of the Supreme Board of Controls. Even more significant was the fact that Gen. Kazimierz Witaszewski, one of the leaders of the so-called "Natolin" group of Stalinists who had been dismissed after the events in October 1956, was recalled on November 11 from the Polish embassy in Prague and named deputy chief of staff in charge of army intelligence.

WIDE WORLD

Vice President Nixon waves from auto to enthusiastic crowd which greeted his arrival in Warsaw, Poland, on August 2.

There seems to be some evidence that the changes in Poland's internal affairs are not exclusively motivated by the economic crisis but are much more the result of direct interference by Soviet Premier Khrushchev, whom Gomułka is said to have met secretly in Rumania on October 19–25. Apparently, Khrushchev requested from Gomułka not only Poland's return to economic centralization but also the final liquidation of "revisionism" in intellectual life and full political support of East Germany.

Foreign Affairs.—Poland's foreign policy continued in 1959 to be dominated by the fear of West Germany's remilitarization and the desire to have her new western frontiers definitely recognized. This continues to be the main reason why the Polish government is anxious to have Moscow's

Soviet Premier Khrushchev (r.), on a visit to Poland in July, inspects corn on a state farm with Władysław Gomułka, Polish Communist Party leader. (For interesting comparison with premier's reaction to United States corn, see *Iowa.*)

WIDE WORLD

support. On January 25 a delegation was sent to the 21st congress of the Soviet Communist Party at Moscow, and on January 28, Gomułka delivered to the congress a speech in which he stressed the sovereignty and equality of all countries in the Soviet bloc.

On April 27–28, a conference was held at Warsaw of the foreign ministers of the Warsaw Pact countries, and China sent a special military delegation. The delegates discussed the forthcoming East-West conference of foreign ministers at Geneva on the Berlin crisis, and the Soviet Union later proposed (May 12) that Poland and Czechoslovakia be admitted to the Geneva deliberations. On July 14 there arrived in Warsaw a Soviet delegation headed by Khrushchev, who received a warm welcome from Gomułka but was rather coolly watched by the people mobilized in the streets. He toured the frontier regions of Poland, beginning with Szczecin, where he made a speech guaranteeing the new western boundaries, and he visited also the Silesian coal mines and the city of Rzeszów near the new eastern frontier. On July 22, on the eve of the anniversary of the establishment of the Communist regime in Poland, a joint communiqué was issued by Khrushchev, Gomułka, and Premier Cyrankiewicz which emphasized the close alliance between the two countries and Poland's support of the Soviet stand on West Berlin.

The outstanding event of the year for the Polish people was probably the three-day visit by U.S. Vice President Richard M. Nixon, who at the invitation of President Zawadzki stopped in Warsaw on his return trip from Moscow. Although no details of his timetable had been announced, he was most enthusiastically greeted and acclaimed by a crowd of at least 100,000 which spontaneously filled the streets on his arrival (August 2) and tried to approach him on every possible occasion in order to manifest the friendly feelings of the Poles for America. The government felt rather embarrassed by the outburst, which was impossible to control and contrasted unfavorably with official policies. On the other hand, Gomułka and Zawadzki, in their long talks with Nixon, tried to convince him of the urgent necessity of recognizing Poland's western frontier, and welcomed his visit as recognition by the United States that their government occupied a special position among the Soviet satellite regimes. Another recognition of that situation by the West was the return to Cracow on February 16 of part of the historic Polish art treasures which had been deposited in Canada during the war.

On the eve of the 20th anniversary of the outbreak of World War II, an important statement by Chancellor Adenauer was expected, since in the spring West Germany had seemed ready to recognize the Warsaw regime and even to sign a nonaggression treaty. However, Adenauer's speech of August 31 did not satisfy the Poles and was at once rebuffed by Cyrankiewicz, thus ending for the time being the plan to establish diplomatic relations. There was also a dispute regarding the composition of the German delegation which attended the meeting of the Inter-Parliamentary Union at Warsaw on August 27–September 4.

Relations with China became closer during the year, and on September 26 a Polish delegation headed by President Zawadzki participated in the celebration of the 10th anniversary of the Communist regime in that country.

Poland's solidarity with the Soviet bloc on matters of foreign policy was exemplified in the fall when that bloc supported Poland's attempt to be elected to the vacant seat in the U.N. Security Council. The Western powers supported the candidacy of Turkey to the vacant seat. After 43 ballots in October and November remained inconclusive, and Poland, which led in most of the ballots, rejected a compromise arrangement, the voting was postponed until December 13, when Poland received 71 of 76 votes, it being understood, however, that Turkey would serve the second year of the two-year term.

The able and objective correspondent of the New York *Times*, A. M. Rosenthal, was ordered, on November 12, to leave Poland for "probing too deeply" into internal matters. The United States government announced two days later that it was "very deeply concerned" about that action and considered it "very harmful" for American-Polish relations, which had begun to improve recently in accordance with the desires of the Polish people.

Oscar Halecki,
Professor of History, Columbia and Fordham Universities; President, Polish Institute of Arts and Sciences in America.

POLAR EXPLORATION. See Antarctica; Arctic Exploration; Geography and Exploration; International Geophysical Year.

POLICE. Safety Training.—The Northwestern University Traffic Safety Institute has received from Kemper Foundation 32 grants-in-aid for enrolled students who are responsible for planning and command. The institute's complete program involves instruction of 2,000 policemen at its headquarters and in cooperating schools and universities in the United States. There are 51 announced courses of study for policemen, judges, prosecutors, engineers, driver-licensing officials, and Army and Navy traffic officers. Most courses extend over two to four weeks; others, for administrators, cover nine weeks.

Firefighting.—Gov. William G. Stratton's veto of Illinois legislation which was intended to kill cooperation between police and fire departments left Evanston and several other cities free to perfect police participation in firefighting during 1959. The plan relieves fully trained firemen from unskilled work at a fire scene. About 100 policemen in Evanston volunteered for this service, with 50 being equipped and assigned to cooperative duty in a given period, and no fewer than 12 placed on duty during each shift. While on regular police patrol they are often so close to a fresh fire that they are first at the scene. The city manager reports improved protection from this cooperation, as well as a saving of $70,000 a year. Similar advantages are the rule in several other Chicago suburbs and downstate Illinois cities.

Wiretapping.—Wiretapping is legal in New York State. Police and district attorneys declare they would be "handcuffed" were it illegal. It has sometimes been called "oppressive," but this has been stoutly denied. Kings County District Attorney Edward S. Silver reported in *The Police Chief* (February 1959) that only 459 wiretap orders per year had been obtained in all counties of the state.

Fingerprinting.—The intense battle against criminals is bringing about other measures to "unshackle the police." Ordinarily police are permitted to fingerprint only persons charged with felony and with repeated less serious offenses, including certain misdemeanors. But in 1959, New York Attorney General Louis J. Lefkowitz asked the State Legislature to authorize enforcement agencies to fingerprint any convicted person.

Use of Radar.—Radar evidence of speeding is sometimes questioned. No expert testimony concerning the general principles and reliability of

radar is needed, according to the Ohio Supreme Court in *City of East Cleveland* v. *Ferell* (Ohio 154 N.E. 2d 630, 1958). But the court held that police officers and departments must be able to show that the particular device involved in a given case was in good condition when the evidence in question was recorded.

In this connection, the court questioned the police technique of signaling a waiting and concealed officer to stop a driver whose alleged speeding a few minutes earlier could not have been seen by the hidden officer. Usually, arrest without a warrant requires that the arrestor have first-hand evidence of the offense.

Illegal Possession and Transport.—Two drivers were arrested on suspicion of carrying marijuana. Only marijuana sweepings were found in the car, but a bag of it was found by the roadside where it appeared to have been tossed by the fleeing suspects, who were unseen by the pursuing police. The defendants' attorney urged that since the bag was not "connected up with the defendants" it was inadmissible as evidence. The court held that this affected the weight but not the admissibility of evidence, thus implying that the police were on solid ground in making the arrests.

Roadblocks.—Florida state police established roadblocks in a wholesale search for laggards who had not renewed their automobile licenses within the required time limit. The courts held indiscriminate blocking a violation of both the United States and Florida constitutions in *Aronowitz* v. *City of Miami* (Fla. 27 U.S.L. Week, 2448, Feb. 20, 1959.)

(See also CRIME; FEDERAL BUREAU OF INVESTIGATION.)

ROBERT H. GAULT,
Editor, "Journal of Criminal Law, Criminology, and Police Science."

POLIOMYELITIS. See MEDICINE; PEDIATRICS; PUBLIC HEALTH.

POLITICAL CANDIDATES. See DEMOCRATIC PARTY; ELECTIONS, U.S.; REPUBLICAN PARTY; UNITED STATES; and biographical articles on each of the leading contenders for the 1960 presidential nominations.

POLITICAL PARTIES. For United States political parties, see DEMOCRATIC PARTY; ELECTIONS, U.S.; REPUBLICAN PARTY; and UNITED STATES. For parties of other countries, see articles on those countries.

POLITICAL SCIENCE. Again in 1959, political science in the United States was characterized by increased emphasis on basic research and the development of empirically grounded theoretical constructs that summarize the results of past research and serve as a guide for future work. Both these emphases result from an extension of the goals, methods, and techniques of what is normally termed the "political behavior" approach to the study of politics and government. The extent to which all fields of political science—public law, American government, comparative government, political theory, public administration, and state and local government—were being influenced by this approach was increasingly apparent in professional journals and at professional meetings.

Characteristically, the political behavior approach rejects institutions as the basic unit of research, focuses attention on the behavior of individuals in political situations, defines political science as a behavioral science, and emphasizes its unity with the other social sciences, especially psychology, sociology, and anthropology. It emphasizes the importance of research design and of utilizing and developing more precise techniques for observing, measuring, and classifying data, and defines the construction of systematic empirical theory as the goal of political science. While still separated by disagreement on a number of fundamental questions, the division between "behavioralists" and "traditionalists" is becoming less sharp as more leading "behavioralist" spokesmen are broadening their approach and granting more recognition to the importance of the study of political institutions, and as leading "traditionalist" proponents utilize more of the techniques, methods, and research findings of the behavioralists.

The American Political Science Association, with permanent headquarters at 1726 Massachusetts Avenue, NW, Washington 6, D.C., is the official professional organization in the field of political science. Its 55th annual meeting was held in Washington, D.C., Sept. 10–12, 1959. At this meeting, papers were presented and discussions held on all major fields of political science. The presidential address, delivered by the retiring president, R. Taylor Cole of Duke University, was devoted to a comparative examination of the constitutional courts of West Germany, Italy, and Austria. President Cole asserted that the comparative study of judicial systems has "received too little attention" and described it as an area "deserving more attention in the future."

Carl Swisher of Johns Hopkins University succeeded to the presidency of the national association and Emmette Redford of the University of Texas was named president-elect. Three major awards for significant research were made by the association at the annual meeting. The Woodrow Wilson Foundation Award for the best book of 1958 in the field of government, politics, and international affairs was divided between Christian Bay for *The Structure of Freedom* and James S. Coleman for *Nigeria: Background to Nationalism.* The Leonard D. White Memorial Award was presented to Dean E. Mann for his doctoral dissertation on *The Administration of Water Resources in the State of Arizona.* The James Kimbrough Owen Award went to Fred G. Burke for his dissertation on *The Development of Local Governments in Uganda: A Comparative Approach.*

The association also inaugurated at the 1959 annual meeting a series of awards for distinguished congressional service. Under a grant from the William Benton Foundation, awards in 1959 were made to Senators Hubert H. Humphrey (Minn.), Kenneth Keating (N.Y.), and John Williams (Del.), and to Representative Carl Vinson (Ga.).

In 1959 the association continued to publish the *American Political Science Review* and again conducted the Congressional Fellowship Program, which enables 18 young political scientists to spend a year as participant observers of the U.S. Congress, and the Public Affairs Reporting Awards Program, which rewards young journalists in 12 Midwestern states for excellence in reporting state and local government and politics.

The International Political Science Association, with headquarters in Geneva, Switzerland, held its Seventh Round Table in Opatija, Yugoslavia, Sept. 1–5, 1959. The central theme was "Civil-Military Relations," and other subjects discussed were "Political Science in Western Europe" and "Recent Developments in the Field of Political Science Teaching and Research in Yugoslavia." In all, 48 participants from 13 countries took part. Professor Jacques Chapsal of France was the president of the international association in 1959.

EVRON M. KIRKPATRICK,
Executive Director,
The American Political Science Association.

POLO. See SPORTS, GAMES, AND SHOWS.

POPULATION STUDIES. See CENSUS DATA, U.S.; POPULATION TRENDS; and the Index entry, *Population Studies.*

POPULATION TRENDS, World. The population of the world in 1958 was estimated at about 2.85 billion, and increasing at a rate of approximately 1.6% per year.[1] If the present rate of increase is maintained, the world population will be more than double the 1958 total by the year 2000.

Table 1—WORLD POPULATION ESTIMATES
(Estimates are as of midyear of dates shown.)

Region	1920	1940	1958	% increase, 1920–58
	(in millions)			
World	1,810	2,246	2,852	58
Africa	140	172	230	64
North America	147	187	256	74
South America	61	90	134	120
Asia[1]	967	1,213	1,592	65
Europe[2]	328	380	418	27
Oceania	8.8	11.3	15.8	80
USSR	158	192	205.8	30

[1] Exclusive of USSR but inclusive of Asiatic Turkey. [2] Exclusive of USSR but inclusive of European Turkey. (Table based mainly on sources from the Statistical Office of the United Nations.)

The chief reason for the relatively high rate of increase is the decline in the overall death rate due to advances in medical care and sanitation. As shown in Table 2 (page 609), the countries with the highest rates of population growth are the underdeveloped or semideveloped countries which have begun to benefit from public health measures. In the highly industrialized countries, such as those of western Europe, the low death rates are accompanied by low birth rates, making for a relatively low rate of natural increase.

PORTS AND HARBORS. See Index entry.

PORTUGAL. A corporative republic on the west coast of the Iberian Peninsula of southwestern Europe. Area (including the Azores and Madeira, qq.v.), 35,598 square miles; pop. (est. July 1, 1959), 9,052,000. Principal cities (with estimated 1957 populations) are Lisbon, the capital (843,300), and Oporto (299,500).

Government.—According to the Portuguese Constitution of 1933, Portugal is a corporate state. The president, who has chiefly titular functions, is Rear Admiral Américo Deus Rodrigues Tomáz; he was elected to the office on June 8, 1958, and assumed his duties on August 9. Parliament consists of a National Assembly of 120 members elected for 4 years, and an appointed Corporative Chamber. The State Council or cabinet is not responsible to Parliament. Premier António de Oliveira Salazar has exercised personal control of the government since 1933. He heads the ruling National Union, whose candidates were elected in 1957 to fill all the seats in the National Assembly. The electorate plays a minor role (see below, *Principal Events*).

Education and Religion.—Illiteracy is widespread; according to the 1950 census, 44% of the population aged 15 years and over were unable to read. In 1956 there were 16,687 primary schools (with 841,422 pupils); 380 secondary schools (76,637 students); 251 technical schools (64,977); 23 teacher-training schools (2,777); and 13 schools for higher education (19,161). In 1956–57 the universities at Lisbon, Coimbra, and Oporto enrolled an aggregate of 12,762 students, and the Technical University at Lisbon had 2,760 students. Roman Catholicism is the predominant religion, but church and state are separate.

Finance.—Government revenue for 1958 was 8,744 million escudos, and expenditure totaled 8,687 million; the resultant surplus of 57 million escudos was the largest in 5 years. The escudo equals 3.48 cents in United States currency. The government established external convertibility of the escudo in December 1958.

Transportation and Communications.—The state-owned Portuguese Railway Company operated 2,217 miles of track at the end of 1957. Roads aggregated 17,768 miles in the same year. The merchant marine comprised 547,000 gross registered tons. Domestic and international air service is provided by the government-sponsored Transportes Aereos Portugueses, and several foreign airlines serve Lisbon. In 1958 there were 133,400 passenger cars and 58,400 commercial vehicles. Telephones in 1957 numbered 304,937; radio receiver licenses, 596,000; and television sets, 8,000.

Production.—The economy is based on agriculture, light industry, and a few export specialties. Estimated national income in 1957 was 50.4 billion escudos, an increase of about 2% over 1956; however, the cost-of-living index also rose by 2% from 1956 to 1957. Manufacturing and construction provided about 35% of gross domestic product in 1957; agriculture, forestry, and fishing, 28%. Industrial production (excepting minerals) increased nearly 6% in 1958 over that in 1957, with notable gains registered by the foodstuffs, chemical, nonmetallic minerals, and textile industries. In 1956 there were 3,596 manufacturing establishments which employed 298,000 workers. Industrial projects scheduled for completion under the Second Six-Year Development Plan (1959–64) include two new dams on the Cavado and Rabagao rivers. In 1959, construction was completed on the Picote hydroelectric plant, which is to generate about 1 billion kw.-hr. annually. Electricity output in 1958 averaged 222 million kw.-hr. monthly. Due to a decline in foreign demand, mineral production in 1958 declined about 20% below 1957. Coal output in 1958 was about 576,000 metric tons; iron ore, 217,200; pyrites, 667,000 (1957; sulfur content: 307,000); tin concentrates (Sn content), 1,145 (1957); and tungsten ore (nickel-cobalt content), 2,589 (1957).

Agricultural output declined somewhat in 1958 from the good crop year of 1957. Chief grain crops and 1958 yields were: wheat, 749,000 metric tons; rye, 211,000; barley, 110,000; and oats, 140,000. Output of potatoes in 1958 totaled 1,196,000 metric tons; olive oil, 82,782 (1958–59); grapes for wine, 838,000; and port wine for export, 5.6 million gallons (down 10% from 1957). The 1958 fish catch, consisting principally of sardines, was a record 275,220 metric tons. Portugal annually provides over half the world's output of cork.

Foreign Trade.—Total exports in 1958 were valued at 8,299 million escudos (about the same as in 1957); imports, at 13,791 million (down 4%). Chief exports and values were: cork, 1,319 million escudos; fish, 1,035 million; and wine, 943 million. Principal imports are raw materials, machinery, vehicles, iron and steel, and petroleum products. In 1958 the Portuguese overseas provinces took 27.4% of Portugal's exports; the United Kingdom, 11.3%; the United States, 8.3%; and West Germany, 7.6%. West Germany supplied 17.6% of Portugal's 1958 imports; the Portuguese overseas provinces, 14.7%; the United Kingdom, 12.9%; and the United States, 7.1%.

Principal Events, 1959.—Gen. Humberto Delgado, the defeated opposition candidate who received nearly a fourth of the electorate's votes in the presidential election of June 8, 1958, was allowed to leave Portugal on April 20, after he had been given political asylum for three months at the Brazilian embassy in Madrid. The government had retired General Delgado from the Portuguese Air Force on January 7 because of his alleged subversive activities, and he had then declared that he was in danger of being arrested. Following his arrival in Brazil on April 21, the general said that he would continue to oppose Premier Salazar and that he expected the Portuguese regime to collapse "at any time."

As a result of the widespread dissatisfaction indicated by the voters in the 1958 presidential election, the National Assembly approved on June 18, 1959, a bill amending the constitution and

[1] World and continental population totals, compiled by the United Nations Statistical Office, are in the nature of estimates, since accurate enumerations have never been taken in some areas of the world.

Table 2—VITAL STATISTICS FOR SELECTED COUNTRIES

(Data are for 1958, unless otherwise indicated. For countries marked with an asterisk (*), data for birth, death, and infant mortality rates are provisional. *Estimated Population*—figures are for mid-1958, as reported by the United Nations. *Birth Rate*—crude rate (number of births per 1,000 persons). *Death Rate*—crude rate (number of deaths, exclusive of stillbirths, per 1,000 persons). *Infant Mortality Rate*—deaths of infants under one year of age per 1,000 live births, excluding stillbirths. *Annual Increase*—average percentage increase of total population. *Life Expectancy*—average expectation of length of life (in years) at birth, based on mortality conditions of period indicated. *Population Per Sq. Km.*—total area, including inland water (1 sq. km. = 0.3861 sq. mi.). Sources: *Demographic Yearbook 1958; Population and Vital Statistics Reports, October 1959,* Statistical Office of the United Nations.)

Country	Estimated population ('000)	Birth rate	Death rate	Infant mortality rate	Annual increase (%) 1953–57	Life expectancy male	Life expectancy female	Life expectancy period	Population per sq. km. 1957
Africa									
Algeria	10,265	31.8[1]	10.6[1]	88.8[1]	2.0		...		4
Egypt*	24,781	39.2[2]	16.4[2]	140.4[2]	2.2	35.7	41.5	(1936–38)	24[3]
Sudan	11,037	51.7[4]	18.5[4]	93.6[4]	...		...		4
Tunisia	3,852	47.0	9.6	173	1.3		...		30
Union of South Africa	14,418	...	...	...	1.8		...		12
White	...	25.6[5]	8.8[5]	28.9[5]	...	63.8	68.3	(1945–47)	
Colored	...	49.0[5]	16.8[5]	127.4[5]	...	41.7	44.0	(1945–47)	
Asiatic	...	32.8[5]	8.8[5]	65.4[5]	...	50.7	49.8	(1945–47)	
Asia									
Ceylon	9,388	36.6[5]	9.9[5]	67.5[5]	2.5	60.3	59.4	(1954)	140
India	397,540	39.9[6]	27.4[6]	185[6]	1.3	32.5	31.7	(1941–50)	120
Indonesia	86,900	40[7]	20[7]	150[7]	1.7		...		57
Iran*	19,723	37.8[5]	8.3[6]	...	...		...		12
Iraq	6,700	16.6[1]	5.0[1]	28.5[1]	...		...		15
Israel	1,997	26.4	5.8	35.0	4.1	68.0[8]	71.4[8]	(1957)	94
Japan*	91,760	18.0	7.5	34.6	1.2	63.2	67.6	(1957)	246
Malaya, Federation of	6,515	43.2	11.0	79.6	2.4		...		48
Philippines	24,010	29.2[1]	10.3[1]	111.8[1]	1.9	48.8	53.4	(1946–49)	76
Singapore	1,515	42.0	7.0	43.4	6.8		...		2,517
Syria*	4,280	25.8	5.5	53.6[4]	3.6		...		22
Taiwan	9,851[9]	41.7	7.6	34.9	3.6	41.1	45.7	(1936–41)	264
Thailand	21,474	42[10]	20[10]	55.2[1]	1.9	48.7	51.9	(1947–48)	41
North America									
Canada	17,048	27.6	7.9	30.2	2.8	66.3	70.8	(1950–52)	2
Costa Rica*	1,076	38.7	9.0	89.0	4.0	54.7	57.1	(1949–51)	20
Dominican Republic*	2,797	41.3	8.4	75.6	3.4		...		55
El Salvador*	2,434	46.4	13.3	89.6	3.4	49.9	52.4	(1949–51)	118
Guatemala*	3,546	48.3	21.3	104.3	3.1	49.3[11]	50.0[11]	(1949–51)	32
Honduras	1,828	43.0	11.1	64.4	3.3		...		16
Mexico*	32,348	44.5	12.5	80.8	2.9	37.9	39.8	(1940)	16
Nicaragua	1,378	41.8[1]	8.1[1]	65.9[1]	3.4		...		9
Panama*	995	39.7	8.8	57.2	2.9	60.4	63.1	(1952–54)	13
Puerto Rico*	2,316	32.7	7.0	53.9	0.8	45.1	46.9	(1939–41)	256
United States*	174,809[12]	24.3	9.5	26.9	1.8	67.3[13]	73.7[13]	(1956)	22
South America									
Argentina*	20,248	22.7	8.1	66.3[5]	1.9	56.9	61.4	(1947)	7
Bolivia*	3,311	20.8	7.2	92.7[2]	1.2	49.7	49.7	(1949–51)	3
Brazil	62,725	43[14]	20.6[14]	170[14]	2.4	49.8[15]	56.0[15]	(1949–51)	7
Chile*	7,298	35.5	12.1	126.8	2.6	49.8	53.9	(1952)	10
Colombia	13,522	43.3	12.8	100.0	2.2		...		12
Ecuador	4,007	47.0[1]	14.8[1]	101.8[1]	2.7	50.4[16]	53.7[16]	(1949–51)	14
Peru*	10,213	37.6	10.3	88.4	2.4		...		8
Uruguay*	2,700	11.4[1]	7.0[1]	73.0[1]	1.4		...		14
Venezuela*	6,320	45.8[6]	10.0[6]	67.3[6]	3.0		...		7
Europe									
Austria*	7,021	16.9	12.2	40.5	0.1	61.9	67.0	(1949–51)	83
Belgium*	9,053	17.0	12.1	30.5	0.6	62.0	67.3	(1946–49)	295
Bulgaria	7,728	17.9	7.9	52.2	0.9		...		69
Czechoslovakia*	13,470	17.4	9.3	29.5	1.0		...		104
Denmark*	4,515	16.6	9.2	23.4[5]	0.7	69.9	72.6	(1951–55)	105
Finland	4,376	18.5	8.9	24.5	1.2	63.4	69.8	(1951–55)	13
France*	44,558	18.2	11.2	31.6	0.8	65.0	71.2	(1952–56)	80
Germany, East*	16,263	15.6	12.7	44.2	— 0.9	66.2	70.2	(1954–55)	153
Germany, West*	52,150	17.0	10.8	36.0	1.2	64.6	68.5	(1949–51)	208
Greece*	8,173	18.9	7.1	39.1	0.9		...		61
Hungary	9,857	16.1	9.9	58.1	0.6	64.7	68.7	(1955)	106
Iceland	169	28.7[6]	6.9	...	2.3	66.1	70.3	(1941–50)	2
Ireland, Republic of	2,853	20.9	12.0	35.4	— 0.5	64.5	67.1	(1950–52)	41
Italy*	48,735	17.9	9.4	48.2	0.5	63.8	67.3	(1950–53)	161
Luxembourg	320	15.5	11.0	34.7	1.0	61.7	65.8	(1946–48)	122
Netherlands*	11,186	21.1	7.5	17.2	1.2	71.0	73.9	(1953–55)	340
Norway*	3,526	18.1	8.9	20.5[5]	1.0	71.1	74.7	(1951–55)	11
Poland*	28,783	27.5[5]	9.5[5]	76.9[5]	1.9	58.6	64.2	(1952–53)	91
Portugal*	8,981	23.1	10.2	85.8	0.8	58.8	63.8	(1955–56)	97
Rumania	18,059	21.6	8.7	70.5	1.4		...		75
Spain*	29,662	21.9	8.7	47.6	0.8	58.8	63.5	(1950)	58
Sweden*	7,415	14.2	9.6	15.8	0.7	70.5	73.4	(1951–55)	16
Switzerland	5,185	17.6	9.5	22.2	1.2	66.4	70.9	(1948–53)	124
USSR	208,826[17]	25[18]	7.2[18]	40.6[18]	...	63	69	(1955–56)	9
United Kingdom*	51,870	16.8	11.7	23.3	0.4	67.8[19]	73.3[19]	(1956)	212
Yugoslavia*	18,189	23.8	9.2	86.2	1.4	59.2	63.5	(1952–54)	70
Oceania									
Australia	9,846	22.6	8.5	20.5	2.3	67.1	72.8	(1953–55)	1
Hawaii	576	27.3	5.2	23.2	4.0	67.8	71.3	(1949–51)	37
New Zealand	2,282	26.6	8.9	23.4	2.2	68.3	72.4	(1950–52)	8

[1] 1956. [2] 1954. [3] 690 in inhabited and cultivated area. [4] 1955. [5] 1957. [6] Estimated from comparison of 1941 and 1951 census returns. [7] Official estimated rates for years since 1950. [8] Jewish population [9] Excluding armed forces and foreigners. [10] Estimated from comparison of 1947 census and 1956 survey. [11] For mixed population; figures for Indian population: male, 39.6; female, 38.7. [12] Including Alaska and Hawaii. [13] Whites only; figures for nonwhites: male, 61.1; female, 65.9. [14] Official estimate from comparison of 1940 and 1950 census returns. [15] Federal District only. [16] For Quito. [17] Census of 1959 (prelim.). [18] Not computed by U.N. Statistical Office. [19] England and Wales.

providing for the election of a president by an electoral college in place of popular suffrage. The electors, comprising parliamentary members and district representatives, are to choose a president on the 15th day before the expiration of the current president's seven-year term, with a two-thirds majority mandatory for election on the first ballot, a majority required on the second ballot, or a

plurality necessary on the third ballot.

Conflicts between the government and various opposition groups continued during the year. The government arrested 31 persons in March and accused them of participating in a Communist-inspired conspiracy. A letter sent in April to Premier Salazar by 45 prominent citizens reportedly protested against the regime's repressive methods, particularly the use of torture by the secret police. Later, the premier received a petition signed by university students which allegedly urged his retirement and condemned political repression and inadequate school facilities. A statement on December 1 by Paulo Benard Guedes, a retired general, that praised the institution of the monarchy as assuring "a true union of the Portuguese" was published in three Lisbon newspapers, and it aroused speculation that the monarchy might be restored. However, Premier Salazar, who was seriously ill early in the year and had hinted then that he might resign his position, gave no real indication that he would do so in the immediate future.

The National Development Bank, which was established to coordinate economic activities and to help finance new enterprises, began operations on August 4. The bank has a capital of 1 billion escudos, of which 70% was supplied by the government, and it will function in both Portugal and the Portuguese overseas territories.

On November 20, Portugal initialed the treaty which would make her a member, along with the other so-called Outer Seven countries, of the European Free Trade Association (q.v.).

W. R. F.

PORTUGUESE TERRITORIES. Portugal's overseas territories exceed 800,000 square miles in area and have a population of some 12.8 million. Each territory forms an overseas province of Portugal and is under the Ministry for Overseas Territories. The territories theoretically exercise administrative and financial autonomy, but are actually under the strict control of Lisbon. A governor, or governor general (in the larger territories), heads the territorial government. In some of the territories there are partly elective legislative councils, but in no instance is there any considerable degree of popular government. The African territories are among the least advanced areas of the continent in economic development and native education and self-rule, and have thus far remained virtually untouched by the nationalist movements under way in Africa.

PORTUGAL'S OVERSEAS PROVINCES

Province	Area (sq. mi.)	Pop. (est. 1958 '000)	Trade ('000,000 escudos[1]) Imports	Exports	Year
Africa					
Mozambique (Port. East Africa)	302,328	6,234	2,996	1,872	1957
Angola (Port. West Africa)	481,350	4,392	3,738	3,689	1958
Portuguese Guinea	13,948	559	187	153	1955
Cape Verde Islands	1,557	192	378	365	1957
São Tomé and Principe	372	62	133	173	1956
Asia					
Portuguese India	1,619	649	445	310	1954
Portuguese Timor	5,763	490	61	39	1957
Macao	6	210	117[2]	58[2]	1957

[1] The Portuguese escudo is equal to about 3.5 cents in U.S. currency.
[2] Patacas (1 pataca = 5.5 escudos); trade is largely transit.

Territories in Africa. *Mozambique.*—A territory extending some 1,500 miles along Africa's east coast. Europeans numbered 65,798 in 1955; mixed Africans, 29,873; Indians, 15,235; and Africans with *assimilado* status, 4,554. Lourenço Marques (est. 1955, 105,000) is the capital and chief port; Beira (50,000) is also a major port. The governor general is assisted by an advisory Government Council and a Legislative Council of 24 members (16 elected, 8 appointed). The 1957 budget was balanced at 2,527 million escudos. Under the 6-year development plan (1953–58), about $81.2 million was spent for social improvement and economic development. In 1956 there were 2,475 primary schools (293,953 pupils); 6 secondary (1,207); 69 vocational (7,496); and 5 normal (360). An estimated 98% of the population was illiterate in 1950.

The economy is chiefly one of subsistence agriculture. Native labor is recruited for mining in Transvaal or forced to labor for public projects or private firms or to grow cotton under restrictive conditions. Mozambique's six principal cash crops—sugar, cotton, cashew nuts, tea, copra, and sisal—accounted for 79% of the value of exports in 1958. Sugar exports in 1958 totaled 148,000 short tons; cotton, 35,974 metric tons (valued at $19.2 million); and cashew nuts, 105,791 short tons ($8.9 million). Manufactures (employing 38,800 workers in 1955) include cement, leather, textiles, footwear, beer, wood products, cottonseed oil, peanut oil, and soap. Chief minerals are coal (270,000 metric tons in 1957), bauxite (4,700), and beryl. Railways total 1,833 miles (1956); classified roads, 16,231 miles (about 342 miles of hard surface). Motor vehicles number 24,100 (1956); telephones, 9,136 (1957). International airlines operate out of Lourenço Marques.

Angola.—A territory on Africa's west coast, south of the Belgian Congo. Europeans number 109,568 (est. 1955). Luanda (est. 1955, 189,500) is the capital, and Lobito (31,630) is an important port. The governor general is aided by a Government Council and a Legislative Council of elected and appointed members. Revenue in 1956 totaled 3,124.6 million escudos; expenditure, 2,579.8 million. In 1956 there were 1,580 primary schools (75,215 pupils); 40 secondary (4,461); 183 vocational (7,024); and 1 normal (208). About 97% of the population was illiterate in 1950.

The majority of the native population is engaged in subsistence agriculture. Cash crops providing an important share of exports include coffee (1958 exports, 77,300 metric tons); sisal (prelim. 1958 output, 106 million pounds); palm oil (1958 exports, 9,966 short tons) and palm kernels (15,141); sugar; and cotton. Chief minerals are diamonds (1957 production, 864,400 metric carats); manganese ore (10,200 metric tons Mn content); and copper ore (5,200 metric tons Cu content). Petroleum wells at Luanda provide oil for a topping plant which began operations in 1958. The fish catch in 1957 totaled 395,500 metric tons. Manufactures includes fish products, palm oil, footwear, paper and wood products, cement, and vegetable fiber. Angola has 1,822 miles of railways, about 23,000 miles of roads (including 2,550 of main roads), 30,400 motor vehicles (1957), and 5,337 telephones (1957). The chief airport is at Luanda.

Portuguese Guinea.—A tropical territory on Africa's west coast about 175 miles south of Dakar. Europeans number 2,263 (1950). About 40% of the natives are Moslems. Bissau (pop. 1950, 18,309) is the capital and chief port. Revenue in 1956 totaled 131.0 million escudos; expenditure, 135.1 million. In 1956 there were 136 primary schools (10,178 pupils); 1 secondary (192); and 5 vocational (117). Illiteracy is almost universal among the natives. Chief exports are palm kernels (18,300 tons in 1958), peanuts, hides, wax, rice, and timber. Roads total about 1,800 miles.

Cape Verde Islands.—Nine inhabited and several barren islands in the Atlantic, about 370 miles west of Dakar. Europeans numbered 2,909 in 1950. The majority of the population is of mixed European-Negro descent. Praia (9,980) on São Thiago, is the capital. The estimated 1957 budget totaled 83.8 million escudos. In 1956 there were 182 primary schools (11,290 pupils); 2 secondary (892); and 5 technical (470). About 79% of the population was illiterate in 1950. Sal Island Airport handles transatlantic traffic. São Vicente is a fueling station for ships. Chief products are canned fish, coffee, mustard, salt, oranges, and brandy.

São Tomé and Principe.—Two islands 125 miles off the African coast in the Gulf of Guinea. Europeans numbered 1,152 in 1950. São Tomé (7,817) is the capital. Revenue in 1957 totaled 71.9 million escudos; expenditure, 66.9 million. In 1956 there were 22 primary schools (2,572 pupils); 1 secondary (103), and 2 vocational (200). Chief exports are cacao (10,600 metric tons in 1957), palm kernels (5,512 short tons in 1957), copra, coffee, and cinchona.

Territories in Asia. *Portuguese India.*—Three settlements along India's west coast: Goa, the largest (1,301 sq. mi.), near the southern end of the state of Bombay; Damão (Daman), an island 100 miles north of the city of Bombay; and Diu, an island across the Gulf of Cambay opposite Damão. The capital is the city of Goa (pop. 1950, 31,950). Europeans number about 1,500. The majority of the population are Indians, of whom about 60% are Hindus and the remainder Roman Catholics. A 23-member Legislative Council, partly elective and partly appointive, votes on bills submitted by the governor general and advises on budgetary matters. The 1957 budget was estimated at 194.5 million escudos. In 1956 there were 381 primary schools (31,662 pupils); 66 secondary (13,287); 15 technical (1,467); 1 normal (29); and 1 higher (117). About 78% of the population was illiterate

in 1950. Iron ore (1957 production, 1,739,000 metric tons iron content) and manganese ore (60,000, Mn content) are important exports; others include coconuts, fish, spices, cashew nuts, and copra.

Macao.—An island (with 3 smaller offshore islands) off the coast of China near Hong Kong. Europeans number 2,719 (1950). The majority of the population is Chinese. In recent years, several thousand Chinese fleeing from the mainland have taken refuge in Macao. Revenue in 1957 was estimated at 113.3 million escudos; expenditure, 95.3 million. Macao is an entrepôt port for trade with China, and is noted as a pleasure resort and smuggling center. The chief industry is fishing, supplemented with some local manufactures, such as textiles and firecrackers. The territory is served by Portuguese, British, and Dutch steamship lines.

Portuguese Timor.—This province lies between the Celebes and Australia, and comprises the eastern part of the island of Timor, the territory of Oe-Cusse (Ambeno), and 2 small islands in the Lesser Sundas. Dili (pop. 1950, 43,589) is the capital and chief port. Revenue in 1957 was estimated at 71.5 million escudos; expenditure, 70.5 million. In 1956 there were 86 primary schools (5,595 pupils); 2 secondary (167); and 2 vocational (59). Chief exports are coffee, rice, sugar, sandalwood, wax, and copra.

M. J. G.

POST OFFICE DEPARTMENT. Postal operations during the fiscal year 1959 continued to set new records in mail volume and revenue. Substantial further progress was made, too, in rehabilitating obsolete postal buildings, and in the development and use of mechanized and automated equipment for handling of the mails. Parcel post rate increases were approved by the Interstate Commerce Commission on Nov. 20, 1959, and became effective Feb. 1, 1960, to offset annual losses of about $88 million.

Net revenue of the Post Office Department for the 1959 fiscal year totaled $3,035,250,808. Operating expenses for fiscal 1959 totaled $3,640,368,053. The total postal deficit for the year was approximately $605,117,245. The volume of mail handled during fiscal 1959 increased (in terms of originating mail) to approximately 61,247,220,000 pieces.

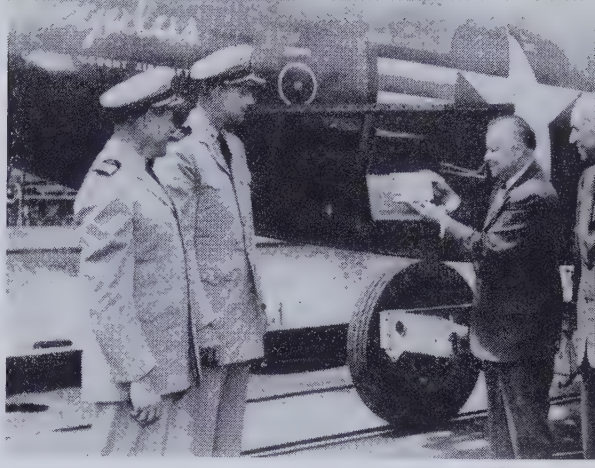
With 549,951 employees at the end of the 1959 fiscal year, the Post Office Department, including the field service, had more employees than any other nonmilitary department of the federal government. Included were 35,595 postmasters, 106,285 city carriers, 31,296 rural carriers, 171,018 postal clerks and mail handlers.

On June 30, 1959, the close of the fiscal year, there were 35,750 post offices, and 8,865 classified and contract stations and branches, and rural stations. Post offices included 218 in Alaska, 85 in Hawaii, 105 in Puerto Rico, 5 in the Virgin Islands, and 10 in Pacific islands other than Hawaii.

Rural delivery routes at the end of fiscal 1959 numbered 31,377 and covered a daily average of 1,752,601 miles, serving 9,189,211 families (comprising 34,090,208 individuals). These figures represented a reduction of 88 routes from the preceding year, but an increase of 1,752,601 in route mileage. At the end of the year there were 249,558 miles of domestic airmail routes in the United States, and during the year mails were flown over these routes a total of 114,336,482 ton-miles, as compared with 103,322,381 in the preceding fiscal year. United States-flag air carriers transported 11,676,320 pounds of foreign mails during the year.

Sales of postage stamps and stamped paper in the fiscal year 1959 yielded $1,245,230,803. Revenue from money orders totaled $67,089,236.

The Postal Savings System had 1,740,000 depositors at the close of the 1959 fiscal year, to whom was credited $1,043,452,661 on outstanding principal in active accounts, plus accrued interest obligations of $85,285,056, making a total liability to depositors of $1,128,737,717. Depositories at the end of fiscal 1959 numbered 6,335, or 536 fewer than one year earlier.



UPI

Postmaster General Arthur Summerfield, with Deputy Postmaster Edson Sessions (r.), holds letter about to be placed in first missile to carry mail. Fired on June 8 from a submarine in the Atlantic, the Regulus carried 3,000 letters 100 miles to a naval air station in Mayport, Fla.

L. ROHE WALTER,
Special Assistant to the Postmaster General.

POTASH. See MINERAL PRODUCTION.

POTATOES. See VEGETABLES.

POULTRY. See Index entry.

POWER, Electric. See ELECTRICAL DEVELOPMENTS; PUBLIC UTILITIES.

PRECIOUS STONES. See DIAMONDS; GEM STONES.

PRESBYTERIAN CHURCHES.[1] The 171st General Assembly of The United Presbyterian Church in the United States of America met on May 20, 1959, at Indianapolis, Ind., and elected the Rev. Dr. Arthur L. Miller, pastor of the Montview Boulevard Presbyterian Church of Denver, Colo., as moderator. Dr. Miller appointed the Rev. Dr. Walter A. Dodds of the First Presbyterian Church, Ithaca, N.Y., as vice moderator.

The merger of all the synods, presbyteries, and major program agencies of the former United Presbyterian Church of North America with those of the former Presbyterian Church in the United States of America, to form The United Presbyterian Church in the United States of America, was completed as of Jan. 1, 1959, by action of a Special Administrative Commission of the united General Assembly. The Special Committee on Consolidations, which had been at work for two full years, presented a final report and was discharged with the grateful thanks of the General Assembly.

The General Assembly approved a far-reaching program of educational assistance for college-age young people in the families of ministers and other full-time workers. The program is administered by the Board of Christian Education. Sixteen overtures proposing amendments to the Form of Government and Book of Discipline were sent to the presbyteries for their action.

The General Assembly approved a current operating program for its General Mission in the sum of $28,684,157 to be received from the churches, with $5,400,000 anticipated from women's organi-

[1] In 1959, distinctively Presbyterian churches in the United States included The United Presbyterian Church in the United States of America; Presbyterian Church in the United States (commonly called the Southern Presbyterian Church); Reformed Presbyterian Church General Synod; Reformed Presbyterian Church Synod; Associate Presbyterian Church Synod; Associate Reformed Presbyterian Church General Synod; Cumberland Presbyterian Church; Cumberland Presbyterian Church (Colored); Orthodox Presbyterian Church; and Bible Presbyterian Church.

zations, $422,500 from individuals, and $3,388,000 from nonliving sources, making a grand total of $37,894,657.

The church in 1959 reported a total communicant membership of 3,159,562.

PRESBYTERIAN CHURCH STATISTICS

Church	Ministers	Churches	Members
United Presbyterian Ch. in the U.S.A.	11,801	9,454	3,159,562
Presbyterian Ch. in the U.S.	3,564	3,948	869,501
Reformed Pres. Ch. Gen. Synod	8	11	1,279
Reformed Pres. Ch. Synod	105	75	6,382
Associate Pres. Ch. Synod	5	7	500
Associate Ref. Pres. Ch. Gen. Synod	118	148	27,560
Cumberland Presbyterian Ch.	738	990	87,531
Cumberland Presbyterian Ch. (Colored)	...	121	30,000
Orthodox Presbyterian Ch.	123	80	9,352

The 99th General Assembly of the Presbyterian Church in the United States (commonly called the Southern Presbyterian Church) was held in Atlanta, Ga., on April 23, 1959, and elected the Rev. Prof. Ernest Trice Thompson, of Union Theological Seminary, Richmond, Va., as its moderator. The Rev. Dr. E. C. Scott, stated clerk and treasurer, was honored in view of his retirement in July 1959; and the Rev. James A. Millard, Jr., was elected stated clerk and treasurer to succeed him. The General Assembly adopted a benevolence budget of $9,186,054 for its boards and agencies. The church in 1959 reported a total communicant membership of 869,501, a net gain of 20,766 over the preceding year.

HENRY BARRACLOUGH,
Associate Stated Clerk, General Assembly, The United Presbyterian Church in the U.S.A.

PRESS, Freedom of the. See the Index entry, *Freedom of Information, Press, and Speech.*

PRIBILOF ISLANDS. See Index entry.

PRICE SUPPORTS. See Index entry, *Subsidies.*

PRICES. See COST OF LIVING and the Index entry, *Prices.*

PRINCE EDWARD ISLAND. Canada's smallest province, Prince Edward Island is situated in the Gulf of St. Lawrence, north of Nova Scotia and New Brunswick. Its area is 2,184 square miles, and its population (1956 census), 99,285. The capital is Charlottetown (1956 pop., 16,446); other communities include Summerside (7,115), Souris (1,183), Parkdale (1,442), and Montague (1,068).

Government.—The island is governed by a lieutenant-governor (Hon. F. Walter Hyndman), a Legislative Assembly of 30 members (15 councilors elected by property franchise, and 15 assemblymen elected by popular franchise), and an Executive Council of 9 members (headed by Premier Walter R. Shaw). There are a Supreme Court of 3 members (Hon. Thane A. Campbell, chief justice), and county courts for each of the three counties. The province has 4 members in the federal House of Commons and 4 members in the Senate.

Finance.—On March 1, 1959, there were 23 branches of chartered banks in the province. The gross funded debt of the province was $22,046,000, less sinking funds of $5,239,000, leaving a net funded debt of $16,807,000. The unfunded debt was $8,719,000; total liabilities, $25,526,000.

Public Welfare.—For the fiscal year ending March 31, 1959, the federal government paid out $2,995,319 in family allowances on behalf of 39,386 children, and $4,813,341 in old-age pensions to 7,927 persons. The provincial government in fiscal 1959 paid out $387,810 in old-age assistance payments to 756 recipients, $58,428 in pensions to 87 blind persons, and $339,607 in assistance for 729 children under 16 years of age. Total benefits for the year amounted to $8,719,487.

Transportation and Communications.—As of Sept. 30, 1959, there were 3,300 miles of provincial roads, of which 600 miles were paved, 1,600 miles were improved, 1,100 miles were unimproved, and 20 miles were national park roads. The Canadian National Railway serves the island with 286 miles of track. Two ferry systems connect the province with the mainland. There are two airports, one at Charlottetown and one at Summerside, and the Maritime Central Airways provides regular passenger and freight service. As of Sept. 30, 1959, there were 17,036 telephones; 16,687 passenger cars; and 6,733 trucks.

Agriculture.—In 1958, farm cash income was $27,891,000. The chief crop, potatoes, was valued at $8,421,600; hay, $5,642,000; oats, $3,647,300; wheat, $147,200; and barley, $34,500. There were 114,000 cattle, 51,000 swine, 33,000 sheep and lambs, and 745,000 domestic fowl. The value of mixed grains was $2,180,500; dairy products, $4,911,000.

Fisheries.—The fish catch in 1958 totaled 39,007,000 pounds, with a landed value of $3,550,000 and a market value of $4,650,000. In addition, 14,950,000 pounds of Irish moss were gathered, with a market value of $183,000.

Principal Events, 1959.—In provincial elections of September 1, the Liberal government of Alexander W. Matheson was defeated, thereby ending 24 years of Liberal rule. The electorate returned 23 Progressive Conservatives and 7 Liberals to the Legislative Assembly, as compared with 26 Liberals and 4 Progressive Conservatives in the former assembly. The new government under Premier Walter R. Shaw took office on September 16.

During her Canadian tour, Queen Elizabeth II visited Prince Edward Island on July 30 and spent the day attending functions and touring points of interest.

Island industry maintained its usual steady development during the year. A new boat service was commenced between Charlottetown and Goose Bay to open up trade with the North. A federal paved highway was constructed through Prince Edward Island National Park. A new Royal Canadian Navy training establishment, the H.M.C.S. *Queen Charlotte,* was opened in Charlottetown.

An inquiry into educational finance in the province was ordered by the provincial government. A new compulsory health insurance plan was put into effect by the province on October 1. This plan is linked with that of the federal government through federal-provincial agreements.

FRANK MACKINNON,
Principal, Prince of Wales College, Prince Edward Island.

PRINCIPE. See PORTUGUESE TERRITORIES.

PRINTING AND PUBLISHING. See BOOK PUBLISHING AND SALES; GRAPHIC ARTS; MAGAZINES; NEWSPAPERS.

PRISONERS OF WAR. See Index entry.

PRISONS. Prison Population Trends.—State and federal prisons and reformatories held a total of 205,643 prisoners at the close of 1958. This was the highest year-end population on record and represented an increase of 10,229 prisoners, or 5.2%, over the previous year. On Dec. 31, 1958, there were 120 state or federal prisoners serving sentences for every 100,000 civilians in the country. The rates, higher than for any year since 1941, range from 25 per 100,000 in New Hampshire to 248 in the District of Columbia. Also registering high rates of prisoners per 100,000 population were Georgia with 182, Alabama and Maryland with 174 each, Virginia with 151, and Nevada and Florida with 147 each.

The federal institutions experienced a slightly larger increase in prisoners confined than those in the states. At the close of 1958, federal institutions held 21,549 prisoners, or 5.5% more than a year earlier. State institutions had 184,094 prisoners, or 5.2% more than in 1957. Of the four chief geographical regions, the West had the highest percentage increase in prisoners confined, 11.2. While all states except Colorado showed an increase, the three states which accounted for the large overall increase were New Mexico (19.4%),

California (13.5%), and Arizona (12.4%). The South was next with an increase of 6.3% in the number confined, and in this region Kentucky, with 13.0%, had the greatest percentage increase, followed by Florida, 12.5%; South Carolina, 12.1%; and Virginia, 11.4%. The number of prisoners confined in the North Central states increased by 2.5% over 1957, with substantial increases of 21.6% and 14.7% in North Dakota and Wisconsin, respectively. Among the Northeastern states the increase was only 2.1%, Vermont and Connecticut having the largest increases, 19.0% and 17.8%, respectively.

SENTENCED PRISONERS IN U.S. PRISONS AND REFORMATORIES
(December 31 of each year)

Year	Federal institutions	State institutions	Total	Rate per 100,000 population
1958	21,549	184,094	205,643	120.0
1957	20,420	174,994	195,414	116.0
1956	20,134	169,431	189,565	114.7
1955	20,088	165,827	185,915	114.5
1954	20,003	162,898	182,901	115.0
1953	19,363	154,216	173,579	111.2
1952	18,014	150,219	168,233	109.7
1951	17,395	148,285	165,680	109.7
1950	17,134	149,031	166,165	110.6
1949	16,868	146,881	163,749	111.0
1948	16,328	139,649	155,977	107.4
1947	17,146	134,158	151,304	106.1

Court Commitments.—A rise in the number of prisoners committed from court accounted for much of the increased total of prisoners confined at the close of 1958. During the year state and federal institutions combined received 88,780 court commitments—8,371, or 10.4%, more than in 1957. Proportionately the state institutions had the larger increase, receiving from court a total of 74,977 prisoners, or 11.7%, more than the previous year. Except for New Hampshire, Nevada, Montana, and Minnesota, all of the states had more commitments in 1958 than in 1957. Increases ranging from 25% to 62% were experienced in Kentucky, Vermont, Connecticut, North Dakota, Delaware, and Rhode Island. Court commitments to federal institutions numbered 13,803, or 3.7%, above 1957.

Releases.—Prisoners released from state institutions numbered 74,709 in 1958, an increase of 4.7% over the 1957 total of 71,327. Of these releases, 42,321, or 56.6%, were by parole, as compared with 55.4% in 1957. Across the country the use of parole varied from 5.9% of all releases in South Carolina to 98.6% in the State of Washington. In the four major geographical regions, the Northeastern states paroled 76.4% of prisoners released; the West, 75.2%; the North Central states, 69.0%; and the South, 32.3%. Federal institutions released 13,970 prisoners during 1958, of whom only 3,587 were by parole.

Prison Improvements.—Federal and state penal systems continued their construction activities in an effort to accommodate prison populations which had already expanded beyond the capacities of existing institutions. California was building a massive, 2,400-man medium-custody institution for adult prisoners at Los Padres and a youth institution at Ontario. Connecticut was engaged in the construction of minimum- and medium-security institutions at Enfield. The District of Columbia was creating a youth center at Lorton, Virginia. Missouri began building a new medium-security institution at Moberly. New Mexico was studying plans for a new institution which would permit the removal of youthful prisoners from the state penitentiary. Ohio was working on the final stages of a correctional institution at Lebanon; and Pennsylvania, on the final stages of a new institution for

BUREAU OF PRISONS INSTITUTIONS
(Figures as of June 30, 1959)

Type of institution	Population
Penitentiaries:	
Alcatraz, California	264
Atlanta, Georgia	2,795
Leavenworth, Kansas	2,524
Lewisburg, Pennsylvania	1,518
McNeil Island, Washington	1,176
Terre Haute, Indiana	1,380
Reformatories:	
Alderson (females), West Virginia	576
Chillicothe, Ohio	1,362
El Reno, Oklahoma	1,164
Petersburg, Virginia	635
Institutions for juvenile and youth offenders:	
Ashland, Kentucky	530
Englewood, Colorado	452
National Training School, Washington, D.C.	434
Natural Bridge Camp, Virginia	76
Correctional institutions:	
Danbury, Connecticut	618
La Tuna, Texas	702
Milan, Michigan	715
Seagoville, Texas	522
Tallahassee, Florida	717
Terminal Island (males), California	674
Terminal Island (females), California	164
Texarkana, Texas	494
Prison camps:	
Allenwood, Pennsylvania	228
Florence, Arizona	217
Greenville, South Carolina	284
McNeil Island, Washington	251
Mill Point, West Virginia	76
Montgomery, Alabama	229
Safford, Arizona	85
Tucson, Arizona	109
Detention headquarters:	
New York, N.Y.	162
Medical center:	
Hospital, Springfield, Mo.	780
Maintenance unit, Springfield, Mo.	255
Alaskan Jail System:	189
In transit	189

defective delinquents at Dallas. Wisconsin broke ground at Fox Lake for a minimum-custody institution of advanced design. The Federal Prison System opened two new camps at Safford, Ariz., and Greenville, S.C.; reopened the long-closed correctional institution at Sandstone, Minn., and took over from the Army a well-equipped institution at Lompoc, Calif. It also received from Congress a down-payment on the construction of a new 700-prisoner maximum-custody institution at Marion, Ill.

Federal Sentencing.—In July 1959 the Judicial Conference of the United States sponsored a pilot sentencing seminar at Boulder, Colo., to discuss the problem of excessive disparities in the sentences imposed by federal courts on defendants with substantially similar backgrounds and offenses. This initial meeting was intended to develop the form and content of a regular sentencing institute program under a 1958 statute in which Congress suggested that the judiciary undertake to work out more consistency in sentencing philosophy and practice. The pilot seminar disclosed broad areas of disagreement between federal judges in their approach to sentencing duties. In mid-September the seminar proceedings were studied by the Judicial Conference in order to determine the need for further experimentation at the national level before conducting the circuit-level institutes envisaged by the framers of the authorizing legislation.

Prison Disorders.—By September the year 1959 promised to rival in intensity the early 1950's when a destructive rash of uprisings raged through American prisons. Following a typical pattern of taking civilian captives and holding them as hostages in an effort to bargain for concessions or release, groups of prisoners staged rebellions in the Walpole (Mass.) state prison (March 7), the Concord (Mass.) state reformatory (April 22), the Deer Lodge (Mont.) state prison (April 16, 17, and 18), Tennessee's Ft. Pillow prison farm (May 11), the Monroe (Wash.) state reformatory (July 6), Tennessee's Brushy Mountain state prison (July 13 and 14), and the Federal Prison System's Springfield (Mo.) medical center (June 22 and 23).

Prisoners engaged in sit-down strikes at the New Jersey state prison at Trenton (January 30), the Utah state prison at Salt Lake City (August 13), the Mississippi state prison at Parchman (August 20), and the London, Ohio, prison farm (August 24). A revolt at Pennsylvania's Eastern Penitentiary was forestalled only minutes before the

"zero hour" set by its 15 ringleaders (September 6). A mass break occurred (April 5) at Maryland's Patuxent institution for defective delinquents when 34 prisoners overpowered two guards and escaped. In Iowa the governor slated an investigation of the Fort Madison state penitentiary after six prisoners escaped from inside the walled enclosure (August 23). In the worst break of the year, half the 40-prisoner population of Ivy Bluff prison in North Carolina captured the entire guard force on duty, locked them in cells and rooms, stole the prison's arsenal of weapons, and escaped (December 8).

Federal Prison Finances.—The sum of $38,520,542 was required to operate 31 Bureau of Prisons institutions for the fiscal year 1959. The confinement, treatment, and care of one prisoner for one day, including cost of maintaining institutional facilities, during the year averaged $4.82, or 46 cents more than in the previous year. Partially offsetting these costs, Federal Prison Industries, Inc., a government corporation operated in conjunction with the Bureau of Prisons, in May 1959 paid into the U.S. Treasury a dividend of $4 million. The fiscal year ending on June 30, 1959, was the most successful in the corporation's history, with sales (to other government agencies only) exceeding $31 million and net industrial profits of $5.5 million. The corporation maintained 32 industrial shops employing on a full-time basis a daily average of 4,356 prisoners.

J. V. Bennett,
Director, Bureau of Prisons.

PRIZES AND AWARDS. The principal prizes and awards announced in 1959 include those in the following list, classified by subject. For other awards not listed here, see the Index entry, *Prizes and Awards.*

Nobel Prizes

Chemistry.—Prof. Jaroslav Heyrovský (q.v.) of the Institute of Polarography of the Czechoslovak Academy of Sciences, for his development of an electrochemical method of analysis.

Literature.—Salvatore Quasimodo (q.v.), Italian poet, for "his lyrical poetry, which with classical fire expresses the tragic experience of life in our time."

Peace.—Philip J. Noel-Baker (q.v.), British public official.

Physics.—Drs. Emilio Segrè and Owen Chamberlain (qq.v.) of the University of California, for their demonstration of the existence of the antiproton.

Physiology and Medicine.—Dr. Severo Ochoa (q.v.) of New York University and Dr. Arthur Kornberg (q.v.) of Stanford University, for "discoveries of the mechanism in the biological synthesis in ribonucleic acids and deoxyribonucleic acids."

The 1959 awards were equivalent to $42,600 in each category.

Pulitzer Prizes

Announced by the trustees of Columbia University on May 4, 1959, the Pulitzer Prize awards for 1958 were as follows:

Journalism.—Most disinterested and meritorious public service rendered by a United States newspaper: Utica *Observer-Dispatch* and Utica *Daily Press,* for a successful campaign against gambling, corruption, and vice in Utica. Distinguished local reporting (under pressure of edition time): Mary Lou Werner of the Washington *Evening Star,* for her coverage of school desegregation in Virginia. Distinguished local reporting (showing initiative and resourcefulness, not under pressure): John Harold Brislin of the Scranton *Tribune* and the *Scrantonian,* for his campaign against labor violence in Scranton. Distinguished reporting on national affairs: Howard Van Smith of the Miami *News,* for articles on the plight of migrant farm workers in Immokalee, Fla. Distinguished reporting on international affairs: Joseph Martin and Philip Santora of the New York *Daily News,* for articles on brutality in Cuba during the regime of President Fulgencio Batista. Distinguished editorial writing: Ralph McGill of the Atlanta *Constitution,* for his effective and courageous editorials, especially one on the bombing of schools and synagogues. Distinguished editorial cartoon: William H. (Bill) Mauldin of the St. Louis *Post-Dispatch,* for a cartoon inspired by Boris Pasternak's rejection of the 1958 Nobel Prize in literature. Outstanding news photography: William Seaman of the Minneapolis *Star,* for a photograph of a fatal traffic accident.

Letters.—Fiction in book form: Robert Lewis Taylor (q.v.), for *The Travels of Jaimie McPheeters.* American play: Archibald MacLeish (q.v.), for *J.B.* Book on United States history: the late Dr. Leonard D. White and Miss Jean Schneider, for *The Republican Era: 1869–1901.* American biography: Arthur C. Walworth, for *Woodrow Wilson.* Volume of verse: Stanley Kunitz (q.v.), for *Selected Poems, 1928–1958.*

Music.—John La Montaine, for Concerto for Piano and Orchestra.

Following notification on November 5 that he had won the 1959 Nobel Peace Prize, Philip J. Noel-Baker (l.), British public official, is congratulated by his son, Francis.

UPI

Art, Music, and Dance

Benjamin Altman Prize ($2,000) for figure painting: Joseph Hirsch.

Benjamin Altman Prize ($2,000) for landscape painting: Edward H. Betts.

American Institute of Architects Gold Medal: Walter Gropius.

American Institute of Graphic Arts Medal: May Massee.

American Water-Color Society Grand Prize ($1,000) and Gold Medal of Honor: Morton Roberts, for *By the Sea.*

Art Institute of Chicago American Exhibition of Painting and Sculpture prizes: Isamu Noguchi, Mr. and Mrs. Frank G. Logan Art Institute Medal and $2,000, for his sculpture *The Self;* Louise Nevelson, Mr. and Mrs. Frank G. Logan Art Institute Medal and $1,000, for her sculpture *Construction in Three Sections;* Joseph Cornell, Ada S. Garrett Prize ($1,500) in painting, for *Orion;* Hans Hofmann, Flora Mayer Witkowsky Prize ($1,500) in painting, for *The Pond.*

Boston Arts Festival Grand Prize in Art ($1,000): Gilbert Franklin, for his sculpture *Beach Figure.*

Arnold W. Brunner Memorial Prize ($1,000) in architecture of the National Institute of Arts and Letters: Edward Larrabee Barnes.

Capezio Dance Award ($1,000): Martha Graham.

Detroit Institute of Arts Second Biennial of American Painting and Sculpture awards: Lee Gatch, Joseph E. Temple Gold Medal and $3,200, for his painting *Fish Market;* Lee Bontecou, George D. Widener Memorial Gold Medal, for her sculpture *Bird;* James Brewton, J. Henry Schiedt Memorial Prize ($1,000), for his painting *Suicide of Judas.*

Alice M. Ditson Award ($1,000) for "distinguished service to American music": Julius Rudel, general director, New York City Opera Company.

National Institute of Arts and Letters Award for Distinguished Service to the Arts: Mrs. Elizabeth Ames.

National Institute of Arts and Letters Gold Medal for Graphic Art: the late George Grosz (q.v.).

National Sculpture Society Medal of Honor: Rudulph Evans.

New York Music Critics Circle awards for 1958: Best choral work—no award made; best dance work—no award made; best opera—Douglas Moore, for *The Ballad of Baby Doe;* best orchestral work—Walter Piston, for Viola Concerto; special citation—the late Ralph Vaughan Williams, for Symphony No. 9.

Royal Gold Medal for Architecture for 1959: Ludwig Miës van der Rohe.

São Paulo Museum of Modern Art Fifth Biennial prizes: Grand Prize (600,000 cruzeiros)—Barbara Hepworth of Great Britain; prizes (200,000 cruzeiros) for the best foreign artists—Modesto Cuixart of Spain, for painting; Somaini of Italy, for sculpture; prizes (200,000 cruzeiros) for the best Brazilian artists—Manabu Mabe, for painting; no award made for sculpture.

Marjorie Peabody Waite Award ($1,000) of the National Institute of Arts and Letters: Leon Hartl.

Journalism

F. Wayland Ayer Cup for mechanical excellence in journalism: Goshen (Ind.) *News.*

Heywood Broun Award ($500) for 1958: George N. Allen, New York *World-Telegram and Sun.*

Maria Moors Cabot awards for "advancement of international friendship in the Americas": Dr. Ricardo Castro Béeche, managing director, *La Nación,* San José, Costa Rica; Clement David Hellyer, Latin American editor, San Diego *Union;* Tad Szulc, South American correspondent, New York *Times;* Dr. Hernane Tavares de Sá, editor in chief, *Visão,* Rio de Janeiro; special citation—Juan Andrés Ramírez, editor, *El Plata,* Montevideo.

Columbia Journalism Award for "singular journalistic

performance in the public interest": Arthur Hays Sulzberger, New York *Times*.

Albert Lasker Medical Journalism awards ($2,500) for 1958: Joseph Kahn, New York *Post*, for articles on contraceptive counseling; Francis Bello, *Fortune*, for an article on coronary disease; Al Wasserman, Columbia Broadcasting System, for two television programs on narcotics addiction; *Today*, for coverage on public health and medical research.

Overseas Press Club awards: George Polk Memorial Award—Joseph Taylor, United Press International; Robert Capa Award—Paul Bruck, Columbia Broadcasting System; reporting from abroad—Bob Considine, Hearst Headline Service; American press interpretation of foreign affairs—Graham Hovey, Minneapolis *Star* and *Tribune;* radio or television reporting from abroad—Winston Burdett, Columbia Broadcasting System; American radio or television interpretation of foreign affairs—Chet Huntley, National Broadcasting Company; magazine reporting of foreign affairs—Joseph Kraft, *Saturday Evening Post;* book on foreign affairs—John Gunther, for *Inside Russia Today;* still photographic reporting from abroad—Andrew St. George; motion picture reporting from abroad—Joseph Oexle, National Broadcasting Company.

George Polk Memorial awards for 1958: Foreign reporting—Chet Huntley and Reuven Frank, National Broadcasting Company; national reporting—Richard L. Strout, *Christian Science Monitor;* local reporting—William Haddad, New York *Post;* community service—Brooklyn Heights *Press;* radio reporting—Jay McMullen, Columbia Broadcasting System; television reporting—Gabriel Pressman, National Broadcasting Company; magazine reporting—Marya Mannes, *Reporter;* news photography—Paul Schutzer, *Life;* special awards—Justice William O. Douglas, for *The Right of the People;* Samuel G. Blackman, Associated Press; Walter Sullivan, New York *Times*.

Literature

Academy of American Poets Prize ($5,000) for distinguished poetic achievement: Louise Bogan.

American Academy of Arts and Letters Award of Merit (gold medal and $1,000): Aldous Huxley.

Bancroft prizes ($3,000) of Columbia University "for distinguished writings in American history" for 1958: Daniel J. Boorstin, for *The Americans: The Colonial Experience;* Ernest Samuels, for *Henry Adams: The Middle Years.*

Bollingen Prize in Poetry ($1,000) for 1958: Theodore Roethke.

Caldecott Medal of the American Library Association: Barbara Cooney, for *Chanticleer and the Fox.*

Alexander Droutskoy Memorial Award (gold medal and $100) for service to poetry of the Poetry Society of America: W. H. Auden.

Fellowship Award ($5,000) of the Academy of American Poets: Léonie Adams.

Christian Gauss Award ($1,000) of Phi Beta Kappa: Margaret Gilman, for *The Idea of Poetry in France.*

Governor General's awards to Canadians for the best books of 1958: Fiction—Colin McDougall, for *Execution;* academic nonfiction—Joyce Hemlow, for *The History of Fanny Burney;* creative nonfiction—Pierre Berton, for *Klondike Fever;* poetry—James Reaney, for *A Suit of Nettles;* juvenile—Edith Lambert Sharp, for *Nkwala.*

Lamont Poetry Selection of the Academy of American Poets for 1959: Donald B. Justice, for *The Summer Anniversaries.*

National Book awards ($1,000): Fiction—Bernard Malamud, for *The Magic Barrel;* nonfiction—J. Christopher Herold, for *Mistress to an Age;* poetry—Theodore Roethke, for *Words for the Wind.*

National Institute of Arts and Letters Gold Medal for Drama: Arthur Miller.

National Institute of Arts and Letters Gold Medal for "good speech on the stage": Katharine Cornell.

Newbery Medal of the American Library Association: Mrs. Elizabeth George Speare, for *The Witch of Blackbird Pond.*

Edgar Allan Poe awards of the Mystery Writers of America for 1958: Best mystery novel—Stanley Ellin, for *The Eighth Circle;* best first mystery novel—Richard Martin Stern, for *The Bright Road to Fear;* best short story—William O'Farrell, for *Over There—Darkness;* best fact crime writing—Wenzell Brown, for *They Died in the Chair;* special award—Olive Woolley Burt, for *American Murder Ballads; and Their Stories.*

Prix Femina: Bernard Privat, for *Au pied du mur.*

Prix Goncourt: André Schwarz-Bart, for *Le dernier des justes.*

Prix Interallié: Antoine Blondin, for *Un singe en hiver.*

Prix Médicis: Claude Mauriac, for *Le diner en ville.*

Prix Théophraste Renaudot: Albert Palle, for *L'expérience.*

Richard and Hinda Rosenthal Award ($1,000) of the National Institute of Arts and Letters: Frederick Buechner, for *The Return of Ansel Gibbs.*

Ryerson Fiction Award: Arthur G. Storey, for *Prairie Harvest.*

Shelley Memorial Award ($1,065) of the Poetry Society of America for 1958: José Garcia Villa, for *Selected Poems and New.*

Woodrow Wilson Foundation Award ($1,000) of the American Political Science Association: Christian Bay, for *The Structure of Freedom,* and James S. Coleman, for *Nigeria: Background to Nationalism.*

Radio and Television

Academy of Television Arts and Sciences awards for 1958: Most outstanding single program of the year—*An Evening with Fred Astaire;* best special dramatic program—*Little Moon of Alban;* best special musical or variety program—*An Evening with Fred Astaire;* best special news program—*Face of Red China;* best comedy series—*The Jack Benny Show;* best dramatic series—*Playhouse 90; Alcoa-Goodyear Theatre;* best musical or variety series—*Dinah Shore Chevy Show;* best news commentary or analysis—Edward R. Murrow, Columbia Broadcasting System; best news reporting series—*Huntley-Brinkley Report;* best on-the-spot news coverage—Columbia Broadcasting System, for coverage of the Cuban Revolution; best panel, quiz, or audience participation series—*What's My Line?;* best public service program or series—*Omnibus;* best Western series—*Maverick;* best single performances—Julie Harris, in *Little Moon of Alban;* Fred Astaire, in *An Evening with Fred Astaire;* best performances in a comedy series—Jane Wyatt, in *Father Knows Best;* Jack Benny, in *The Jack Benny Show;* Ann B. Davis, in *The Bob Cummings Show;* Tom Poston, in *The Steve Allen Show;* best performances in a dramatic series—Loretta Young, in *The Loretta Young Show;* Raymond Burr, in *Perry Mason;* Barbara Hale, in *Perry Mason;* Dennis Weaver, in *Gunsmoke;* best performances in a musical or variety series—Dinah Shore, in *Dinah Shore Chevy Show;* Perry Como, in *The Perry Como Show;* best comedy writing—Sam Perrin, George Balzer, Hal Goldman, and Al Gordon, for *The Jack*

Meeting in Stockholm, Sweden, for presentation of the 1959 Nobel Prizes on December 10 were (l. to r.): Emilio Segrè (U.S.), physics; Severo Ochoa (U.S.), medicine; Jaroslav Heyrovský (Czechoslovakia), chemistry; Owen Chamberlain (U.S.), physics; Birger Ekberg, chairman of the Nobel Foundation; Arthur Kornberg (U.S.), medicine; and Salvatore Quasimodo (Italy), literature.

EUROPEAN

Benny Show; best dramatic writing—James Costigan, for *Little Moon of Alban;* Alfred Brenner and Ken Hughes, for *Eddie;* best musical or variety writing—Bud Yorkin and Herbert Baker, for *An Evening with Fred Astaire;* best direction of a single program of a comedy series—Peter Tewksbury, for *Medal for Margaret;* best direction of a single program of a dramatic series—George Schaefer, for *Little Moon of Alban;* Jack Smight, for *Eddie;* best direction of a single musical or variety program—Bud Yorkin, for *An Evening with Fred Astaire;* best art direction—Edward Stephenson, for *An Evening with Fred Astaire;* Claudio Guzman, for *Bernadette;* best live camera work—*An Evening with Fred Astaire;* best cinematography—Ellis Carter, for *Alphabet Conspiracy;* best choreography—Hermes Pan, for *An Evening with Fred Astaire;* best editing of a film for television—Silvio d'Alisera, for *Meet Mr. Lincoln;* best engineering or technical achievement—improvement of video tapes by the three networks; best musical contribution—David Rose, for *An Evening with Fred Astaire.*

George Foster Peabody awards for 1958: Radio.—*Easy as ABC,* cited for contribution to international understanding; *Standard School Broadcast,* best educational program; Station WNEW, New York, best news analysis; *The Hidden Revolution,* cited for public service. Television.—*The Blue Fairy,* best children's program; *M.D. International,* cited for contribution to international understanding; *Continental Classroom,* best educational program; *Playhouse 90,* best dramatic entertainment; *The Steve Allen Show,* best entertainment with humor; Leonard Bernstein and the New York Philharmonic, best musical entertainment; *Huntley-Brinkley Report,* best news analysis; Columbia Broadcasting System, cited for public service; James Costigan's *Little Moon of Alban,* best writing; *College News Conference,* best youth program; *An Evening with Fred Astaire* and Orson Welles' *Fountain of Youth,* special awards.

Robert E. Sherwood Television awards of the Fund for the Republic: *Made in Japan,* $5,000 award; *Twenty Cent Tip,* $2,500 award; *Report from Alabama* and *The American Stranger,* $2,000 awards; *Small World* and *Bishop Pike,* $1,000 awards; *Meet Mr. Lincoln,* $500 award.

Sylvania Television awards for 1958: Most outstanding program—*Little Moon of Alban;* best original television play—James Costigan, for *Little Moon of Alban;* best television adaptation—*The Bridge of San Luis Rey;* best performance by a starring actress—Julie Harris, in *Little Moon of Alban;* best performance by a starring actor—Neville Brand, in *All the King's Men;* best children's program—*Art Carney Meets Peter and the Wolf;* best comedy program—*The Chevy Show,* starring Sid Caesar; best documentary program—*Face of Red China;* best documentary series—*The 20th Century;* best dramatic program—*Little Moon of Alban;* best light musical program—*An Evening with Fred Astaire;* best contribution to serious music—Leonard Bernstein; best news and special events program—National Broadcasting Company's coverage of Explorer rocket launching; best public service series—*Continental Classroom;* best religious series—*Frontiers of Faith, Catholic Hour,* and *Eternal Light;* best variety program—*The Bob Hope Moscow Show.*

Science

Roger Adams Award (gold medal and $5,000) in organic chemistry of the American Chemical Society: Dr. Derek H. R. Barton, University of London.

Alexander Agassiz Medal of the National Academy of Sciences: Dr. Martin W. Johnson, Scripps Institution of Oceanography.

American Cancer Society National Award: Dr. George Wells Beadle, California Institute of Technology.

American Chemical Society Award (gold medal and $1,000) in the chemistry of milk: Dr. E. L. Jack, University of California.

American Chemical Society Award ($1,000) for creative work in synthetic organic chemistry: Dr. Herbert C. Brown, Purdue University.

American Chemical Society Award (gold medal and $1,000) in industrial and engineering chemistry: Dr. Neal R. Amundson, University of Minnesota.

American Chemical Society Award ($1,000) for nuclear chemistry: Dr. Charles D. Coryell, Massachusetts Institute of Technology.

American Chemical Society Award ($1,000) in petroleum chemistry: Dr. Robert W. Taft, Jr., Pennsylvania State University.

American Chemical Society Award ($1,000) in pure chemistry: Dr. E. J. Corey, Harvard University.

American Heart Association Gold Heart awards for 1959: Dr. Edgar V. Allen, Mayo Clinic; Drs. Samuel A. Levine and David Davis Rutstein, Harvard Medical School.

American Institute of Chemists Gold Medal for 1959: Crawford H. Greenewalt, E. I. du Pont de Nemours & Co.

Bôcher Memorial Prize of the American Mathematical Society: Dr. Louis Nirenberg, New York University.

Borden Award (gold medal and $1,000) of the Association of American Medical Colleges: Dr. Theodore T. Puck, University of Colorado Medical Center.

Octave Chanute Award of the Institute of the Aeronautical Sciences: John T. Reeder, Langley Research Center, National Aeronautics and Space Administration.

Comstock Prize of the National Academy of Sciences: Dr. Charles Hard Townes, Columbia University.

Dr. C. C. Criss Award (gold medal and $10,000) of Mutual of Omaha: Dr. Thomas Dooley.

Davy Medal of the Royal Society: Dr. R. B. Woodward, Harvard University.

Arthur L. Day Medal of the Geological Society of America: Sir Edward Bullard, Cambridge University.

Edison Medal of the American Institute of Electrical Engineers for 1959: James F. Fairman, Consolidated Edison Company of New York.

Albert Einstein Award (gold medal and $5,000) of the Lewis and Rosa Strauss Memorial Fund: Dr. Willard F. Libby, University of California.

Daniel Giraud Elliot Medal of the National Academy of Sciences: Dr. Herbert Friedmann, Smithsonian Institution.

Enrico Fermi Award (gold medal and $50,000): Dr. Glenn T. Seaborg, University of California.

Fisher Award ($1,000) in analytical chemistry: Dr. Philip J. Elving, University of Michigan.

Franklin Medal of the Franklin Institute: Dr. Hans A. Bethe, Cornell University.

Fritzsche Award (gold medal and $1,000) for work in essential oils: Dr. Carl Djerassi, Stanford University.

Garvan Medal of the American Chemical Society: Dr. Mary L. Caldwell, Columbia University.

Willard Gibbs Medal of the American Chemical Society for 1960: Dr. George B. Kistiakowsky, special assistant to the president for science and technology.

Daniel Guggenheim Medal of the American Society of Mechanical Engineers: Sir George Robert Edwards, Vickers-Armstrongs (Aircraft), Ltd.

Hayden Geological Award of the Academy of Natural Sciences: Dr. Carl O. Dunbar, Yale University.

Dannie Heineman Prize ($2,500) for mathematical physics: Dr. Murray Gell-Mann, California Institute of Technology.

Lewis H. Hill Space Transportation Award of the Institute of the Aeronautical Sciences: the late Dr. Robert H. Goddard.

Holley Medal of the American Society of Mechanical Engineers: Col. Maurice J. Fletcher, Army Prosthetics Research Laboratory, Walter Reed Medical Center.

Hoover Medal for distinguished public service by an engineer: Dr. Henry T. Heald, Ford Foundation.

Hubbard Medal of the National Geographic Society: Rear Adm. George J. Dufek.

Industrial Research Institute Medal for 1960: Dr. Augustus B. Kinzel, Union Carbide Corporation.

Institute of Radio Engineers Medal of Honor for 1960: Dr. Harry Nyquist, Bell Telephone Laboratories.

John Jeffries Award of the Institute of the Aeronautical Sciences: Dr. Hubertus Strughold, U.S. Air Force School of Aviation Medicine.

Kendall Company Award ($1,000) in colloid chemistry: Dr. John D. Ferry, University of Wisconsin.

Kimber Genetics Award of the National Academy of Sciences: Dr. Tracy Morton Sonneborn, Indiana University.

Jessie Stevenson Kovalenko Medal of the National Academy of Sciences: Dr. Eugene L. Opie, Rockefeller Institute for Medical Research.

Frank H. Lahey Memorial Award "for outstanding leadership in medical education": Devereux C. Josephs.

Benjamin G. Lamme Gold Medal of the American Institute of Electrical Engineers for 1958: Dr. Sterling Beckwith, consultant; Philip L. Alger, General Electric Company.

Albert Lasker Award ($2,500) of the American Heart Association for 1959: Dr. Robert E. Gross, Harvard Medical School.

Albert Lasker awards in medical research and public health administration: Special awards ($5,000)—Sen. Lister Hill; Rep. John E. Fogarty; regular awards ($2,500)—Maurice Pate, U.N. Children's Fund; Dr. John H. Dingle, Western Reserve University School of Medicine; Dr. Albert H. Coons, Harvard Medical School; Dr. Jules Freund, National Institutes of Health; Dr. Gilbert Dalldorf, National Foundation.

Eli Lilly and Company Award (gold medal and $1,000) in biological chemistry: Dr. James D. Watson, Harvard University.

Robert M. Losey Award of the Institute of the Aeronautical Sciences: Patrick D. McTaggart-Cowan, Meteorological Division, Canadian Department of Transport.

Mineralogical Society of America Award: Dr. Harry F. W. Taylor, University of Aberdeen.

Paul-Lewis Laboratories Award (gold medal and $1,000) in enzyme chemistry: Dr. Arthur B. Pardee, University of California.

Penrose Medal of the Geological Society of America: Dr. Adolph Knopf, Stanford University.

Phi Beta Kappa Science Prize ($1,000): Dr. Loren C. Eiseley, for *Darwin's Century.*

Priestley Medal of the American Chemical Society: Dr. Hermann I. Schlesinger, University of Chicago, medal for 1959; Dr. Wallace R. Brode, science adviser to the secretary of state, medal for 1960.

Sylvanus Albert Reed Award of the Institute of the Aeronautical Sciences: Victor E. Carbonara, Kollsman Instrument Corporation.

Research Corporation Award ($2,500): Dr. Melvin Calvin, University of California.

Roebling Medal of the Mineralogical Society of America: Prof. Felix K. L. Machatschki, Vienna University.

Royal Geographical Society medals: Sir Raymond Edward Priestley, Founder's Medal; Comdr. William R. Anderson, U.S. Navy, Patron's Medal.

Rumford Premium (medals and $5,000) of the American Academy of Arts and Sciences: Dr. George Wald, Harvard University.

Scientific Apparatus Makers Award ($1,000) in chemical education: Dr. Arthur F. Scott, Reed College.

Sedgwick Memorial Medal of the American Public Health Association: Dr. Louis I. Dublin, Institute of Life Insurance.

Lawrence Sperry Award of the Institute of the Aeronautical Sciences: Robert G. Loewy, Vertol Aircraft Corporation.

Mary Clark Thompson Medal of the National Academy of Sciences: Dr. Roman Kozłowski, University of Warsaw.

Trudeau Medal of the National Tuberculosis Association: Dr. Edith M. Lincoln, New York University–Bellevue Medical Center.

Viking Fund awards (medal and $1,000) of the Wenner-Gren Foundation for Anthropological Research, Inc.: Dr. Raymond W. Firth, University of London; Dr. Henri Victor Vallois, Musée de l'Homme; Dr. Jesse D. Jennings, University of Utah.

Wright Brothers Medal of the Society of Automotive Engineers for 1958: Kermit E. Van Every, Douglas Aircraft Company, Inc.

Theater and Motion Pictures

Academy of Motion Picture Arts and Sciences awards for 1958: Best picture of 1958—*Gigi;* best film actress—Susan Hayward (q.v.), for her performance in *I Want to Live!;* best film actor—David Niven (q.v.), for his performance in *Separate Tables;* best director—Vincente Minnelli, for *Gigi;* best supporting actress—Wendy Hiller, in *Separate Tables;* best supporting actor—Burl Ives, in *The Big Country;* best foreign-language film—*My Uncle, Mr. Hulot* (French); best feature documentary film—*White Wilderness;* best screenplay—Nathan E. Douglas and Harold Jacob Smith, for *The Defiant Ones;* best screen adaptation—Alan Jay Lerner, for *Gigi;* best original song—*Gigi* (Frederick Loewe and Alan Jay Lerner); best music scoring (drama or comedy)—Dimitri Tiomkin, for *The Old Man and the Sea;* best music scoring (musical)—André Previn, for *Gigi;* best cinematography (black and white)—Sam Leavitt, for *The Defiant Ones;* best cinematography (color)—Joseph Ruttenberg, for *Gigi;* best art direction—William A. Horning and Preston Ames, for *Gigi;* best special effects—Tom Howard, for *Tom Thumb;* best costume design—Cecil Beaton, for *Gigi;* best film editing—Adrienne Fazan, for *Gigi;* best sound recording—*South Pacific;* best documentary short subject—*Ama Girls;* best live-action short subject—*Grand Canyon;* best cartoon short subject—*Knighty Knight Bugs;* special awards—Jack L. Warner (Irving G. Thalberg Award); Maurice Chevalier.

American National Theatre and Academy (ANTA) awards: Kim Stanley, for her performance in *A Touch of the Poet;* Jason Robards, Jr., for his performance in *The Disenchanted.*

Barter Theater Award: Robert Whitehead, for production of *A Touch of the Poet, The Cold Wind and the Warm,* and *Goldilocks.*

British Film Academy awards for 1958: Best film—*Room at the Top;* best British actress—Irene Worth, for performance in *Orders to Kill;* best British actor—Trevor Howard, for performance in *The Key;* best non-British actress—Simone Signoret, for performance in *Room at the Top;* best non-British actor—Sidney Poitier, for performance in *The Defiant Ones;* best documentary film—*Glass* (Dutch); United Nations Award—*The Defiant Ones.*

Cannes International Film Festival prizes: Golden Palm—*Black Orpheus* (French); best actress—Simone Signoret, for performance in *Room at the Top* (British); best actor—Orson Welles, Dean Stockwell, and Bradford Dillman, for performance in *Compulsion* (American); best director—François Truffaut, for *The 400 Blows* (French); International Prize—*Nazarene* (Mexican); special jury prize—*Stars* (Bulgarian); special prize for comedy—*Policarpo* (Italian); special mention—*The White Heron* (Japanese).

Clarence Derwent awards ($500) for best nonfeatured performances by an actress and an actor for 1958–59: Lois Nettleton, for performance in *God and Kate Murphy;* David Hurst, for performance in *Look After Lulu.*

Milestone Award of the Screen Producers Guild: Samuel Goldwyn.

New York Drama Critics Circle awards: *A Raisin in the Sun,* best American play of the 1958–59 season; *The Visit,* best foreign play; *La Plume de Ma Tante,* best musical.

New York Film Critics Circle awards: best picture—*Ben-Hur;* best actress—Audrey Hepburn, for performance in *The Nun's Story;* best actor—James Stewart, for performance in *Anatomy of a Murder;* best director—Fred Zinnemann, for *The Nun's Story;* best screen writing—*Anatomy of a Murder;* best foreign-language film—*The 400 Blows* (French).

Antoinette Perry awards for 1958–59: *J.B.,* play by Archibald MacLeish (q.v.); *Redhead,* musical with book by Herbert and Dorothy Fields, Sidney Sheldon, and David Shaw, music by Albert Hague, and lyrics by Miss Fields; Gertrude Berg, for performance in *A Majority of One;* Jason Robards, Jr., for performance in *The Disenchanted;* Gwen Verdon, Richard Kiley, and Leonard Stone, for performances in *Redhead;* Julie Newmar, for performance in *The Marriage-Go-Round;* Charlie Ruggles, for performance in *The Pleasure of His Company;* Pat Stanley and Russell Nype, for performances in *Goldilocks;* Elia Kazan, for direction of *J.B.;* Salvatore Dell'Isola, for musical direction of *Flower Drum Song;* Bob Fosse, for choreography, and Rouben Ter-Arutunian, for costumes, of *Redhead;* Donald Oenslager, for sets of *A Majority of One;* Sam Knapp, for work as an electrician at *The Music Man;* cast of *La Plume de Ma Tante.* John Gielgud, and Howard Lindsay and Russel Crouse, special awards.

Screen Directors Guild of America Award for 1958: Vincente Minnelli, for *Gigi.*

Venice International Film Festival awards: Golden Lion of St. Mark—*General Della Rovere* (Italian) and *The Great War* (Italian); best actress—Madeleine Robinson, for performance in *A Double Tour* (French); best actor—James Stewart, for performance in *Anatomy of a Murder* (American); special jury prize—*The Magician* (Swedish).

Writers Guild of America awards for 1958: Laurel Award for Achievement—Nunnally Johnson; best drama—*The Defiant Ones;* best comedy—*Me and the Colonel;* best musical—*Gigi.*

Miscellaneous

Horatio Alger awards: Albert J. Berdis, John F. Ernsthausen, Alfred C. Fuller, Alfred L. Hammell, Walter L. Jacobs, James P. Mitchell, Charles F. Noyes, Dr. Eric A. Walker, Benjamin H. Wooten.

American Association for the United Nations Award for distinguished service to the United Nations: Dr. Auguste R. Lindt.

American Bar Association Medal: Grenville Clark.

B'nai B'rith President's Medal: President Dwight D. Eisenhower.

Charlemagne Prize of Aachen for outstanding contributions to European unity: the late General of the Army George C. Marshall (q.v.).

Collier Trophy "for the greatest achievement in aviation" in the United States in 1958: Clarence L. Johnson, Lockheed Aircraft Corporation; Neil Burgess and Gerhard Neumann, General Electric Company; Lt. Col. Howard C. Johnson and Maj. Walter W. Irwin, U.S. Air Force.

Erasmus Prize ($28,000) of the European Cultural Foundation: Dr. Karl Jaspers and Robert Schuman.

Four Freedoms Award: Henry Cabot Lodge (q.v.).

Freedom Award of Freedom House: Paul-Henri Spaak.

Grolier Society Award ($500) for an unusual contribution by a librarian to the stimulation and guidance of reading by children and young people: Evelyn Sickels, former coordinator of children's services, Indianapolis Public Library.

Harmon International Aviation Trophy for 1959: Maj. André Turcat, Nord Aviation.

International Benjamin Franklin Society Gold Medal: Dr. Herman B. Wells, president, Indiana University.

Laetare Medal of the University of Notre Dame: Robert Murphy, deputy under secretary of state.

Joseph W. Lippincott Award (medal and $500) of the American Library Association: Essae Martha Culver, Louisiana state librarian.

Nansen Medal for "services to the humanitarian cause of refugees": Oskar Helmer.

President's awards for distinguished federal civilian service: James V. Bennett, Dr. Wernher von Braun, Robert D. Murphy, Doyle L. Northrup, Dr. Hazel K. Stiebeling.

Theodore Roosevelt medals for distinguished service: Horace M. Albright, Henry Cabot Lodge (q.v.), American Museum of Natural History.

George Washington Honor Medal of the Freedoms Foundation: J. Edgar Hoover.

Woodrow Wilson Award for Distinguished Service: Dr. James B. Conant.

Wright Brothers Memorial Trophy for 1959: William P. MacCracken, Jr.

PRODUCTION, Industrial. See Industrial Production.

PROFITS, Industrial. See Business Data, U.S.

PROPAGANDA. See Index entry.

PROPERTY INSURANCE. See Insurance.

PROTESTANT EPISCOPAL CHURCH. On Jan. 14, 1959, in the Cathedral of St. Peter and St. Paul, Washington, D.C., the Rt. Rev. Arthur C. Lichtenberger, bishop of Missouri, was installed as the 21st (the 6th elected) presiding bishop of the Protestant Episcopal Church.[1] The year also

[1] Prior to his elevation to the episcopate, Bishop Lichtenberger had been a missionary in China, a professor in the General Theological Seminary, and the dean of Trinity Church Cathedral, Newark, N.J.

marked the 175th anniversary of the consecration (Nov. 14, 1784) of Samuel Seabury as the first bishop of the church in the United States. The first bishop of Connecticut, Seabury also served as the second presiding bishop (1789–92). Prior to the 1920's, when the office of presiding bishop was made elective, the office was held by the senior bishop in point of consecration.

The year 1959 also marked several other notable anniversaries, including the centennial of the Japanese Episcopal Church (*Nippon Seikokai*). The movement, begun by a few lone missionaries soon after the opening of Japan to the West in 1854 by Commodore Matthew Perry (a great-uncle of a later presiding bishop) and by another Episcopalian diplomat, Townsend Harris, grew in 10 decades, despite persecutions, war, and other obstacles, to an autonomous, self-supporting, self-propagating church, with 11 dioceses covering the entire empire and led by Japanese bishops and other clergy.

In April appropriate recognition was given to this anniversary during the meeting in Tokyo of the General Synod of the Japanese church. Among those participating were the archbishop of Canterbury; Presiding Bishop Lichtenberger; and representatives of other branches of the Anglican Communion. The event also was the occasion of the gift from United States Episcopalians of a nuclear reactor to St. Paul's (Rikkyo) University, one of the leading institutions of higher learning in Japan. The contract for the erection of the reactor by the General Atomics Company was signed in New York City on December 15.

In the United States, the year 1959 marked the 100th anniversary of the church in North Dakota and Oregon, and the centennial of the consecration of Alexander Gregg as the first bishop of Texas. All three areas have shown encouraging growth, and Texas, which was served by one bishop in 1859, had grown by 1959 to comprise five dioceses with nine bishops.

The centennial in North Dakota was marked by placing in service of a bus equipped with a modern exhibit of the church's life and work. The exhibit is moved from town to town throughout North Dakota to acquaint the citizens of that state with the Episcopal Church.

In accordance with the action of the Lambeth Conference of 1958, and at the request of the metropolitans of the Anglican Communion, the archbishop of Canterbury, early in 1959, invited the bishop of Olympia (Wash.), the Rt. Rev. Stephen F. Bayne, Jr., to be the first executive officer of the Anglican Communion. Bishop Bayne resigned his jurisdiction in Olympia to undertake this work, and the diocese elected as his successor the Rt. Rev. William Fisher Lewis, missionary bishop of Nevada.

Other changes in the missionary episcopate in 1959 included the election of the Rev. William G. Wright, director of the National Council's Home Department, as bishop of Nevada, and of the Rev. Paul A. Kellogg as the first missionary bishop of the Dominican Republic. The Episcopal Church has been at work in the Dominican Republic since 1897, but until 1940 the area was under the care of neighboring bishops, first of Puerto Rico and later of Haiti. In 1940 the General Convention organized the Dominican Republic into a separate missionary district but continued it in charge of the bishop of Haiti. It was not until 1959 that provision for a bishop of its own was made.

Headquarters of the National Council of the Episcopal Church (which is the board of directors of the Domestic and Foreign Missionary Society) are at Church Missions House, 281 Fourth Avenue, New York 10, N.Y. The official publication is *Forth* (William E. Leidt, Publisher). The president of the National Council is the Rt. Rev. Arthur Lichtenberger.

William E. Leidt,
Director of Publications, National Council, Protestant Episcopal Church.

PROTESTANTISM. See Religion.

PRUNES. See Fruits.

PSYCHIATRY AND MENTAL HEALTH. During 1959 the effort to understand and control mental illness was expanded and intensified in the United States. Challenges to the structure and function of the traditional state hospital appeared at many levels. A study of the state administration of mental health services in New Jersey, for example, resulted in the recommendation of certain drastic changes, including the strengthening of state authority. In Georgia there was a shift of mental hospitals from independent status to the jurisdiction of a state public health authority. Alaska, the only state without a mental institution, succeeded in 1959 in planning and authorizing a $6.5 million state hospital to be located near Anchorage.

Accreditation.—Standards which had been accepted for years were challenged by the withholding of accreditation from many mental hospitals by the Joint Commission on Accreditation of Hospitals. There was, however, a counterchallenge to the competence of this body, which is oriented chiefly to the general hospital. As a result, future evaluations were expected to be more appropriate and acceptable.

Hospital Care.—The decline in the number of patients in mental hospitals in recent years,[1] owing largely to the use of tranquilizing drugs, decelerated in 1959 to one half of 1 per cent. In some hospitals the population actually rose.

Hospitalization methods in England continued in 1959 to be of significant interest to American health authorities. The broadening of the Worthing Experiment in England supported earlier findings that increased community out-patient and home services result in a reduction of the need for hospitalization.

After studying British "open" hospitals, a New Jersey delegation contributed to the trend in the United States away from patient isolation and toward improved community services. It offered ten recommendations which were later approved by the state. These bore upon voluntary admission, easy readmission, improved preadmission services, analysis and more economical use of nursing personnel, concern with the social as well as with the physical disorders of the patient, day care for the aged patient, establishment of improved living conditions for patients, reduced bed capacity of hospitals, re-examination of record-keeping practices, and simplification of budgeting procedures.[2] Taking action in this general area, the Veterans Administration in August announced adoption of an "open door policy" for the operation of its mental hospitals.

Financing.—A Roper poll in 1959 showed that the care and treatment of the mentally ill ranked second to education as the service most Americans were willing to pay for. This attitude seemed increasingly to be borne out in steps being taken toward financing the nation's mental health programs. Congress, for example, again proved to be generous in its appropriations. It provided $68 million for mental health, more than $15 million

[1] In state hospitals alone the decrease approximated 13,000 between 1955 and the end of 1958, when patients numbered 545,465.

[2] *Mental Hygiene*, 43:325, April 1959.

beyond the president's request. Action by the National Association of County Officials called for increased county appropriations for mental health purposes.

Repeated efforts continued to be made to include mental illness as an insurable disability.[3] A step in this direction was reflected in recent New York State workmen's compensation schedules which provide coverage for psychiatric examinations.

Personnel.—The number of mental health workers increased in 1959, but the shortage of personnel continued despite the attractions of constantly rising salaries and marked improvements in training methods and facilities.

It was estimated that in 1959 there was one psychiatrist for every 16,400 persons in the United States, compared with one for every 19,200 in 1956.

Increasing attention was being given to strengthening the role of the family physician in assuming psychiatric responsibility for his patients, and training opportunities were accordingly being offered. For this purpose a special congressional appropriation was made to the National Institute of Mental Health, and the American Psychiatric Association was conducting a joint project with the Academy of General Practice. In a related development the National League for Nursing continued to give special attention to the improved training of psychiatric aides in mental hospitals and launched a special publication for them.

Research.—During the year the National Association for Mental Health greatly expanded its research program and made grants to a number of research centers. New drugs were being developed and older ones were being constantly tested for effectiveness and specific applicability. A critical review of hereditary enzyme deficiencies, including those bearing on mental illness, was reported,[4] and another study appraised the multiple theories of and attacks on schizophrenia.[5]

In other research developments a "Health for Peace" bill was presented in Congress by Sen. Lister Hill to launch a National Institute of International Medical Research which would receive an annual appropriation of $50 million to help attack the illnesses of man wherever investigation promises to be fruitful. The Southern Regional Education Board was undertaking a study of mental health research in the South.

Interesting advances were made in the field of mental deficiency. Studies disclosed a consistent increase in chromosomes in the cells of persons afflicted with mongolism and have demonstrated the possibility of preventing cretinism through prenatal treatment of mothers suffering from thyroid deficiency. One study showed that children born in the winter are more apt to suffer from mental deficiency than those born at other times of the year.

Insanity Before Law.—With a view to revising their own statutes, several states were seriously studying the Durham decision of 1956 in which a federal court altered the basis of criminal responsibility established in the century-old M'Naghten formula.

International Developments.—On World Health Day (April 7) the World Federation for Mental Health opened World Mental Health Year with a multiprofessional, multinational program at the United Nations Headquarters in New York. In connection with the program many countries are conducting or planning mental health projects which will be reported in 1961 at a congress in Paris.

Two transnational mental health conferences of importance were held in 1959. One occurred at St. Thomas in the Virgin Islands and principally involved representatives of countries in or adjacent to the Caribbean area; and the other, the third Latin-American conference, met in Lima, Peru.

(See also MEDICINE; NERVOUS SYSTEM.)

GEORGE S. STEVENSON,
National and International Consultant,
The National Association for Mental Health.

PSYCHOLOGY. For an exhaustive bibliography of current psychological literature the reader should consult the *Annual Review of Psychology* (Annual Reviews, Inc., Palo Alto, Calif.), in which specialists critically summarize the contributions of their respective fields, and the bimonthly *Psychological Abstracts* (American Psychological Association, Washington, D.C.), in which the literature is classified and abstracted as it appears. The programs of the annual meetings of the American Psychological Association and of its regional divisions provide another important source. Reports of these appear, with titles of all contributed papers, in *The American Psychologist* (American Psychological Association, Washington, D.C.), the monthly organ of the association.

The following discussion must necessarily be limited to a sampling of recent contributions in the fields of experimental, social, and applied psychology.

Experimental Psychology.—The greatest research and theoretical activity in experimental psychology exists in the areas of learning, sensory and perceptual processes, motivation, thinking, and physiological psychology.

Learning.—Much of the smoke and din of the battle of theories seems to be subsiding, and each contestant is applying himself to the task of theory construction on a "live and let live" basis. It does seem that research in the area of situation-response (S-R) theory continues most active and fruitful. This may be because of the greater ease with which the mind can picture its elementalistic variables. Especially noteworthy is the increasingly vigorous attack on problems of motivation in relation to learning and the strong attempt to clarify the distinctions and relations between motivation and habit. Illustrative of this trend, as well as of the delineation of newer approaches to motivation and reward, are recent papers by Neal E. Miller.

Statistical learning theory is a newcomer in the field of learning, but its influence is increasing. Although its publications still are relatively few in number, a sizable number of experimental studies triggered off by the stochastic model conceptions of William K. Estes have appeared. Estes, Frank Restle, C. J. Burke, and others have also published a number of theoretical papers conceptualized under the aegis of probability learning.

In general it may be said that the range of phenomena encompassed as variables in the investigation of learning is becoming wider, with motivation and perception as foci of this expansional trend. Also noteworthy is an increasing attention to the nature of the subject's responses. Conceptualization in terms of interrelations between abstracted functions is giving way hopefully to some consideration of the performing individual and what he does as part and parcel of the learning act.

Thought.—Interest is being revived in the ancient field of problem solving and thinking. The

[3] See Alt, Edith S., "Insured Psychiatric Care," *Public Health Reports,* 74:687, August 1959.

[4] Snyder, Laurence H., "Fifty Years of Medical Genetics," *Science,* 129:7–13, Jan. 2, 1959.

[5] Kety, Seymour, "Biochemical Theories of Schizophrenia," *Science,* Part 1, June 5, 1959; Part 2, June 12, 1959.

most comprehensive contemporary theoretical work in this field is a report on a symposium at the University of Colorado entitled *Contemporary Approaches to Cognition* (Cambridge, Mass., 1957) by Jerome S. Bruner, Charles E. Osgood, and others. The method known as semantic differentiation, which was initiated by Osgood, is continuing to bear fruit in the study of the structure of meaning and the problem of its relative dependence upon or independence from the mold of language. Another central topic is that of decision making, which is being treated largely in terms of a probabilistic orientation, as, for example, in the work of Robert D. Luce and Howard Raiffa, *Games and Decisions* (New York 1957).

Sensation and Perception.—The currently outstanding publication in the field of vision is the monumental *The Vertebrate Visual System* by the late Stephen Polyak (Chicago 1957). Its 1,390 pages are undoubtedly destined to play a future role similar to that of Hermann Helmholtz's classic on physiological optics during the past 100 years. Experimental contributions abound in the fields of flicker, adaptation, electroencephalography, and photoreceptor process. Considerable new work has been done in perception on figural after effects.

Publication in the field of hearing has also been very active. Both auditory sensory and perceptual phenomena are being subjected to study in terms of their physiological underpinning. The work in this field has been greatly stimulated by the Armed Forces—National Research Committee on Hearing and Bio-Acoustics.

Social Psychology.—The greatest productivity in social psychology during recent years has been in the field of social influence on attitude and opinion change. An important theoretical contribution to the subject is Leon Festinger's *A Theory of Cognitive Dissonance* (Evanston, Ill., 1957). Dissonance is held to be a motivating state inducing the individual to reduce it to bring about consonance and to avoid behavior and situations which tend to increase dissonance. This generalized position, which has stimulated a number of research papers, is supported by precise definition and a wealth of data.

Other studies deal with the identification of situational causes of attitude change, the nature of individual differences in tendency to change, and the effect of pre-existing personality differences on susceptibility to change under varying conditions.

A second field of social psychology showing great activity has been that of social perception. Topics such as the role of response categories, the personality of judges, and implicit assumptions in judges have been focal centers of much of the experimentation.

Applied Psychology.—A check of the relative number of articles appearing in the several branches of psychology reveals the domination of clinical psychology, psychological therapy, counseling psychology, and the supporting fields of developmental psychology and abnormal psychology.

Outside the clinical area, educational psychology is the largest field of application. Actually the findings of all fields of psychology have educational implication, as is evident from such topics as have been mentioned: learning, motivation, perception, and social change. In addition there are such other topics of special interest to the educator as the measurement of educational achievement and intellectual growth, adjustment problems of pupils and teachers, and psychological problems of administration. Educational psychology is a broad field and the interested person will find much in the psychological literature pertinent to its application.

(See also PARAPSYCHOLOGY.)

ALFRED G. DIETZE,
Professor of Psychology,
Michigan State University.

PUBLIC ASSISTANCE. See CHILD WELFARE; OLD AGE; SOCIAL WELFARE; and *Social Welfare* or *Public Assistance* section of state articles.

PUBLIC DEBT. See DEBT, PUBLIC AND PRIVATE; TREASURY DEPARTMENT.

PUBLIC HEALTH. Although a recurrence of Asian influenza, which struck the United States in epidemic proportions in the fall and winter of 1957, was expected in 1958, there were no reports of confirmed cases until February 1959. Sporadic outbreaks of both Type A2 (Asian) and Type B influenza began to occur during that month and continued to be reported for the remaining winter months.

The total number of paralytic poliomyelitis cases reported in the United States in 1958 was 3,697—almost 50% higher than in 1957. This increase ended the steady downward trend in incidence since 1954. By the end of 1958 about 50 million people under 40 years of age had had three injections of Salk vaccine, and some had had a fourth injection, but about 40 million people under 40 had had no vaccine. About half of the 3,697 paralytic cases occurred in children under 5, the group with the least amount of vaccine protection. To meet this situation, the U.S. Public Health Service, in cooperation with the American Medical Association and the National Foundation, campaigned vigorously to promote vaccination programs. The possible utilization of one or more orally administered live-virus vaccines—the subjects of large-scale tests in a number of countries—awaited conclusive determination of the safety and effectiveness of such vaccines. (See also MEDICINE; PEDIATRICS.)

Death Rates.—The general death rate in the United States in 1958 was 9.5 per 1,000 population. This was the 11th consecutive year in which the death rate remained below 10 per 1,000.

The infant death rate was 26.9 per 1,000 live births, and the maternal death rate, 3.5 per 10,000 live births. The tuberculosis death rate fell from 7.8 per 100,000 population in 1957 to 7.0 in 1958. The principal diseases of childhood—scarlet fever and streptococcal sore throat, diphtheria, whooping cough, and measles—which caused about 4 deaths for every 100,000 youngsters in 1949, were responsible for only about 1 death per 100,000 in 1958.

Chronic diseases continued to cause a majority of deaths in the United States. Together, diseases of the heart and blood vessels and cancer accounted for 70% of all deaths in 1958. The death rate for the major cardiovascular-renal diseases in 1958 was 524.0 per 100,000 population, and the cancer death rate was 145.6 per 100,000 population. (See also DEATH, CAUSES OF.)

Births and Marriages.—There were an estimated 4,250,000 births and 1,445,000 marriages in the United States in 1958.

Public Health Service.—The principal federal health agency, the Public Health Service, of the U.S. Department of Health, Education, and Welfare, continued its programs of research, medical care for specially designated groups, and technical and financial aid to state and local agencies.

In 1959, Congress appropriated $756,361,208 for the Public Health Service, an increase of $190,603,411 over the 1958 appropriation. More than two thirds of this amount was allocated to

the states and to nonfederal institutions for public health and medical research programs.

Increasing attention was given during the year to the growing health problems related to the modern environment, including air and water pollution and the effects of natural and man-made radiation. The service cooperated with Army, Navy, Atomic Energy Commission and Maritime Administration authorities in radiological protection and surveillance programs, and monitored radiation levels in air, water, and milk. A National Conference on Air Pollution, called by the service in November 1958 and attended by more than 1,000 representatives of industry, research organizations, and federal, state, and local agencies, recommended extension of the Federal Air Pollution Act and expanded research efforts, with particular attention to the problem of motor vehicle exhausts.

Investigations conducted by or with the support of the service included engineering studies, air sampling to detect cancer-causing substances, and communitywide air surveys. The newly created Division of Water Supply and Pollution Control gave grants totaling $47 million to aid in construction of sewage treatment works, most of the assistance going to cities of less than 125,000 population. An important phase of research in this area centered on problems created by manufacture of new chemicals and synthetics, and studies of radioactivity in water.

In March 1959 the National Advisory Committee on Radiation, set up by the surgeon general in 1958 to advise him on radiological health matters, recommended a comprehensive program of control of all sources of radiation and expanded research and training in this field, with principal federal responsibility in the Public Health Service. In August 1959 the president established by executive order a Federal Radiation Council, designated the secretary of health, education, and welfare as chairman, and directed the department to intensify its radiological health efforts, including research, development, technical assistance, enforcement, and public information on ionizing radiation. In September, Congress enacted legislation authorizing a permanent Federal Radiation Council and clarifying the responsibility of the states for radiation safety measures. (See also RADIATION; SANITARY ENGINEERING.)

Research.—The National Institutes of Health, main research arm of the Public Health Service, in 1959 awarded an unprecedented 9,166 research-project grants and 5,779 training grants and fellowships, totaling $202 million. Congressional appropriations for the institutes' programs totaled $294.4 million, and an additional $30 million was appropriated for construction of health research facilities.

Substantial progress was made in the search for better chemical agents to treat cancer and in the evaluation of drugs for the treatment of mental illness. A collaborative study of 40,000 mothers and their babies was directed toward finding causes of cerebral palsy, mental retardation, and related disorders. Scientists in various institutes cooperated in finding new basic knowledge of neurostructural bases of behavior. Clinical studies were initiated to evalute promising new compounds for dietary control of dental caries and treatment of high blood pressure.

An experiment involving induction of leukemia in mice by means of a virus extracted from a mouse sarcoma stimulated investigation of the possible viral origins of some human cancers and constituted one of the major achievements of the year.

The second in a series of long-term programs to coordinate aging studies was established at Yeshiva University through a grant from the National Institutes of Health's Center for Aging Research.

A new synthetic pain-killing drug—10 times more powerful than morphine and 50 times more powerful than codeine—was developed by scientists at the institutes and given the name phenazocine. In addition to high potency, phenazocine causes less respiratory depression than morphine, has low toxicity, and is effective against certain forms of severe pain which morphine does not relieve.

Women cigarette smokers were found in a cancer institute study to run the same excessive risk of developing lung cancer as men cigarette smokers. This confirmed a belief of other investigators that there is no factor peculiar to men which contributes to the development of this form of cancer.

Medical Services.—In continuing to provide services for merchant seamen and other designated federal beneficiaries, the Public Health Service in 1959 maintained 16 hospitals (including two for treatment of narcotic addiction and other psychiatric disorders, 1 for tuberculosis, and 1 for leprosy), 26 outpatient clinics, and 99 outpatient offices.

Ministering to about 345,000 Indians and 37,500 Alaska natives through hundreds of health facilities that reach from above the Arctic Circle to the Mexican border, the Division of Indian Health conducted the largest and most comprehensive civilian health program within the federal government.

In 1959, the 13th year of the cooperative state-federal program for the construction of hospital and medical facilities (Hill-Burton program), 77% of the need for general hospitals, but only 16% of the need for chronic disease hospitals, 37% of the need for nursing homes, and 52% of the need for mental hospital beds, were met. For all types of hospitals, 855,000 additional beds were still needed, according to state plans on record as of Jan. 1, 1959.

Services to the States.—Grants-in-aid funds for state and local health programs amounted to $265,475,000 in federal appropriations for 1959, reflecting increases of $65,000,000 for hospital and medical facilities construction and $700,000 for venereal disease special projects, as compared with 1958 appropriations. Funds for tuberculosis control, however, were decreased by $500,000. To help strengthen other state and local health programs, $1,972,848.13 was allocated for public health workers' professional traineeships, $199,939.79 for air pollution control training and demonstration projects, and $442,300 for grants to schools of public health in the provision of public health training.

LEROY E. BURNEY,
Surgeon General, U.S. Public Health Service.

PUBLIC OPINION SURVEYS. The 1960 political campaigns in the United States probably will see a wider use than ever before of private surveys financed by the several candidates. Although in Great Britain and West Germany the major political parties have engaged for years in systematic public opinion research, it was not until 1956 that private political polls became common in the United States. The trend continued in 1958, and the upset victory of Nelson Rockefeller in that year's New York gubernatorial election was widely ascribed to his skillful use of private survey findings. This trend has been decried in some quarters as encouraging appeals to selfish group interests at the expense of the national welfare, as blunting differences between the parties on crucial issues, and as producing candidates who follow public opinion instead of boldly attempting to lead it. On the other hand, candidates for public office have always, and quite properly, sought to learn the desires and preferences of the voters, and scientifically conducted surveys simply provide a more accurate method of achieving this end.

The shifting nature of public sentiment far in advance of a general election is illustrated by the recent resurgence of Republican Party fortunes and the rising popularity of Vice President Richard Nixon, as chronicled by leading polls during the year. Surveys made early in 1959 showed a heavy voter preference for the Democratic Party, with only a bare majority of those questioned approving of Dwight D. Eisenhower as president.

By autumn, however, the proportion of voters approving of Eisenhower had risen from 52% to 68%, and the Republican Party had regained much of its lost support. Further, "trial heats" conducted by the Gallup Poll showed Nixon comfortably ahead of any Democratic candidate for president. As the year drew to a close, the vice president was the nomination choice of 68% of Republican voters. Democrats showed no such heavily weighted consensus. Sen. John Kennedy and Adlai Stevenson were each favored by slightly over a fourth of the party's supporters, and no

other individual was named by more than 10%.

In Great Britain, the Conservative victory in the October 1959 election was correctly forecast by all three national polling agencies. Errors in the estimated division of the popular vote were well under 2%.

A 13-nation survey by the World Gallup Poll found widespread public approval of an exchange of visits between Soviet Premier Khrushchev and President Eisenhower, with fewer than one person in ten disapproving of the idea. Although opposition was strongest in the United States, a clear majority of the American public endorsed the proposal, and at the close of Khrushchev's United States tour in September, only 19% of those polled thought his visit had been "a bad thing." A "before-and-after" Gallup Poll survey of the American public's "image" of the Soviet premier found that favorable references increased from 13% to 27%, while unfavorable references remained about the same. After the visit, more people than before characterized him as "intelligent" and "cooperative," and fewer regarded him as "domineering" and "ruthless," although there was a considerable rise in the proportion who called him "untrustworthy." Only 20% of the American public expressed a belief in Khrushchev's sincerity in wanting to work out an effective disarmament plan.

The year 1959 marked the first occasion on which Soviet citizens were polled on a political question. At the request of the World Gallup Poll, Radio Moscow interviewed some 90 Russians concerning the exchange of visits between Khrushchev and Eisenhower. While all of the Muscovites approved of the idea, there were varied expectations concerning the outcome.

Visitors to the USSR reported the beginnings of market research efforts there, now that consumer goods are in greater supply. Also, it was reported that the Communist Hungarian government has already conducted several studies of people's buying habits and needs.

Creation of the 6-nation European Economic Community (q.v.) is expected to increase greatly the use of public opinion surveys in western Europe. A three-day conference entitled "Market Research on a European Scale" was held in Paris in the summer of 1959.

The World Association for Public Opinion Research, with members in 24 countries, held its 1959 conference in Brighton, England. The theme was "Widening Frontiers of Research," and reports of new activity in Yugoslavia, Spain, and Africa were read.

In spite of these encouraging developments, there is emerging a cautious attitude toward opinion surveys on the part of some governments. It is reported that the United Arab Republic, for example, now requires governmental permission for surveys involving more than 50 respondents.

A survey of the 545 members of the American Association for Public Opinion Research shows that 61% are research directors of corporations, or executives of market or opinion research companies; 29% are employed by academic institutions; and 10% represent government agencies, foundations, and educational or charitable institutions. At the 1959 meeting of the association, held at Lake George, N.Y., Elmo Roper was presented with the Julian L. Woodward Memorial Award for his distinguished career in public opinion research.

PAUL B. SHEATSLEY,
Eastern Representative, National Opinion Research Center, University of Chicago.

PUBLIC ROADS, Bureau of. See HIGHWAYS.

PUBLIC UTILITIES. Electric Power.—The installed capacity of electric public utility generating plants in the United States increased to 150.2 million kilowatts as of June 30, 1959, compared with 128.7 million kw. the previous year. Steam continued to increase its share of the total, accounting for 78.13%; water power accounted for 20.11%, and internal combustion for 1.75%. Of the total, 76.16% was privately owned and 23.84% was publicly owned. Average annual residential consumption increased to 3,366 kw.-hr., while the average revenue per kw.-hr. continued its long secular decline to 2.53 cents.

U.S. ELECTRIC POWER SALES, YEARS ENDING JUNE 30, 1958–59
(In billions of kilowatt-hours)

Area	1958[1]	1959[2]	Per cent change, 1958–59
New England	22.7	24.6	8.0
Middle Atlantic	89.8	94.4	5.1
East North Central	126.5	136.4	7.8
West North Central	35.1	37.7	7.4
South Atlantic	73.1	79.3	8.5
East South Central	80.1	82.1	2.5
West South Central	46.7	50.9	9.1
Mountain	24.1	26.2	8.8
Pacific	79.2	85.9	8.5
United States	577.3	617.5	7.0

[1] 1958 figures are final, as revised. [2] 1959 figures are preliminary. (Source: Federal Power Commission.)

Electric utilities received rate increases aggregating an estimated $76 million a year in 1958, and requests for increases which would total some $92 million were pending at the year's end. The propriety of allowing as expenses for rate making and tax purposes the costs of the electric utility industry's advertising program directed against public ownership was questioned by the Federal Power Commission and the Bureau of Internal Revenue. President Eisenhower, on Aug. 6, 1959, signed a bill enabling the Tennessee Valley Authority (q.v.) to obtain capital through the sale of revenue bonds (up to $750 million) to finance construction of new facilities, and requiring the agency to pay an annual return on its investment and limiting its geographical expansion.

As of December 1959, the 60,000-kw. Shippingport, Pa., nuclear power plant and two small experimental reactors (with generating capacities under 10,000 kw.) were producing commercial power in the United States. Sixteen additional commercial power reactors (11 sponsored by public utilities) were in various stages of planning, construction, or testing; three of these, all large, were to begin regular operation in 1960, and three more in 1961. One of the largest plants under construction was the Indian Point plant (near Peekskill, N.Y.) of the Consolidated Edison Company of New York. It will have a capacity of 275,000 kw. and will cost approximately $100 million. The unit cost of $363 per kw. compares with typical costs of conventional plants ranging from $115 to $180 per kw. The cost of power at the Shippingport, Pa., nuclear plant was reported at 64 mills (6.4 cents) per kw.-hr., as compared with approximately 7 mills (0.7 cent) at conventional plants. These figures indicate that the economic operation of nuclear generating plants will be somewhat further in the future than had been expected.

An experimental nuclear plant of approximately 20,000 kw. was being built in Canada, near Chalk River, Ontario, and plans were announced for a 200,000 kw. plant on Lake Huron, near Kincardine, Ontario; both are due to come into operation in 1961. In October 1959, the Peace River Power Development Company announced plans for a hydroelectric project to develop up to 4,200,000

hp. of energy in British Columbia. Work on the first stage of the program will begin in 1960. (See also ELECTRICAL DEVELOPMENTS.)

Telephone and Telegraph.—Telephones in service increased by 5.2% during 1958 to a total of 66.9 million at the end of the year. Of these, the Bell System accounted for 56.8 million, the remainder being serviced by 3,867 independent telephone companies. On July 24, 1959, the Federal Communications Commission ordered the Bell System to cut long-distance rates approximately $50 million a year, effective about September 15. On the other hand, the Bell System received rate increases of $87 million a year in 1958. Mechanization has offset, in part, rising labor costs. One of the more interesting developments in 1959 was the three-for-one stock split of the Bell company's common stock; the aggregate dividend also was increased 10%. (See also TELEPHONE.)

Western Union in December 1958 completed installation of the world's largest private wire system, a 250,000-mile network for the U.S. Air Force. The company, which received approximately $21 million in rate increases in 1958, has been seeking to offset competition by developing private lines and other services, materially changing the character of the enterprise. (See also TELEGRAPHY.)

Natural Gas.—Gas sales in the United States attained record levels in 1958, reaching 80.3 billion therms, of which 77.8 billion represented natural gas. Natural gas accounted for 30.7% of the United States energy needs in 1958, as compared with 27.7% in 1957 and 14.2% in 1947. Due in part to the uncertainty created by the Memphis case of 1958 (*Memphis L.G.&W. Div.* v. *F.P.C.*, 250 F2d 403), construction expenditures dropped from $1.77 billion to $1.62 billion, but the present pace was expected to continue at least through 1962. The S.S. *Methane Pioneer* completed its first year of transporting liquefied natural gas from Louisiana to England. A pipeline was completed to Florida in 1959.

Natural gas reserves increased by 7.6 trillion cubic feet in 1958 to reach a new peak of 254.1 trillion; net production totaled 11.5 trillion cubic feet. Major additions to reserves were found in Texas and Louisiana. The scramble for gas in the producing fields continued and forced average wellhead prices upward from 11.3 to 11.7 cents per thousand cubic feet. Turbulent economic conditions were highlighted by a decision of the U.S. Supreme Court on June 22, 1959 (*Atlantic Refining Company v. Public Service Commission of New York*) overturning a Federal Power Commission order permitting the pipeline company to pay 21.4 cents per thousand cubic feet after originally finding a 17-cent figure reasonable. The producers had refused to sell at the lower price. The court decision, in effect, cautioned the FPC that it should consider the price to be charged for natural gas before approving supply contracts. (See also GAS; PETROLEUM.)

Security Offerings.—New capital requirements of the utilities industries fell off somewhat in 1958, although the amount of gas securities offered continued to rise. Figures covering a four-year period are shown in the accompanying table.

U.S. UTILITY SECURITY OFFERINGS*
(Millions of dollars)

Category	1955	1956	1957	1958
Electric	$1,497	$1,457	$2,504	$2,379
Gas	991	646	1,075	1,298
Telephone	1,105	1,390	1,331	1,291
Other utilities	59	46	40	14
Total	$3,652	$3,539	$4,950	$4,982

* As compiled by Ebasco Services, Inc.

Transit.—Interest in monorail transportation was expressed in five cities—Washington, New Orleans, Los Angeles, Seattle, and Detroit. Seattle planned a one-mile system. In Detroit, however, a committee advised against a proposed 54-mile network. The Chicago Transit Authority experimented with electronically guided buses. (See also URBAN TRANSIT.)

(See also FEDERAL POWER COMMISSION; LAW; SECURITIES AND EXCHANGE COMMISSION.)

E. W. CLEMENS,
Professor of Economics and Business Administration, University of Maryland.

CONSOLIDATED EDISON

Consolidated Edison is constructing this $100 million nuclear power plant at Indian Point on the Hudson River, near Buchanan, N.Y., about 40 miles north of New York City.

PUBLISHING. See BOOK PUBLISHING AND SALES; GRAPHIC ARTS; MAGAZINES; NEWSPAPERS.

PUERTO RICO. Puerto Rico, lying 1,000 miles southeast of Florida, is the smallest and easternmost island of the Greater Antilles. It is approximately 100 miles long and 36 miles wide, and has an area of 3,435 square miles. Self-governing in local affairs, Puerto Rico is a commonwealth in voluntary association with the United States, which handles its international relations and defense activities. Puerto Ricans are also citizens of the United States.

Population.—Puerto Rico's total population as of July 1, 1959, was estimated at 2,342,428. The capital, San Juan, has a population of about 400,000. Other important cities (with 1950 census figures) are Ponce (99,492), Mayagüez (58,949), and Caguas (33,759).

The birth rate during the first half of 1959 was 30.2 per thousand (30.9 during the same period in 1958); the death rate was 6.3 per thousand (7.4 in 1958). In 1958–59, net emigration, almost entirely to the United States mainland, totaled 37,212 (27,000 in 1957–58).

Government.—Government officials and members of the bicameral legislature are elected every four years on the date of the United States presidential election. In 1959 the legislature had 38 members in the Senate and 62 members in the House of Representatives. The chief officials were Luis Muñoz Marín, governor; Antonio Fernós Isern, resident commissioner in Washington, where he sits in the U.S. House of Representatives; Roberto Sánchez Vilella, secretary of state; and Luis Negrón Fernandez, chief justice of the Supreme Court.

Economy.—During the past decade, Puerto Rico has attracted world attention because of the speed and effectiveness of its economic development. In the decade between 1948–49 and 1958–59, the commonwealth's gross product rose from $718 million to $1,406 million. In the same period its total net income rose from $597 million to $1,148 million; its yearly per capita income, from $272 to $493. Property valuation in 1958–59 was $1,643 million. The operating budget of the commonwealth in 1958–59 was $220 million—equal to that of the previous year.

Education.—Well over a third of the island's population is receiving some kind of formal education. According to a United Nations report published in 1957, this is the world's highest percentage (in the United States the figure is less than one fourth). A special drive has reduced adult illiteracy to 15%, as against 25% in 1949 and 85% at the time of Puerto Rico's annexation by the United States. The commonwealth spends more than a third of its income on education, but there is still a shortage of teachers and accommodations. In addition, the amount spent per pupil in the public school system ($67 annually) is low when compared with that spent in certain mainland areas. In 1957–58 there were 564,443 pupils in public day-schools and 48,847 in accredited private schools.

The University of Puerto Rico has increased its attendance in the past two decades from 5,000 to 18,222. There are two other institutions of higher learning, Catholic University in Ponce, and Inter American University in San Germán.

Agriculture and Industry.—Although the increased mechanization of agriculture, the automation of factories, and changes in the method of handling dock cargoes have played major roles in raising the island's gross product, they have also

resulted in a mounting social problem—increased technological unemployment. In 1958–59, some 90,000 workers, comprising 14% of the labor force, were unemployed. The average hourly wage in July 1959 was 85.4 cents.

A decade ago, Puerto Rico was still predominantly an agricultural country. However, in 1958–59 the net income from manufacturing was $244 million ($18 million more than in 1957–58); that from agriculture, $162 million. While agricultural exports rose sharply in 1958–59, the rate of growth in that branch of the economy is still far behind the growth in manufacturing. The problems created by old patterns of land tenure and outmoded methods of farming, together with the urgent need to improve grading, packaging, canning, and marketing and distribution, have retarded the rate of development in agriculture.

Dairy farming, which barely existed a decade ago, now ranks second to sugar (193,991 short tons refined in 1957–58) in economic importance. In the coffee regions in the western mountains, a government program for distributing better trees and improving methods of cultivation has begun to produce results. Puerto Rico's coffee production (7,800 tons in 1957) is recognized as the world's least efficient. The yield is about 150 pounds per acre, as compared with Hawaii's 2,000.

The number of new factories established with government help reached a total of 599 in 1958–59, an increase of 51 over 1957–58. The trend of the government's promotion efforts has been increasingly toward interlocking industries in which the byproducts of one become the raw materials of the next. Work was begun in 1959 on the establishment of a foreign trade zone in Mayagüez. According to plans, manufacturers may import duty-free parts and raw materials into the zone for local assembly and manufacture.

Mining.—In 1958, mineral production, principally of cement and stone, was valued at $17,689,000—$2,576,000 less than in 1957. This was the first decrease in the value of mineral output since 1953.

Trade and Tourism.—Puerto Rico's external trade was $1,315 million in 1958–59, as compared with $1,195 million in 1957–58 and $555 million in 1948–49. Imports during 1958–59, predominantly from the mainland United States (about 85%) were $807 million; exports (about 95% to the United States mainland) were $508 million. Foodstuffs continue to be the principal imports, along with chemical products, machinery, shoes, and automobiles. Textile products, foundation garments, leather goods, plastics, and metal products continue to lead in the list of manufactured exports. In 1957–58, imports to the United States mainland included the following values: sugar, $112 million; tobacco leaf, $12.4 million; rum, $5.9 million; and textiles, $118.6 million.

The 1958–59 tourist season broke all records (over 136,000 nonresident hotel guests), and two new luxury hotels were completed. Before 1949, Puerto Rico had four accredited hotels, with 335 rooms; by the end of 1958, hotels numbered 39, with 2,790 rooms.

Principal Events, 1959.—The year was celebrated as the 100th anniversary of the birth of Luis Muñoz Rivera, father of the present governor, and himself an outstanding leader. Muñoz Rivera obtained Puerto Rico's autonomy from Spain in 1897, immediately before the Spanish-American War.

The admission of Alaska and Hawaii to the Union as states intensified the debate on Puerto Rico's ultimate political status. The sentiment in favor of eventual statehood seems to be gaining, although Governor Muñoz Marín and his Popular Democratic Party continue to insist that the present commonwealth status is best designed to fit Puerto Rico's needs, and should be regarded as permanent, though subject to occasional changes. The Fernós bill, introduced into the U.S. Senate during the year, provides for a popular referendum on the issue of statehood when Puerto Rico's per capita annual income equals that of the poorest state. The debate over the issue was intensified by the release of figures prepared by the U.S. Bureau of the Budget, showing that statehood in 1959 would have cost the commonwealth an extra $188 million in contributions to the U.S. Treasury.

The conference of United States governors, meeting for the first time outside the continental United States, was held in San Juan in August.

Several serious strikes in 1959 taxed the government's conciliation and arbitration facilities. The most important of these was in the telephone communications industry. Service was disrupted in many parts of the island, and there was considerable sabotage by cutting trunk cables.

The third Casals Music Festival took place in San Juan in May. The programs were recorded and broadcast throughout Latin America by the Voice of America. The first San Juan Drama Festival, with plays in English, was held early in the year. The island's only English-language daily newspaper, the San Juan *Star*, began publication on November 2.

EARL PARKER HANSON,
Consultant, Commonwealth Department of State.

PULITZER PRIZES. See PRIZES AND AWARDS.
PYRITE. See MINERAL PRODUCTION.

QATAR. See ARABIA.
QUAKERS. See FRIENDS, RELIGIOUS SOCIETY OF.

QUARLES, Donald Aubrey (64), American engineer and government official: b. Van Buren, Ark., July 30, 1894; d. Washington, D.C., May 8, 1959. During six years with the Defense Department, as assistant secretary for research and development (1953–55), as Air Force secretary (1955–56), and, after 1957, as deputy secretary of defense, he made an impressive record in shaping the nation's defense effort, particularly in the development of the guided missile and artificial earth satellite programs.

Quarles was graduated from Yale University in 1916. During World War I, he served in Europe with the famous Rainbow Division. After his

discharge in 1919 with the rank of captain, he joined the Western Electric Company's engineering department (after 1925, the Bell Telephone Laboratories), where he was instrumental in the development of much new telephone equipment, including open-wire insulation and the coaxial cable.

During World War II, Quarles was in charge of the Bell Telephone Laboratories' radar research development program. In August 1946 he was appointed to the federal government's Joint Research and Development Board (later, the Research and Development Board), becoming chairman of its electronics committee in 1949.

In 1952 Quarles became a vice president of the Western Electric Company and president of the Sandia Corporation, a nonprofit subsidiary of Western Electric engaged in atomic research and development. He was appointed assistant secretary of defense for research and development on July 28, 1953; secretary of the Air Force on Aug. 11, 1955; and deputy secretary of defense on March 26, 1957, which position he held at the time of his death.

QUARTZ CRYSTAL. United States consumption of raw quartz crystal declined 13% in 1958, as compared with 1957. The most important use of quartz crystal is for making piezoelectric units used in the electronics industry. In 1958 the number of units produced decreased 8%. No domestic output of electronic-grade crystal was reported to the U.S. Bureau of Mines. Brazil continued to be the chief source (89%) of electronic- and optical-grade quartz crystal. Total imports declined from 432,100 pounds in 1957 to 273,900 in 1958, a drop of 37%.

QUASIMODO, Salvatore, Italian poet: b. Syracuse, Italy, Aug. 20, 1901. His selection as winner of the 1959 Nobel Prize in literature was announced in Stockholm, Sweden, on Oct. 22, 1959. The poet was cited for "his lyrical poetry, which with classical fire expresses the tragic experience of our time." Little known outside his native country, Quasimodo is well known in Italy as a prolific poet and translator and as founder and leader of the so-called hermetic school of Italian poetry. This movement originated during the Fascist regime, when a number of poets wrote in obscure words which "hermetically sealed" or veiled the meaning of their poetry.

After earlier technical studies, Quasimodo went to Rome in 1921 to study the classics. He was employed by the Italian government's public works department, but by 1930 decided to devote himself to writing and teaching. Eventually he settled in Milan, where from 1938 to 1940 he wrote for *Tempo*, a weekly. Later he was appointed professor of literature at the city's Giuseppe Verdi Conservatory of Music.

Quasimodo's poems were first published in 1930 in the Florentine magazine *Solaria*. His reputation rests mainly on five volumes: *Ed è subito sera* (1942), which includes some of his early work, *Giorno dopo giorno* (1947), *La vita non è sogno* (1949), *Il falso e vero verde* (1956), and *La terra impareggiabile* (1958).

The author also translated into Italian works by Aeschylus, Virgil, Shakespeare, Melville, and others. (For further discussion of his work, see ITALIAN LITERATURE.)

QUEBEC. The largest of the Canadian provinces, Quebec has an area of 594,860 square miles (15.4% of the total area of Canada). The population, according to the 1956 census, is 4,628,378 (5,032,000 as of Sept. 1, 1959). The overwhelming majority of the population is of French origin (83%) and Roman Catholic (83%). In 1956, 3,240,838 persons lived in urban localities, while 1,387,540 constituted the rural population. Principal cities, with 1956 populations, are: Montreal, 1,109,439 (Greater Montreal, 1,620,758); Quebec, the capital, 170,703 (Greater Quebec, 309,959); Verdun, 78,262; Sherbrooke, 58,668; Trois-Rivières, 50,483; and Hull, 49,243. Montreal (q.v.) is the metropolis of Canada and the second largest French-speaking city (after Paris) in the world.

Government.—The government comprises a lieutenant governor named by the government of Canada; an Executive Council of 21 members, 5 of whom have no portfolio; a Legislative Council of 24 members appointed for life by the lieutenant governor in council; and a Legislative Assembly of 93 members elected for five years. The present (1959) lieutenant governor is the Hon. Onésime Gagnon. The Hon. Antonio Barrette (Union Nationale Party) became premier on Jan. 8, 1960, succeeding the Hon. J. M. Paul Sauvé, who died on Jan. 2, 1960. Membership in the Legislative Assembly is divided as follows: Union Nationale, 72 (1 vacancy); Liberal, 19; Independent, 1. In the Canadian Parliament, the province is represented by 24 members in the Senate and 75 in the House of Commons.

Finance.—For the 1958–59 fiscal year, the total revenue of the province amounted to $546,859,705; ordinary expenditure, $453,041,819; and net capital expenditure, $93,444,148. The net funded debt was $304,157,425.

Education.—The schools governed by the Education Act are either Catholic or Protestant, and in both types French and English are taught. In 1958 the entire school system included 10,413 schools, 56,707 teachers, and 1,241,595 pupils. Teacher training is provided in 112 normal schools. Secondary education is provided by public schools and 92 *collèges classiques*, 3 of which have modernized their curricula. Higher education is offered by 6 universities.

Purchasing Power.—The purchasing power of Quebec's population was estimated at $6,165 million during 1958; salaries and wages totaling $4,150 million made up the greater part of the amount. Retail trade in 1958 amounted to $3,597 million.

Hydroelectric Energy.—The actual capacity of turbines installed in the Province of Quebec represents 44.0% of the total Canadian installation and about one third of the resources recorded at the present time. Hydroelectric turbines installed in 1958 represent an increase of 900,000 horsepower, and bring the total turbine installation in Quebec up to 9,858,000 hp., or 7,351,000 kilowatts, with active construction underway for other large-scale projects.

Touring Quebec in June, Queen Elizabeth, with Prince Philip (behind her, right), visits an aluminum plant in Arvida.

NATIONAL FILM BOARD

Increased capacity is expected to amount to 2,781,700 hp. within the next three years.

Transportation and Communications.—In 1958 Quebec had 32,232 miles of surfaced roads out of a total road mileage of 43,750. There were 946,661 registered motor cars, 5,081 miles of railroads, and 1,187,442 telephones.

Agriculture.—Agricultural land covers an area of 66,615 square miles or about 12% of the total area of the province. In 1958, 8,560,000 acres were under cultivation (including pastures). For 1958 the aggregate value of agricultural production was estimated at $615,497,000. The three leading crops are hay and clover, oats, and potatoes. The cash income of farm operations was valued at $414,495,000 and was derived from the sale of dairy products ($166,702,000); livestock ($132,820,000); poultry and eggs ($47,302,000); field crops ($11,235,000); fruits and vegetables ($20,415,000); forest products, maple products, tobacco, honey, and others ($36,021,000).

Forestry.—The commercial forests of the province cover an area of 264,160 square miles. The wood cut during 1957 was valued at $321,342,963, including pulpwood, $222,651,228; lumber, $74,959,904; veneer, excelsior, matches, and similar products, $7,062,880; and charcoal and firewood, $11,541,106. In 1958 the pulp and paper industry provided employment to 28,000 persons, and had a payroll of $129 million and a gross value of production exceeding $600 million. Newsprint production was estimated to have totaled 3.2 million tons, valued at approximately $360 million.

Mines and Quarries.—The value of mineral production in 1958 was estimated at $395,565,306, subdivided as follows: metals, $200,431,138; industrial minerals, $107,332,185; and building materials, $87,801,983.

The most important news item to come out of the iron ore fields of Quebec in 1959 was the announcement of a $300 million development program by the Quebec Cartier Mining Co. The company has awarded contracts for the building of a 193-mile railroad, a hydroelectric plant on the Hart-Jaune River, a concentrator at Lac Jeannine, two mining villages—one at Lac Barbel, the other at Port-Cartier—and dockloading facilities at the latter place. Production is scheduled to begin in 1961, at the annual rate of 8 million tons of concentrates.

Manufactures.—Manufacturing establishments during 1958 paid out $1.5 billion in salaries and wages to 447,000 workers. The gross value of factory shipments was estimated at $6,679,965,000. Chief industries include pulp and paper, nonferrous smelting and refining, petroleum products, slaughtering and meatpacking, cotton yarn and cloth, factory clothing, railway rolling stock, electrical appliances, and synthetic textiles.

Principal Events, 1959.—The year's most important event in the Province of Quebec was the death on September 7 of Premier Maurice Duplessis, who was on an inspection tour of the Ungava region. Duplessis had been deputy from Trois-Rivières since 1927, and prime minister of Quebec since 1944. He had previously served in that post from 1936 to 1939.

On September 11, the Hon. J. M. Paul Sauvé succeeded Duplessis as prime minister and leader of the Union Nationale Party. Sauvé was deputy of Deux-Montagnes County since 1930, and minister of youth and social welfare since the foundation of that department in 1946. Premier Sauvé died suddenly from a heart attack on Jan. 2, 1960, and was succeeded by the Hon. Antonio Barrette, also of the Union Nationale.

On June 26 the formal opening ceremony of the St. Lawrence Seaway (q.v.) was held in Montreal. Present at the official opening were Queen Elizabeth II, then on a tour of the province; President Eisenhower; and Canadian Prime Minister John Diefenbaker.

In order to permit easier access to higher studies for gifted students, the Legislative Assembly passed a law placing $10 million at the disposal of the minister of youth and social welfare to distribute in student bursaries and loans, and also to give financial help to students pursuing advanced or specialized studies abroad. The law was ratified on March 5. On the same date, legislation was approved creating the Montreal Metropolitan Corporation and the Interurban Corporation of Ile Jésus, both completely new in the municipal organization of the province.

Shortly before his death, Premier Duplessis officially opened the Montreal-Laurentian Autoroute, the first modern toll road in Canada. The Autoroute is 29 miles long and joins Montreal to St. Jérôme; it comprises three lanes in each direction, separated by a 100-foot strip in the center (40 feet on the island of Montreal). The two main bridges, crossing Des Prairies River and Thousand Islands River, are respectively, 1,850 and 3,300 feet long and each measures 92 feet in width.

The tercentenary of the arrival in "La Nouvelle-France" of François Xavier de Laval-Montmorency, who founded the Roman Catholic Church on Canadian soil, was celebrated in Quebec City in October.

J. C. McGee,
Director, Quebec Bureau of Statistics.

QUEMOY. See Index entry.

RACE RELATIONS. See Civil Liberties; Indians, American; Negroes, American; and the Index entry, *Race Relations.*

RACING. See Sports, Games, and Shows.

RADIATION. Radiation as a part of our environment is not new. It has been with us from the beginning of time, but until about the turn of the century and the discovery of X-rays it had been slowly but steadily losing its overall strength. Man in his development not only has adapted himself to radiation, but he may even have derived from it, in some small measure, his present physical stature. This is not to imply that we should lack concern over our increasing radiation environment, but we must also look upon it sensibly. Many years, or even decades, of research are needed

before the radiation protection problem is fully understood. Moreover, the problem will become even more widespread and complicated as man properly exploits new and expanded peaceful uses of atomic energy.

The Nature of Radiation.—Our radiation environment is both of natural and, since 1895 and the discovery of X-rays, of man-made origin. The natural sources consist mainly of radium and its products in the earth's crust, and cosmic rays from outer space. The human body itself contains radioactive potassium, carbon, and radium. Man-made radiations include X-rays (medical and industrial), fall-out, waste products from the atomic energy industry, and radiations from many common household devices ranging from television receivers to luminous timepieces.

All radioactive material is undergoing a constant process of decay or loss of strength. The rates of decay between different radioactive elements vary widely; the time for a given quantity to lose half its strength (called half-life) varies from small fractions of a second to millions of years.[1]

When radioactive material enters the body, it continuously irradiates the tissue nearby as long as the material remains. On the contrary, irradiation of the body by X-rays (for example, in diagnostic or therapeutic applications) continues only while the X-rays are turned on. No "lingering" or "residual" radiation remains after the beam is cut off. But in either case, a body cell has no way of knowing or distinguishing between the sources of the radiation that may strike it. A cell may be equally affected by a ray from an X-ray machine outside the body or from a particle of radium lodged as closely as in the next cell. Basically the interaction between all kinds of radiation and the body cells is essentially the same.

External exposure to local gamma rays has been estimated to account for roughly 49% of the total body dose of radiation from natural causes. The remainder of naturally caused radiation comes from external exposure to cosmic rays (about 24%), internal exposure to radium and its products (20%), and internal exposure to potassium-40 (7%). All of these values may vary widely.

Radiation Effects.—Radiation effects on the human body may be divided broadly into two classes: (1) genetic effects or damage to the germ cells which play an essential role in our heredity process; (2) somatic effects, or damage to the body cells, exclusive of germ cells. Whereas somatic effects are limited to the individual who is exposed, genetic effects may be transmitted through the family strain for many generations. It is estimated that it will take some 50 generations for genetic damage, once produced, to work itself out of the human system. Somatic effects, if they occur, may show up as leukemia or some other malignancy, slight shortening of the expected life span, etc. It is important to note that any effect that may be produced by radiation can also occur from other causes, mostly unknown. Very rarely may a radiation-produced disease be specifically identified as such.

There is virtually no knowledge today which would indicate that there may be some threshold of radiation exposure below which no damage will occur and above which damage probably will occur. All radiation protection philosophy is based on the unproved assumption that no such threshold exists; thus, any exposure may presumably cause some damage, however small or undetectable. Within the past year or two the viewpoint is becoming accepted that any radiation exposure may entail some risk, though not necessarily. The big problem now facing us is how to balance properly the uncertain risks against the more certain gains (see below, *Federal Radiation Council*).

Deleterious effects of radiation at normal levels (background, medical, occupational, fall-out, etc.) can be detected only by the most elaborate statistical procedures. There may be some slight reassurance in this fact; the situation is not so critical that we can clearly see the harm. The long-range genetic picture is not so bright, although some findings in 1959 may lead to a less pessimistic outlook than now exists.

Current Radiation Environment Situation.—It is still not possible to assess with any accuracy the relative contribution from each source of radiation exposure because conditions vary too greatly between locations and between individuals. Control of radiation exposure to the germ cells is considered to be most critical, however, since any damage that may occur there is believed to be irreversible and cumulative. Protection criteria designed mainly for genetic protection will provide, at the same time, acceptable somatic protection under most circumstances.

Evaluations of the contribution of the various sources of radiation to our total genetically significant dose have been made by the National Academy of Sciences and other bodies. Roughly summarized, these evaluations are as follows: natural background radiation (all sources), 40%; irradiation from medical procedures, 50%; exposure of radiation workers and public exposure from all radiation operations, 3%; fall-out, 3%; and miscellaneous sources, 4%, for a total of about 9 rems (or units of radiation dose) up to age 30. While these percentages will not bear close scrutiny, their relative values are believed to be reasonable.

National and International Protection Efforts.—Knowledge of the existence of the possible hazards of radiation goes back some 60 years. A concerted attack on the problem was begun with the establishment of the International Commission on Radiological Protection (ICRP) in 1928. This body determined the first permissible dose level in 1934. A similar national effort was started in the United States with the establishment of the National

At Floyd Bennett Field, Brooklyn, shipments of radioactive wastes from Brookhaven National Laboratory are stowed aboard a Navy ship for disposal at sea. The waste-disposal problem was underscored in congressional hearings in 1959.

BROOKHAVEN NATIONAL LABORATORY

[1] The approximate half-life of some isotopes: radium-226, 1,622 years; strontium-90, 28 years; potassium-40, more than 1 billion years; carbon-14, 5,600 years; and iodine-131, 8 days.

Committee on Radiation Protection and Measurements (NCRP) in 1929. The two bodies have worked together closely since that time.

Use of the radiation protection criteria established by the NCRP in 1936 (slightly lower than those of the ICRP) enabled the Manhattan District, which built the first atomic bomb, to perform its operations with one of the best safety records known to industry. Thus, today, we do not find ourselves plunged into a situation for which no preparation has been made. However, a basic difficulty in establishing absolute radiation protection criteria continues to be the almost total lack of knowledge of the specific effects of low-level radiation exposure on the human system. The impossibility of experimenting with human beings and the lack of accidents that might provide useful protection data compel the adoption of protection criteria based on an absence of information.

In simple terms, the maximum permissible dose for radiation workers is a dose of radiation that, in the light of present knowledge, is not expected to cause appreciable bodily injury to that person at any time during his lifetime. Thus far there is no evidence that radiation workers exposed continually at the maximum permissible level (even when it was 10 times higher than recommended today) have been injured. The permissible radiation levels for members of the population are even lower than for radiation workers.

In January 1957 and April 1958 the NCRP introduced a lower value of the maximum permissible dose (MPD) for radiation workers. It is now set at an average of 5 rems per year (previous values were: 1934, 60 rems; 1936, 30 rems; 1948, 15 rems). At the same time an MPD of one tenth that for radiation workers was recommended for people living in the vicinity of radiation sources where small amounts of radiation might escape. This was considered to be a very conservative recommendation, since there has been no demonstration of damage at the higher level allowed for radiation workers.

In July 1959 the ICRP recommended an MPD for the population at large from all sources of radiation at one tenth the occupational allowance (in addition to natural background radiation).

While recognizing the impracticability of establishing a meaningful average somatic dose for the population, the ICRP, for long-range planning purposes, made the tentative suggestion (not specific recommendation) that the *average* dose for the population at large be one third the *maximum* for individuals of the population at large. At the same time, the ICRP suggested an *average* genetic dose, for long-range planning purposes, of one tenth the *maximum* for individuals.

Congressional Hearings.—The Joint Committee on Atomic Energy held a series of hearings on radiation matters in 1959. Following is a summary of its findings (with dates of hearings).

Industrial Radioactive Waste Disposal (Jan. 28–Feb. 3, and July 29, 1959).—For the first time the magnitude of the waste-disposal problem that the United States faces in the future was disclosed at these hearings. The disposal of radioactive waste could easily be one of the most serious limitations on the expansion of the nuclear industry. Burial at sea would be one disposal method, and suggestions for accomplishing this in "in-shore" areas at depths of less than 300 feet have been made but not yet accepted. In the meantime, the U.S. Atomic Energy Commission (AEC) will continue to license sea disposal only in depths of over 6,000 feet in accordance with NCRP recommendations made in 1954. (See also CHEMISTRY.)

Federal-State Relationships in the Atomic Energy Field (May 19–22, 1959).—An important outcome of these hearings has been a bill (S. 2568) amending the Atomic Energy Act of 1946 and leading to the transfer of certain radiation control activities to the states. Such responsibilities will be taken up by the states when and as the states can demonstrate the necessary technical capability.

Fall-out from Nuclear Weapons Tests (May 5–8, 1959).—Basically, these hearings were an extension of the 1957 fall-out hearings and were designed to update information previously developed. New evidence showed that average fall-out levels in the Northern Hemisphere had increased considerably since 1957, and also that the rate of fall-out is greater than previously thought. (The average time that fall-out remains in the stratosphere is now estimated at 1 to 5 years instead of the 1957 estimate of 5 to 10 years.) Evidence also showed that while fall-out varies greatly with locality, thus causing "hot-spots," these probably do not change the overall hazard to the world's population. (More recent information developed by the AEC and the Public Health Service have shown that the levels of radiation from fall-out are now decreasing somewhat and can be expected to continue to do so, provided no further weapons testing takes place.)

Biological and Environmental Effects of Nuclear War (June 22–26, 1959).—These hearings emphasized the well-known fact that a nuclear attack on the United States could be disastrous. However, in the committee's own words: "Probably the most significant finding presented to the subcommittee was that civil defense preparedness could reduce the fatalities of the assumed attack on the United States from approximately 25% of the population to about 3%. The provision of shielding against radiation effects would at the same time protect against blast and thermal effects for the vast majority of the population."

Employee Radiation Hazards and Workmen's Compensation (March 10–19, 1959).—It was generally agreed that radiation disease should be compensable under all compensation systems and that suitable standards should be provided by which the causal relationship between radiation exposure and injury can be established. Any radiation-produced disease should have complete medical treatment during the course of disability and for whatever time necessary to bring about complete rehabilitation of the individual. There was no agreement as to how these objectives could be met.

A number of bills relative to health protection against radiation effects were introduced in the 86th Congress, although most of them have not been passed. Several had to do with the vesting of greater responsibilities in the Public Health Service than heretofore. Also included were measures for increasing public education and the education of specialists relative to radiation control.

Federal Radiation Council.—One of the most important events at the governmental level was the establishment by executive order of the president on Aug. 14, 1959, as well as by legislative action (S. 2568), of the Federal Radiation Council, consisting of the secretaries of the departments of Health, Education, and Welfare, Defense, and Commerce, and the chairman of the Atomic Energy Commission. This council will be charged with developing a national policy with regard to radiation control.

As acceptable radiation levels for the population as a whole cannot be decided on the basis of scientific opinion alone, it is essential that some high-level policy body make the decision as to how much risk the nation is willing to accept in exchange for the gains derived from the use of radiation. The Federal Radiation Council will work with the advice of the National Committee on Radiation Protection and Measurements and the National Academy of Sciences. The recommendations of the NCRP will continue to guide federal policy, unless and until the council deems it wise to do otherwise.

Research.—Research advances in recent years are too numerous to mention in detail. However, important progress is being made in the development of techniques and procedures for controlling radioactive contamination, particularly in the removal of strontium-90 from milk and other food products.

Using calcium-based resins, it has been found possible to remove up to 94% of the strontium-90 from separated milk; removal of strontium-90 from cream involves a dilution process followed by separation of the cream from the water. Methods for decontamination of other foods have thus far met with much less success.

Large-scale AEC studies of both living and deceased persons whose bodies contain radium are

helping to establish the basic relationship between body burden and deleterious effects. Results thus far indicate that the present base is satisfactory.

Genetic studies on mice have given at least a preliminary demonstration of a dose rate effect that has not heretofore been known. If verified, it might indicate that very low exposure rates may be less harmful than presently assumed.

Scientists of the Argonne National Laboratory have succeeded in flushing out radioactive plutonium from the bodies of rats, even after the treatment has been delayed for several days. Two compounds, DTPA and BAETA, grasp the atoms of plutonium in octopus-like molecular tentacles and form a water-soluble chemically inert complex that is flushed from the rats' bodies by normal elimination processes. These compounds are not poisonous to humans.

Research in the biomedical field conducted by various agencies, in particular by the AEC and the Health, Education, and Welfare Department, will be accelerated during the coming years. Pieces of evidence are beginning to indicate that the problem of controlling the radiation hazard of fall-out may be a little less serious than was previously thought to be the case. There is no great margin for optimism at this time, but advances in this direction can be reasonably expected.

(See also ATOMIC ENERGY; INDUSTRIAL HEALTH AND SAFETY; MEDICINE; PUBLIC HEALTH; SANITARY ENGINEERING; X-RAY.)

LAURISTON S. TAYLOR,
Chief, Atomic and Radiation Physics Division, National Bureau of Standards.

RADIATION LAYERS. See ATMOSPHERE RESEARCH; SPACE FLIGHT.

RADIO AND TELEVISION. Highlights of the year 1959 in radio and television are reviewed below in three sections: (1) The Radio-Electronics-TV Industry; (2) Radio and Television Engineering; and (3) Radio and Television Programs. For additional information, see the Index entries, *Radio* and *Television.*

THE RADIO-TV-ELECTRONICS INDUSTRY

After a brief slowdown during the recession of 1958, the electronics industry took another spurt forward in 1959 to continue its phenomenal ten-year growth. Factory sales of all electronic products rose 16% over those of 1958 to pass the $9 billion mark. This represented a gain of over 250% since 1950. Revenue for all sources, including broadcasting and servicing, was estimated at $15 billion.

Increases occurred in all major categories, but the greatest rise was in military electronics, with consumer goods ranking second. Electronics also began moving to a greater degree into the new field of space exploration, with its virtually unlimited horizon.

TV-Radio-Phonograph Sales.—Both television and radio receiver sales, which had declined in 1958, came back strongly in 1959. Retail sales of TV sets did not reach the peak years of 1953–57, but increased from 5.1 million in 1958 to over 5.7 million in 1959. Radio factory sales made even greater gains, increasing from 11.9 million to about 15.5 million for radio's best sales record since the postwar boom years. Auto sets showed the greatest increase (from 3.7 to 5.6 million), due to the recovery of the automobile market. Factory sales of phonographs increased from 4.2 to 4.3 million.

At the end of 1959 the Electronic Industries Association (EIA) estimated there were 52.5 million television receivers and almost 140 million radios in use. Of the latter, one third were in automobiles.

The advent of stereophonic sound reproduction provided a stimulus to the phonograph and combination radio-phonograph market, and much greater gains are expected after stereophonic radio transmission standards have been adopted (possibly in 1960). A National Stereophonic Radio Committee was formed by EIA in 1959 to analyze the various proposed stereo systems.

Military Electronics.—The production of electronic equipment and components for the military services continued to occupy half the industry's capacity and probably more than half of its engineers in 1959. Dollar volume rose from $4.1 to $4.5 billion—equal to the dollar volume of the entire electronics industry in 1952. While the national defense appropriations appeared likely to level off in 1960, with reductions in some areas, electronics is expected to continue to increase its share of the total appropriation. In 1959 it represented about 29% of all military procurement.

Industrial Electronics.—Sales rose from $1.4 to $1.6 billion in 1959, with computing and data-processing equipment moving steadily into commerce and industry. Gains continued in closed-circuit television, mobile radio communications, instrumentation, and automation processes in industry. Advances also were made in electronic aids for medicine, educational TV, and electronic meteorological equipment.

New Components Increase.—Spurred by the need for lighter, more compact, and more reliable components, many new and more rugged electronic parts have appeared in recent years. Through various technological advances, manufacturers have combined the functions of previously separate components into single devices of greater reliability and effectiveness. These devices accounted for an increasingly large share of the components market in 1959.

Semiconductor devices, which were scarcely known a decade ago, had grown into a sizable business by 1959. Sales rose from $229 to nearly $380 million as the output of transistors nearly doubled. Receiving tubes, however, still found a substantial market with sales rising from $342 to $367 million.

Employment and Wages.—More than 700,000 persons were employed in electronics manufacturing in 1959. Of this total, 100,000 were engineers, 500,000 were production workers, and about 110,000 were executive and sales employees.

There were an estimated 4,600 electronics producers in 1959, of which only 1,500 were equipment manufacturers. Although electronic plants are located in every state except Alaska, 70% of manufacturing employment is concentrated in the six states of New York, Pennsylvania, New Jersey, Massachusetts, Illinois, and California.

The Bureau of Labor Statistics reported the average weekly earnings of workers in the radio-TV-phonograph industry at more than $86 in 1959, up $4 from 1958.

Exports and Imports.—The sharp rise in 1959 of Japanese shipments of electronic products (particularly transistor portable radios), constituting the first serious threat to the United States electronics industry, drew strong protests from domestic manufacturers. EIA appealed to the Office of Civil and Defense Mobilization for government curbs in the interest of national security.

While total United States exports declined in 1959, electronic shipments were off far less than most other products. Electronic exports totaled $412 million, as compared with $427.6 million in 1958. An increasing number of United States

manufacturers made investments abroad or licensed the use of their designs and processes to foreign companies.

JAMES D. SECREST,
Executive Vice President,
Electronic Industries Association.

RADIO AND TELEVISION ENGINEERING

Television broadcasting throughout the world continued a steady growth in 1959, but the pace of expansion in the United States slackened as compared with previous years. Approximately 20 new stations began broadcasting during the year, bringing to 565 the total number of television transmitting stations on the air in the United States at the end of 1959.

Auxiliary television broadcast services expanded in the United States in 1959. Community antenna systems, which distribute signals received from distant transmitters to individual homes by special cable, numbered more than 560. Low-power "translator" stations, operating in the upper ultra-high-frequency (UHF) band, increased from 146 to 186.

Elsewhere in the world, television broadcasting continued its growth. The accompanying table lists the countries reported to have regular television service at the end of 1959, and gives the latest available statistics as to the number of transmitters and receivers in regular use.[1]

SUMMARY OF WORLD TELEVISION, 1959

Country	Transmitting stations	Receiving sets
Algeria	2	28,000
Argentina	1	400,000
Australia	9	618,000
Austria	10	88,200
Belgium	4	350,000
Bermuda	1	8,000
Brazil	7	85,000
Canada	51	5,534,000
China, Communist	2	5,000
Colombia	1	150,000
Cuba	13	365,000
Cyprus	1	3,000
Czechoslovakia	6	450,000
Denmark	6	300,000
Dominican Republic	4	13,000
El Salvador	2	15,000
Finland	4	21,000
France	25	1,300,000
Germany, East	10	425,000
Germany, West[1]	27	2,900,000
Guatemala	2	20,000
Honduras[3]	1	400
Hong Kong[2]	...	3,000
Hungary	3	30,000
Iran	1	12,000
Iraq	1	9,000
Italy	25	1,500,000
Japan	66	2,949,000
Korea	1	2,700
Lebanon[3]	2	1,500
Luxembourg	1	4,000
Mexico	14	600,000
Monaco	1	11,000
Netherlands	3	500,000
Nicaragua	1	5,000
Nigeria[3]	1	1,000
Peru	3	27,500
Philippines	2	25,000
Poland	4	138,000
Portugal	5	35,000
Rumania	2	20,000
Saudi Arabia	1	2,500
Spain	3	130,000
Sweden	18	450,000
Switzerland	7	67,800
Thailand	2	40,000
United Kingdom	27	10,000,000
United States[4]	565[5]	58,200,000
Uruguay	1	15,000
USSR	69	3,000,000
Venezuela	5	200,000
Yugoslavia	5	12,000

[1] Includes the Saar. [2] Service supplied by closed-circuit system. [3] Inaugurated regular television service in 1959. [4] Includes regularly operating stations under United States jurisdiction in Guam and Puerto Rico. In addition, the United States armed forces operate 11 low-power stations in the United States and possessions (5 in Alaska, 2 in the Canal Zone, and 1 each in Okinawa, Eniwetok, Puerto Rico and Midway), and 18 low-power stations in the Azores, Bermuda, Crete, Cuba, Iran, Labrador, Newfoundland, Eritrea, Germany, Greenland, Guam, Iceland, Korea, Libya, the Philippines, and Saudi Arabia. [5] Includes 44 noncommercial educational stations. (Source: *Television Digest.*)

The first regular transatlantic television relaying was undertaken in 1959, employing the transatlantic telephone cable to relay television film pickups from Europe to the United States and Canada. The film was scanned frame by frame, and the resulting signals were then transmitted to North America, where the separate frames were re-assembled into a film for broadcast transmission. The process is relatively slow, requiring some two hours' time to transmit short sequences of television motion picture film. Scenes of President Dwight Eisenhower's visit to Europe in September 1959 were relayed to the United States by this process, and, in addition, magnetic video tape recordings of the visit were flown from Europe to the United States by jet airplane. The speed of modern jet aircraft, together with the fact that magnetic tape recordings do not require processing (as does photographic film), makes this latter process only slightly slower than the cable transmission of film pictures. The tape recordings produce pictures of greatly superior quality to those transmitted by cable.

For television relaying, a very substantial video band width is required to transmit the picture signal. Intercity television networks in the United States employ a minimum video band width of 2.7 megacycles, as compared with the much narrower available band width of about 200 kilocycles provided by the transatlantic cable. Experimental equipment demonstrated in 1959 provided a substantial reduction in the required video band width without degrading the picture quality. One demonstration, by the Technicolor Corporation, achieved a reduction in band width of 75% over the present requirement.

For several years, proposals have been made for broad-band relay circuits between the United States and Europe, utilizing very-high-frequency (VHF) and microwave relay systems. A promising new method of long-distance relaying has been opened up by the successful launching of earth satellites capable of reflecting broad-band signals over very substantial distances. A test launching of one of a series of 100-foot diameter aluminized balloons, designed to be sent aloft for experimentation with this type of relaying, was successfully conducted in October.

Television and television techniques are being used increasingly in the exploration of space. A United States satellite successfully relayed a crude television picture of cloud cover over the Pacific Ocean during the summer. The unmanned Soviet satellite fired on a course past the distant face of the moon relayed a photograph of a portion of the moon's "invisible" face back to earth using television transmission methods (see ASTRONOMY). Radio messages are now being regularly relayed by the U.S. Navy between distant points on the earth's surface by reflections from the moon, and it was announced in 1959 that a radar signal beamed from the earth toward the planet Venus had been reflected and identified in 1958 (see PHYSICS).

The Federal Communications Commission (FCC) continued to grapple with the problem of television allocations, the plan for the assignment of television broadcast channels to individual towns and cities. A comprehensive engineering

[1] In addition to the high-power regular transmitting stations included in the table, many foreign countries employ community antenna systems and low-power relay stations, as is done in the United States.

report was submitted to the commission in March by the Television Allocations Study Organization (TASO), including technical data of a wide scope for the commission's use in arriving at technical judgments in the assignment of VHF and UHF channels.

One of the principal engineering problems faced in allocating television channels is that of a substantial disparity in the effectiveness of the VHF and UHF channels. Promising developments reported in 1959, however, are expected to lead to substantially improved UHF television receiver performance, thus reducing the disparity. These include various solid-state devices, the so-called "parametric amplifiers," and the newly-discovered "tunnel diode" principle.

The first truly portable television receiver was placed on the market by Philco in 1959. This receiver operates from self-contained batteries and makes extensive use of transistors in all circuits to minimize power consumption. The picture tube is a 2-inch cathode ray tube, with an optical system which produces an 8-inch image.

Plans were announced for a unique educational television transmitting station to be carried aloft in an airplane. This system will employ television transmitters in an airplane flying at a height of 25,000 feet over central Indiana. Pictures will be transmitted on four channels in the UHF portion of the television band, two employing conventional transmitting standards and two employing experimental transmission standards utilizing only one half of the regular 6-megacycle band width. The very high transmitting antenna provided in this manner will permit service to be rendered to a distance in excess of 200 miles.

The growth of both standard broadcast (AM) and frequency modulation (FM) radio continued in the United States in 1959. The number of AM stations increased to a total of 3,454 on the air at the end of 1959, as compared with 3,323 at the end of the previous year. FM stations increased in number from 577 to 673 during the same period.

(See also ELECTRICAL DEVELOPMENTS; ELECTRONICS; FEDERAL COMMUNICATIONS COMMISSION.)

HOWARD T. HEAD,
Consulting Radio Engineer.

RADIO AND TELEVISION PROGRAMS

Television, which was hit by a quiz program scandal in 1958, was rocked to its foundations in 1959 by the findings in a congressional investigation of rigged quiz shows. For several weeks the center stage was held by Charles Van Doren, 33-year-old assistant professor of English at Columbia University, who finally admitted that he received questions and answers in advance while winning $129,000 on *Twenty-One.* The producers, he said, also coached him on how to act in the isolation booth.

Van Doren, who denied for a year that he knew of quiz show irregularities, confessed in dramatic fashion on Nov. 2, 1959, during a Washington hearing by the House Special Subcommittee on Legislative Oversight (headed by Oren Harris of Arkansas). Van Doren also admitted he had lied months earlier when he told a New York grand jury that he had not participated in a rigged quiz. But even before he testified in Washington, Van Doren had returned to the office of New York District Attorney Frank S. Hogan to recant his earlier testimony. Columbia University accepted Van Doren's resignation within hours after his Washington appearance. He also lost his $50,000-a-year job with the National Broadcasting Company (NBC), which had televised *Twenty-One.* After Van Doren became a national figure in 1957 as a result of his quiz show appearances, NBC hired him as a consultant, and later he made regular appearances on the *Today* show.

Dan Enright, one of the originators of *Twenty-One* and other quiz shows, told the House subcommittee on October 9 that the fixing of quiz programs had been "a practice for many, many years." He said that a nighttime version of *Tic Tac Dough* had been rigged about 75 per cent of the time.

Mert Koplin, producer of *The $64,000 Question* and *The $64,000 Challenge,* explained to House investigators how he spent days preparing questions "from the matrix" of a contestant's experience. When a contestant was marked for extinction, the question could be placed outside this "matrix." Koplin and others testified that officials of Revlon, Inc., which sponsored both shows over the Columbia Broadcasting System (CBS), were aware of control and even insisted on it. Charles Revson, president of the cosmetics company, and his brother Martin, former executive vice president, denied any knowledge of rigging or control.

After the Washington hearings had piled up considerable evidence of quiz fixes, District Attorney Hogan said in New York that he would look into the matter of possible perjury against many persons who had testified at his inquiry. Of 150 former contestants or quiz show personnel who were questioned, Hogan estimated that two thirds might not have told the truth.

Dr. Frank Stanton, president of CBS, and Robert E. Kintner, president of NBC, told the House subcommittee in November that they were not aware of quiz show rigging at the time it occurred. CBS eliminated big-money quiz shows, but NBC said it would continue such programs under strict surveillance to make sure of no dishonesty. (Most quiz shows were owned not by the networks but by independent producers and packagers.) Stanton announced that CBS would re-evaluate its entire television operation and remove from the air any form of deceit or deception. He declared that interview programs which are rehearsed in advance must announce the use of such production techniques at the time of presentation, and that comedy shows must stop using recorded laughter or applause.

The House subcommittee heard that 12-year-old Patty Duke, a Broadway and television actress, had received $32,000 on *The $64,000 Challenge* by reciting answers given to her only minutes before the show went on the air. Other testimony disclosed that Max Hess, Allentown, Pa., department store owner, had paid $10,000 to get an employee on *The $64,000 Question* so that his store would receive publicity.

The uproar over quizzes prompted President Eisenhower to ask Attorney General William P. Rogers to study the fixing of programs. Later, Rogers said that "those who conceived the deception" might be in violation of Section 1343 of the Criminal Code.

At the end of 1959, the House subcommittee began to broaden its investigation to include many types of commercial tie-ins, such as kickbacks, payoffs, and "payola." (The latter term was coined to describe a form of bribe secretly paid to a person to promote a product, especially phonograph records played by disk jockeys.) The subcommittee questioned Dick Clark, American Broadcasting Company (ABC) disk jockey, whose program was a favorite of millions of teen-agers. Clark was ordered by ABC to divest himself of holdings in a record company and music publishing houses or

UPI

Charles Van Doren (foreground), shown at a news conference in October, admitted before a congressional inquiry on November 2 that he had participated in rigged television quiz programs. Revelations of widespread irregularities rocked the industry and led to dropping many quiz shows.

leave the network. He gave up the outside holdings.

As the congressional inquiry into "payola" continued, another popular disk jockey, Alan Freed, was dismissed from his radio show over a New York station, and shortly after lost his television program with another broadcaster. In Detroit, Philadelphia, and other cities, a number of disk jockeys were resigning or being dismissed in connection with the growing payoff scandal.

The Federal Communications Commission announced that it would conduct its own investigation, with several public hearings beginning in Washington on December 7, into quiz shows, alleged payments to disk jockeys, and questionable programing and advertising practices by broadcasting stations. Earlier, FCC Chairman John C. Doerfer had said that his group had no legal power at present to act against the improper practices brought to light by the congressional inquiry.

Before the quiz show scandal became the dominant broadcasting factor of 1959, other major developments occurred. These included Arthur Godfrey's cancer operation on April 30, which kept him off the air for six months. He came back to morning radio but eliminated his morning television show. Godfrey's only television activity was an occasional one-hour evening show.

Ingrid Bergman and Hayward Morse in a scene from *The Turn of the Screw* (October 20), a dramatic highlight of 1959.

NBC

Edward R. Murrow made news and aroused curiosity by announcing a year's leave of absence from CBS, as of July 1, to travel and reflect. The commentator continued to appear, however, on *Small World*, which he could film wherever he happened to be.

Probably the biggest single talent contract of the year was one for $25 million between Perry Como and Kraft Foods, although not all the money went to the singer. This was the amount Kraft put up to sponsor Como's new show (*Kraft Music Hall*) for two years. The money also included the cost of production and air time on NBC, plus summer replacement shows to be produced by Como's company, Roncom Productions.

The *Voice of Firestone* concert program, which had been on the air for more than 30 years (but on television only in recent years), left the air after its sponsor said no suitable time period was available on any network. ABC, which had carried the program in recent years, proposed to move the series to a new hour unacceptable to Firestone.

Omnibus, a program that strived for quality entertainment, went off television after seven years. Phil Silvers' Sgt. Ernie Bilko got his discharge papers after several years of popular comedy shows.

There was a growing trend to tape television shows abroad. Dave Garroway's *Today* originated in Paris for two weeks; Ed Sullivan did a show from Moscow; Arthur Godfrey recorded one in Hawaii; and *Person to Person* began taping interviews in Europe. NBC made use of new transatlantic cable facilities by transmitting news film from London to New York (see above, *Radio and Television Engineering*).

An outstanding news telecast was one from Moscow that featured the July 24 debate between Soviet Premier Nikita S. Khrushchev and Vice President Richard M. Nixon at the American National Exhibition. All networks presented extensive coverage of the Nixon trip to the Soviet Union, the subsequent visit to the United States by Khrushchev, and President Eisenhower's travels abroad.

A notable innovation in TV programing in 1959 was the presentation, on a local station (WNTA-TV) in New York, of the *Play of the Week*, a series of outstanding two-hour plays on video tape, repeated every night for a full week during prime viewing time. Among the early productions in this series were Robinson Jeffers' version of Euripides' *Medea*, with Judith Anderson; Ivan Turgenev's *A Month in the Country*, with Uta Hagen, Luther Adler, and Alexander Scourby; Jean Anouilh's *The Waltz of the Toreadors*, with Hugh Griffith and Mildred Natwick; and Paul Vincent Carroll's *The White Steed*, with Frank Conroy, Tim O'Connor, and Helena Carroll. Although this series was limited to a New York metropolitan area audience, it was hoped that it might set a precedent for other stations and networks.

The Business of Sex was the radio broadcast that created the most comment of the year. Narrated by Edward R. Murrow on CBS, it was a documentary on the use of prostitutes in the world of business. There were interviews with "call girls" and businessmen who purported to tell of their mutual agreements. The program contended

NBC

(*Left*) Sir Laurence Olivier starred in an adaptation of Somerset Maugham's *The Moon and Sixpence*, presented on October 30. (*Right*) Christopher Plummer (left), Julie Harris, and Jason Robards, Jr., appeared in Ibsen's *A Doll's House*, November 15.

that some companies keep "call girls" on their payrolls to entertain customers.

The Mutual Broadcasting System, the only national radio network with no television counterpart, filed a voluntary bankruptcy petition in federal court on July 1 to arrange a settlement of more than $3 million in debts; it listed assets of $579,607. The network, which underwent a fourth change in management in two years, continued in business while working out a plan to satisfy its creditors.

In a TV year which appeared, at least to the more discriminating viewer, to be too full of an ever-increasing flood of cowboys, gangsters, and adventurers, there were, nevertheless, a noticeably greater number of excellent dramatic, musical, and documentary programs. Following is an alphabetical list of the more outstanding special programs presented during the year 1959.

OUTSTANDING TV PROGRAMS IN 1959

Ah! Wilderness (*Hallmark Hall of Fame*)—The Eugene O'Neill play, directed by Robert Mulligan, produced by Mildred Freed Alberg; with Helen Hayes, Lloyd Nolan, Burgess Meredith, Betty Field, Lee Kinsolving. NBC, April 28.

America Pauses for Springtime—Variety music and narration depicting springtime in various parts of the U.S., produced by Barry Wood; with Robert Merrill, Jane Wyman, Marge and Gower Champion, Herb Shriner, Genevieve, West Point Choir, Air Force Chorale, and others; narrated by Burgess Meredith. CBS, March 30.

America Pauses for The Merry Month of May—Musical variety program staged against outdoor settings; with Marian Anderson, Art Carney, Carol Haney, Ted Rooney, and others; Burgess Meredith, host. CBS, May 18.

Another Evening with Fred Astaire—Musical variety, with Fred Astaire, Barrie Chase, the Jonah Jones Quartet, the Bill Thompson Singers. NBC, November 4.

Bells of St. Mary's—Drama, with Robert Preston, Claudette Colbert, Charles Ruggles, Marc Connelly, Nancy Marchand, Glenda Farrell. CBS, October 27.

Billy Budd (*Du Pont Show of the Month*)—Adaptation by Jacqueline Babbin and Audrey Gellen of the Herman Melville story, directed by Robert Mulligan; with Don Murray, Alfred Ryder, Roddy McDowall, James Donald, Tim O'Connor, George Eberling. CBS, May 25.

Bing Crosby Show—Musical variety, with Bing Crosby, Frank Sinatra, Peggy Lee, Louis Armstrong, and others. ABC, September 29.

Biography of a Missile (*C.B.S. Reports*)—Filmed documentary on the making and launching of a satellite rocket; narrated by Edward R. Murrow. CBS, October 27.

Browning Version, The (*Du Pont Show of the Month*)—The Terence Rattigan play, directed by John Frankenheimer, produced by David Susskind; with Sir John Gielgud, Margaret Leighton, Cecil Parker, Robert Stephens, Rhoden Streeter. CBS, April 23.

Christmas Startime (*Ford Startime*)—Musical variety featuring Leonard Bernstein conducting the New York Philharmonic, with Marian Anderson, and others; Joseph N. Welch, host. NBC, December 22.

Doll's House, A (*Hallmark Hall of Fame*)—Adaptation by James Costigan of the Ibsen play, directed by George Schaefer; with Julie Harris, Christopher Plummer, Jason Robards, Jr., Eileen Heckart, Hume Cronyn. NBC, November 15.

Fidelio—Beethoven's opera performed by the N.B.C. Opera Company; Samuel Chotzinoff, producer; Peter Herman Adler, music and artistic director; Kirk Browning, director; with Irene Jordan, John Alexander, Chester Watson, Lee Cass, and others. NBC, November 8.

(*Left*) N.B.C. Opera Company's *Fidelio*, shown November 8, featured (from left) Irene Jordan, Chester Watson, John Alexander. (*Right*) Jason Robards, Jr. (left) and Maria Schell starred in *For Whom the Bell Tolls*, produced in two parts, March 12 and 19.

NBC; CBS

For Whom the Bell Tolls (*Playhouse 90*)—The Ernest Hemingway classic presented in two parts, adapted by A. E. Hotchner, produced by Fred Coe, directed by John Frankenheimer; with Jason Robards, Jr., Maria Schell, Maureen Stapleton, Eli Wallach, Nehemiah Persoff. CBS, March 12 and 19.

Green Pastures, The (*Hallmark Hall of Fame*)—Adaptation of the Marc Connelly play, produced by Mildred Freed Alberg, directed by George Schaefer; with William Warfield, Eddie Anderson ("Rochester"), Earle Hyman, Frederick O'Neal, and others. NBC, March 23 (repeat performance; first presented Oct. 17, 1957).

Human Comedy, The (*Du Pont Show of the Month*)—Adaptation by S. Lee Pogostin of the William Saroyan novel, directed by Robert Mulligan; with Jo Van Fleet, Michael J. Pollard, Russell Collins, Thomas Chalmers, R. G. Armstrong, David Francis, and Burgess Meredith, narrator. CBS, March 28.

I, Don Quixote (*Du Pont Show of the Month*)—Adaptation by Dale Wasserman of the novel by Miguel de Cervantes, with incidents from the author's life; with Lee J. Cobb, Colleen Dewhurst, Eli Wallach, Hurd Hatfield, Peter Donat. CBS, November 9.

Killers, The (*Buick Electra Playhouse*)—Adaptation by A. E. Hotchner of the Ernest Hemingway short story, produced by Gordon Duff; with Dean Stockwell, Dane Clark, Robert Middleton, Ray Walston, Ingemar Johansson, Deborah Moldow. CBS, November 19.

Leonard Bernstein and the New York Philharmonic—Filmed portion of a concert in Moscow, featuring the first movement of Shostakovich's Seventh Symphony. CBS, October 25.

Magic with Mary Martin and *Music with Mary Martin*—Two variety programs of music and narration featuring Mary Martin; directed by Vincent J. Donehue. NBC, March 29.

Meet Me in St. Louis—Musical comedy adapted from the book by Sally Benson, directed by George Schaefer, choreography by Herbert Ross; with Myrna Loy, Ed Wynn, Tab Hunter, Jane Powell, Walter Pidgeon, Patty Duke, Reta Shaw, Jeanne Crain. CBS, April 26.

Merman on Broadway (*Ford Startime*)—Musical variety, featuring Ethel Merman, with Tab Hunter, Fess Parker, Tom Poston. NBC, November 24.

Misalliance (*Playhouse 90*)—The play by George Bernard Shaw, adapted by Meade Roberts; with Claire Bloom, Robert Morley, Siobhan McKenna, Kenneth Haigh, Rod Taylor, John Williams, Isobel Elson. CBS, October 29.

Montgomery Speaks His Mind—Filmed interview with Field Marshal Viscount Montgomery, with Edward R. Murrow and Charles Collingwood as the interviewers. CBS, April 28.

Moon and Sixpence, The—Adaptation by S. Lee Pogostin of the Somerset Maugham novel, directed by Robert Mulligan, produced by David Susskind; with Sir Laurence Olivier, Judith Anderson, Hume Cronyn, Jessica Tandy, Geraldine Fitzgerald, Denholm Elliott, Cyril Cusack. NBC, October 30.

My Three Angels (*Ford Startime*)—Comedy adapted by Sam and Bella Spewack from their Broadway play, based on a drama by Albert Husson; with Walter Slezak, Barry Sullivan, Henry Daniell, Peter Donat, George Grizzard, Ruth Hammond, Will Kuluva, Carmen Mathews, Diana Millay. NBC, December 8.

Oliver Twist (*Du Pont Show of the Month*)—Adaptation by Michael Dyne of the Dickens novel; directed by Daniel Petrie, produced by David Susskind; with Frederick Clark, Eric Portman, Robert Morley, John McGiver, Nancy Wickwire, Tom Clancy. CBS, December 4.

Pinafore (*Omnibus*)—Adaptation of Gilbert and Sullivan's *H.M.S. Pinafore*, directed by Norman Campbell, produced by Robert Saudek; with Cyril Ritchard, Irene Byatt, William Chapman, Jacquelyn McKeever, Loren Driscoll, Chester Watson. NBC, May 10.

Population Explosion (*C.B.S. Reports*)—Documentary study of uncontrolled birth-rate problems, particularly in India; narrated by Howard K. Smith. CBS, November 11.

Sounds of Eden, The (*Playhouse 90*)—Play by George Bellak, based on 1933 kidnaping, directed by Buzz Kulik, produced by John Houseman; with Kim Hunter, James Whitmore, Everett Sloane, Dick Foran, Henry Jones, Don Dubbins. CBS, October 15.

Target for Three (*Playhouse 90*)—Drama by David Davidson, directed by Robert Stevens, produced by John Houseman; with Ricardo Montalban, George C. Scott, Marisa Pavan, Liliane Montevecchi, Pedro Armendariz. CBS, October 1.

Ten Little Indians—Adaptation by Phil Reisman, Jr., of the Agatha Christie play; with Nina Foch, Barry Jones, Kenneth Haigh. NBC, January 18.

Third Commandment, The (*Kaleidoscope*)—Original television drama by Ben Hecht, attacking commercialized evangelism and faith healing; directed by Jack Smight; with Arthur Kennedy, Anne Francis, Fay Spain, John Hoyt. NBC, February 8.

Toast to Jerome Kern, A—Musical tribute to the composer, with Howard Keel, Patrice Munsel, Carol Channing, Robert Cummings, Louis Prima, Keely Smith, Lisa Kirk, and others. NBC, September 21.

Tonight with Belafonte—Harry Belafonte and Odetta in a musical program featuring American folk songs; with chorus, dancers, Sonny Terry and Brownie McGee. CBS, December 10.

Turn of the Screw, The (*Startime*)—Adaptation by James Costigan of the Henry James story; directed by John Frankenheimer; with Ingrid Bergman, Isobel Elsom, Hayward Morse, Alexandra Wager. NBC, October 20.

Wicked Scheme of Jebal Deeks, The (*Startime*)—Comedy by John D. Hess, directed by Franklin Schaffner, produced by Hubbell Robinson; with Alec Guinness, Henry Jones, Patricia Barry, and others. NBC, November 10.

Winterset (*Hallmark Hall of Fame*)—Adaptation by Robert Hartung of the Maxwell Anderson play, produced and directed by George Schaefer; with Don Murray, Piper Laurie, George C. Scott, Charles Bickford. NBC, October 26.

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RADIOACTIVITY. See Index entry.
RADIOLOGY. See X-RAY.
RAILROAD RETIREMENT BOARD. See Index entry.

RAILROADS. Due largely to developments beyond their control, Class I railroads in 1959 fell far short of achieving the economic recovery predicted for them as the year began.

Congress in May increased retirement and unemployment benefits for railroad employees, adding about $120 million a year to railroad payroll costs immediately and $247 million a year when the new benefits become fully effective. In the second half of the year a 116-day steel strike (see IRON AND STEEL) sharply reduced railroad traffic and revenue. Largely as a result of these developments railroad traffic and revenue did not greatly exceed that of the recession year of 1958.

Freight Traffic.—Revenue freight carloadings of 30,991,000 were about 765,000 above the 1958 total; revenue ton-miles of 575 billion, about 23 billion above (see Table 1).[1] Stockpiling in anticipation of the steel strike and the production speed-up that followed only partially offset losses during the strike. Carloadings in the period to July 15, when the strike began, were nearly 2 million ahead of the 1958 number. In the remaining months they were 1 million below.

Table 1—FREIGHT TRAFFIC

Year	Tons originated (millions)	Ton-miles (millions)	Ton-miles (% increase over 1939)
1939	901.7	333,438.4	...
1947	1,537.5	654,728.3	96.4
1957	1,380.3	618,193.5	85.4
1958	1,190.4	551,667.9	65.4
1959 (estimated)	1,240.0	575,000.0	72.4

Due largely to the strike, a serious car shortage predicted for the fall did not materialize. Movement of the winter wheat crop and of a record corn crop was handled satisfactorily.

Trailer-on-flat-car (piggyback) loadings totaled 415,000 cars, an increase of 50%. Such service was provided by 50 railroads, and the number was continuing to increase.

Passenger Traffic and Service.—Railroad passenger traffic continued the decline that began with the end of World War II. Passenger-miles of 22¼ billion were the lowest since 1938 (see Table 2).

The discontinuance of several money-losing trains enabled railroads to reduce their passenger deficit to $515 million, the lowest since 1950. The likelihood of further train discontinuances, particularly in heavily money-losing commuter services, led some states and cities to consider tax and other relief for the passenger-carrying railroads. A pro-

[1] Figures and statements herein refer to Class I railroads only. These railroads account for about 95% of all railroad performance. All figures for 1959 are partially estimated.

Table 2—PASSENGER TRAFFIC

Year	Passenger-miles (millions)	Per cent increase over 1938
1938	21,628.7	...
1944 (peak war year)	95,549.1	341.3
1947 (peak postwar year)	45,920.6	112.3
1958	23,268.8	7.6
1959 (estimated)	22,250.0	2.9

gram adopted in New York affords railroads both tax relief and assistance in acquiring new passenger equipment. In New Jersey a proposal to ease the railroads' tax burden was defeated in public referendum (see NEW JERSEY—*Principal Events, 1959.*) In Philadelphia (see PHILADELPHIA), railroads and the city government were cooperating to stimulate use of rail commuting facilities in the area through lower fares and improvement of service and equipment.

In an effort to help themselves, many railroads experimented with such services as reduced fares, first-class travel at coach fares plus a small charge for the sleeping accommodation occupied, "package fares" which include meals as well as transportation, and economy meals and sleeping accommodations. Several roads reported the experiments moderately successful.

In 1959 the Interstate Commerce Commission (q.v.) completed its three-year investigation of the passenger-train deficit. The principal reason for the deficit, the ICC said in its report, is "the increase in the availability and use of motor and air transportation." Supporting reasons for the decline in commutation traffic include (1) widespread adoption of the five-day week making Saturday, as well as Sunday, a nonbusiness day, and (2) commercial growth of suburbs, lessening demand for off-peak train service by housewives on shopping trips to the city.

Financial Results.—Railroads in 1959 had net railway operating income of $755 million on gross operating revenue of $9.9 billion for a return of 2.78% on investment (see Table 3). Gross operating revenue was $305 million above that for 1958. Operating expenses totaled $7,740 million, an increase of $196 million. Twenty-three Class I railroads failed to earn their fixed charges and operated at a deficit in 1959.

Table 3—EARNINGS OF CLASS I RAILROADS

Period	Net railway operating income	Annual return on investment (per cent)
1936–40 average	$ 580,277,475	2.51
1941–45 "	1,160,203,531	4.97
1946–50 "	825,803,620	3.54
1951–55 "	1,026,435,288	3.92
1956	1,068,245,689	3.95
1957	922,333,564	3.36
1958	762,296,068	2.76
1959 (estimated)	755,000,000	2.78

Employment.—For the first time in this century, the number of employees on railroad payrolls fell below 800,000. At the peak of the steel strike in October, employment fell to 786,000. By December 31 it had climbed to 796,000. Wages of railroad employees totaled $4.975 million, an increase of $45 million (see Table 4). Including retirement, unemployment, and other benefits, payroll costs were equal to 54 cents of the railroad revenue dollar.

Retirement benefits for railroad employees were increased a flat 10%, effective June 1; unemployment benefits, an average of 20%. Retirement benefits are financed jointly by employees and employers; unemployment benefits, by the companies alone. To pay for the higher retirement benefits, the tax base was raised to $400 a month of employee earnings, and the tax rate on employees and employers, to 6¼%, both effective June 1. Progressive increases in the rate are provided through 1969, when it reaches a maximum of 9%. To finance the added unemployment benefits, the tax rate on railroads was increased to a maximum of 3¾% on earnings of up to $400 a month.

Table 4—EMPLOYMENT AND COMPENSATION

Year	Average number of employees	Total compensation (millions)	Average straight time hourly rate	Average annual compensation per employee
1939	987,943	$1,863	$0.74	$1,886
1947	1,351,961	4,350	1.18	3,218
1957	986,001	5,358	2.29	5,434
1958	840,575	4,930	2.46	5,865
1959	815,000	4,975	2.55	6,110

On October 31 a three-year moratorium on changes in railroad pay scales and work rules expired. Union demands for increased wages and benefits, if granted in full, were expected by the carriers to cost an estimated $750 million a year—about equal to their entire net railway operating income in 1959. Railroads countered with demands for changes in work rules which, they claim, are outmoded and result in "featherbed" practices estimated to cost over $500 million a year. Elimination of the fireman on diesel locomotives in freight and yard service, and revision of the basic day standard under which employees receive a day's pay for each 100 or 150 miles traveled are the principal changes sought.

To protect themselves against certain types of strikes, most railroads have adopted a new "service interruption" insurance plan. Railroads thus insured may be reimbursed for certain fixed expenses for up to 365 days in a single work stoppage.

Fuel and Material Costs.—Despite slightly lower prices of fuel, including diesel oil, the price index of railroad materials and supplies rose to a new high (see Table 5). Expenditures for fuel, materials, and supplies totaled $1.5 billion, an increase of 22% over those for 1958.

Table 5—COST OF MATERIALS AND FUEL INDEX

Period	Materials and supplies (excluding fuel)	Fuel (coal and oil)	Fuel and all other materials and supplies
1947–49 Average	100.0	100.0	100.0
December 1939	55.5	47.5	52.6
October 1958	155.4	116.8	141.6
October 1959	158.6	114.8	143.2

Rates and Fares.—In contrast to the horizontal rate increases of previous years, railroads in 1959 sought to increase revenue through selective rate adjustments. A move by Eastern railroads to reduce rates on paint was permitted by the ICC to go into effect as both lawful and compensatory under the Transportation Act of 1958. The threatened loss of a large volume of coal traffic was averted by an ICC decision permitting the railroads to offer multiple-car rates.

Facilities and Equipment.—Capital expenditures totaled $829 million, about 12% over the 1958 investment but substantially below the postwar average. Two thirds went for new equipment, and the remainder was spent on additions to and betterment of roadways and structures. New equipment installed included 800 locomotive units, 40,000 freight cars, and 50 passenger-train cars. All of the locomotives were diesel, except seven gas-turbine units. On order on Dec. 31, 1959, were 200 locomotive units (all diesel), 40,000 freight cars, and 170 passenger-train cars.

In 1959 the nation's railroad plant comprised

220,000 miles of road and 370,000 miles of track. Equipment owned consisted of 29,540 locomotive units (28,300 diesel), 1,685,000 freight cars, and 31,000 passenger-train cars.

Mergers.—The Virginian and the Norfolk and Western railways merged in 1959 to become the Norfolk and Western Railway, a system of 2,746 miles of railroad and $970 million in assets. A proposed merger of the Erie and the Delaware, Lackawanna and Western railroads was approved by stockholders of both companies and was the subject of hearings before the ICC. Being studied in 1959 were possible mergers of the Atlantic Coast Line and Seaboard Air Line railroads; of the Burlington, the Northern Pacific, the Great Northern, and the Spokane, Portland and Seattle railways; and of the Milwaukee and Rock Island railroads. Studies of a proposed merger of the New York Central and Pennsylvania railroads were discontinued.

Research.—The industry's central research laboratory in Chicago received equipment for its new isotopes laboratory, and programs were begun to use radioactive materials for tracer technique studies. A cooperative program on irradiation of goods and vegetables to increase storage life and reduce refrigeration requirements was conducted with the Army.

Reducing the incidence of overheated journal bearings (hot-boxes) on freight cars continued as a primary research objective. Research also continued in many aspects of track construction and maintenance. Tests of prestressed concrete ties made under improved methods of manufacture were watched with interest.

Table 6—RAILWAY TRAFFIC, BY MAJOR COUNTRIES
(In millions of passenger-kilometers and freight net ton-kilometers; one kilometer equals 0.62137 mile)

Country	Passenger-km. 1956	Passenger-km. 1957 (prelim.)	Ton-km. 1956	Ton-km. 1957 (prelim.)
Argentina	15,384	15,884	14,873	14,313
Australia[1,2]	...	...	11,894	12,050
Austria[3]	5,748	5,902	7,328	7,592
Belgium[4]	8,333	8,555	6,870[5]	6,530[5]
Brazil	12,712	...	10,375[6,7]	...
Canada[8]	4,679	4,708	115,075	103,727
China (mainland)[9]	...	...	120,351	...
Czechoslovakia	18,628	19,048	34,279	39,541
France[10]	30,760	32,630	50,220	53,710
Germany, West[3]	38,811[11]	40,591[11]	51,504	51,842
Saar	971	866	1,033	1,058
Germany, East	22,560	22,785	27,334[6,12]	28,635[6,12]
India[13]	67,905	...	65,775[6]	...
Italy[14]	24,315	24,835	14,092[15]	13,996[15]
Japan[13,14]	98,082	101,244	46,309	47,648
Mexico	3,864	...	11,988[6,16]	...
Netherlands	7,687	7,612	3,562[17]	3,398[17]
Pakistan[13]	10,327	...	6,350[6]	...
Poland	37,596	38,262	52,099[6]	55,255[6]
South Africa, Union of[13,18]	...	...	25,475	25,972
Spain[19]	8,552[20]	8,607[20]	8,208[21]	8,556[21]
Sweden	6,237	5,642	10,974	10,415
Switzerland	7,307	...	3,537[6,22]	...
United Kingdom[23]	34,010	36,357	35,111[6]	34,139[6]
United States[24]	45,409	41,700	950,718	906,900
USSR[25]	142,400	153,400	1,079,100	1,212,800
Yugoslavia	7,208	7,914	11,869[6]	12,984[6]

Note—Figures relate to domestic and international traffic on all railway lines within each country shown, except those railway lines entirely within an urban unit, and plantation, industrial, mining, funicular, and cable railways. Passenger figures include all except military, government, and railway personnel when carried without revenue; ton-km. figures represent freight net ton-kilometers, and include all goods, whether carried by fast or ordinary trains, except service traffic, mail, baggage, and nonrevenue government stores, unless otherwise indicated.

[1] Twelve months ending June 30. [2] Government railways. [3] Federal railways. [4] Société Nationale des Chemins de fer Belges. [5] Full carloads only, excluding military traffic. [6] Includes service traffic. [7] Excludes small parcels. [8] Includes Newfoundland. [9] Source: *Hsin Hua Monthly*. May include service traffic. [10] Société Nationale des Chemins de Fer Français only. [11] Excludes occupation traffic. [12] Excludes light railways. [13] Twelve months beginning April 1. [14] State railways. [15] Excludes livestock. [16] Includes government traffic. [17] Full carloads only. [18] Includes South West Africa and Vryburg-Bulawayo line of Rhodesia Railways. [19] National railways (RENFE) only. [20] Excludes suburban railways. [21] Includes mail and weight of mail cars. [22] Includes mail and passengers' baggage. [23] Excludes Northern Ireland. Excludes London Transport Railways. The figures relate to British Railways. [24] Forty-eight states. [25] May include service traffic. (Source: Statistical Office of the United Nations, *Statistical Yearbook, 1958*.)

World Railway Traffic.—Figures on railway traffic are presented in Table 6 for leading nations for which relatively recent data are available.

CHARLES O. MORGRET,
Manager, Public and Special Services, Association of American Railroads.

RAINFALL. See METEOROLOGY AND CLIMATOLOGY.

RAISINS. See Index entry.

RAPID TRANSIT. See URBAN TRANSIT.

RAYON. See TEXTILE INDUSTRY.

RECLAMATION. The daily activities of nearly 10 million persons on farms and in cities and industrial centers in 17 Western states are vitally affected by water supplies provided by the U.S. Bureau of Reclamation of the U.S. Department of the Interior. Significant progress in meeting these and future water needs in the semiarid West was made by the bureau in the 1959 fiscal year.

Construction was completed on three water storage dams (Howard Prairie in Oregon, and Twitchell and Casitas dams in California) with a combined storage capacity of 551,000 square feet; three diversion dams (Soda Creek in Oregon, Robles in California, and Woodston in Kansas); and 410 miles of canals, pipelines, laterals, and drains. These facilities added about $195 million to the federal government's total investment of $3 billion in Western projects.

Other structures completed included: Glendo Powerplant, Wyoming; Big Thompson Powerplant, Colorado, marking completion of the Colorado–Big Thompson Project; Wanship and Gateway power plants, Utah; Helena Valley Tunnel and pumping plant, Montana; and the world's highest (700 feet) steel-arch bridge over the Colorado River at Glen Canyon, Arizona.

Major construction contracts awarded included: Foss Dam, Oklahoma; Stanaker Dam and second stage of Willard Dam, Utah; Prineville Dam, Oregon; Paonia Dam, Colorado; and the generator and turbine for the last unit of Hoover Dam power plant, Nevada. Work also was started on initial features of the Farwell unit of the Missouri River Basin Project, Nebraska, and the San Angelo Project, Texas.

Irrigation facilities were completed to serve 199,471 acres of land, increasing the bureau's irrigable acreage total to 8,049,642. Of the 6,756,737 acres actually irrigated, 3,407,057 received full irrigation service, 3,254,388 acres received a supplemental service, and 95,292 acres, a temporary water supply. Project farms produced crops valued at $987 million in 1958, raising the cumulative gross crop value since the start of the program in 1906 to $14.2 billion.

Bureau projects delivered 260 billion gallons of water to 106 municipalities and 68 industrial entities throughout the West.

Installed hydroelectric generating capacity of 45,450 kw. was completed, bringing total capacity at the bureau's 41 plants to 5,137,550 kw. Total revenues of $70,968,412 were received on bureau sales of 26,504,260,413 kw.-hr. of energy.

The number of recreational visitors to bureau reservoirs continued upward, tripling in the last eight years to reach 19.5 million visitor days of use in 1958.

Planning investigations were under way at the fiscal year's end on 134 projects in 17 Western states and Alaska. Comprehensive surveys of multi-

purpose water development also were in progress in 10 river basins and in 12 sub-basins of the Missouri River Basin.

Results of evaporation tests conducted at Oklahoma's Lake Hefner by the Bureau of Reclamation and the U.S. Geological Survey were announced in 1959. These tests showed a 9 per cent reduction of evaporation loss through use of a monomolecular layer of hexadecanol on the reservoir surface. The tests are continuing.

A total of 465 construction, material, equipment, and supply contracts, with a combined value of $72 million, was awarded in the fiscal year 1959. At the fiscal year's end, 145 construction contracts were in progress with a total face value of about $345 million.

A total of 48 repayment contracts were executed for repayment of costs of Reclamation project works, bringing to $916,073,149 the total value of all Reclamation repayment contracts. Water users have repaid $140,294,832, and delinquencies are negligible.

Three land openings were conducted on the Columbia Basin project in Washington, where 76 farm units aggregating 7,792 acres were made available for settlement.

FLOYD E. DOMINY,
Commissioner of Reclamation.

RECORDS, Phonograph. During 1959 the record industry continued to grow and prosper. Total sales of all types of records went ahead of the previous year by about 20 per cent.

However, some manufacturers were disappointed in the progress of the new stereophonic records, although demand for regular high-fidelity long-playing records continued to grow beyond normal expectations. It is now believed that stereo records are probably accounting for something less than 20 per cent of all 12-inch long-playing records. This slow growth does not seem to be due to lack of public appreciation of the undoubted merits of stereo sound, but it is apparent that most music lovers have been slow in installing the special equipment which is required for the proper reproduction of these records. Although regular high-fidelity records may be played on stereo phonographs with improved reproduction, it is not possible to play stereo records on the older type (monaural) phonographs.

In the closing months of 1959, the industry was shocked by the revelation of the so-called "payola" scandal. It was revealed that a number of prominent disc jockeys employed by radio stations in some large cities had been accepting, if not demanding, cash payments or other favors from certain record manufacturers, or from wholesale distributors, as a consideration for featuring their recordings in program arrangements. City and federal governmental agencies began investigations of this practice, and the situation will be examined further by congressional committees during the 1960 session. (See also RADIO AND TELEVISION—*Radio and Television Programs.*)

The peculiar rhythm and arrangement which has come to be known as "rock 'n' roll" music continues in undiminished popularity with the younger buyers of records, and after six years of general acceptance bids fair to become a permanent part of the American musical tradition. However, the rock 'n' roll of 1959 was quite different from the old-fashioned rock 'n' roll beat by which this arrangement first became famous. Many of the folk singers of the South and West have blended their country style with elements of true rock 'n' roll, and the final result has been further softened by the use of string instruments.

POPULAR RECORDS

Following the lead of the motion picture and television industries, a body known as the National Academy of Recording Arts and Sciences was organized recently for the purpose of making awards annually for outstanding accomplishment in all phases of recorded music. Selections are made by popular vote of the members, who are record company employees engaged in creative or technical work. Administrative or sales executives are not members of the academy.

It is now generally accepted by the industry that these awards (the trophy is called a "Grammy") are a more accurate appraisal of artistic merit in all categories of recorded music than are the limited polls reflecting the opinion of disc jockeys, juke box operators, or other specialized groups. Academy awards in 1959, announced on a coast-to-coast television program on November 29, included the following:

Bobby Darin, who records for Atco, was not only voted the best new artist of the year, but his recording of *Mack the Knife* was selected as record of the year.

Duke Ellington (Columbia) was a double winner. His rendition of *Anatomy of a Murder* was voted the best performance by a dance band, and the same selection was voted the best musical composition first recorded in 1959.

Ella Fitzgerald (Verve) was honored for the best female vocal performance in the selection, *But Not for Me.* She also won first place as soloist for the best jazz performance, with *Ella Swings Lightly.*

Frank Sinatra (Capitol) won two awards, both as a result of his album, *Come Dance with Me.* This was selected as the best album of the year, and his rendition was voted the best male vocal performance.

Dinah Washington (Mercury) was voted to have recorded the best rhythm and blues performance for her selection, *What a Difference a Day Makes.*

Jimmy Driftwood (RCA-Victor) was chosen as composer of the best song of the year, *The Battle of New Orleans.* The Columbia rendition of this number by Johnny Horton was voted best country and Western performance of the year.

For the best Broadway show album, Columbia's *Gypsy* shared honors with RCA-Victor's *Redhead.*

A new category of popular music, best performance by a chorus, was easily won by Columbia's recording of *The Battle Hymn of the Republic* by the Mormon Tabernacle Choir.

The award for the best performance by an orchestra went to David Rose and his orchestra with Andre Previn, M-G-M artists, for the selection *Like Young.*

Capitol Records was another winner with the Kingston Trio, which won an award for the best folk performance of the year with its rendition of *Kingston Trio at Large.*

During 1959 there were, of course, many outstanding successes in the field of popular music other than those cited by the academy. Among the best of the singles were the following:

Just as Much as Ever, Bob Beckham (Decca)
Primrose Lane, Jerry Wallace (Challenge)
Lonely Street, Andy Williams (Cadence)
Deck of Cards, Wink Martindale (Dot)
Put Your Head on My Shoulder, Paul Anka (ABC-Paramount)
Love Potion #9, The Clovers (United Artists)
Morgen, Ivo Robie (Laurie)

In the annual poll of disc jockeys, Bobby Darin tied for first place with Lloyd Price, pushing Elvis Presley down to second place. Connie Francis was voted the best pop female vocalist. The Everly Brothers were voted the best popular vocal combination, with The Coasters ranking second, and the Kingston Trio third. The disc jockeys picked Ray Anthony for the best popular band of 1959.

The readers of *Down Beat* magazine selected Frank Sinatra and Ella Fitzgerald as the best male and female singers. They picked Count Basie in the category of the best jazz band, and Les Brown for the best dance band.

The Record Industry Association of America, Inc., now undertakes to audit sales figures of various records which are proposed as eligible for a Gold Record Award and, in the event that it is found that sales have surpassed the required

minimum, provides a certification to that effect. Gold Record Awards attested to by RIAA during 1959 were as follows:

Oklahoma!, Gordon MacRae (Capitol)
He's Got the Whole World in His Hands, Laurie London (Capitol)
Tom Dooley, Kingston Trio (Capitol)
Hymns, Tennessee Ernie Ford (Capitol)
The Music Man, Meredith Willson (Capitol)
Johnny's Greatest Hits, Johnny Mathis (Columbia)
Sing Along with Mitch, Mitch Miller (Columbia)
Catch a Falling Star, Perry Como (RCA-Victor)
Hard Headed Woman, Elvis Presley (RCA-Victor)
Patricia, Perez Prado (RCA-Victor)
Peter Gunn, Henry Mancini Orchestra (RCA-Victor)

JOHN W. GRIFFIN,
Executive Secretary, Record Industry Association of America, Inc.

CLASSICAL RECORDS

The stereophonic disc, introduced commercially in 1958, began to gain considerable consumer acceptance in 1959. By the year's end, about 25% of all classical record sales were in the stereo category. This trend to stereo seemed certain to persist, particularly in view of the general improvement in quality and the vast increase in quantity of stereo issues.

Other media of stereophonic recording became available during the year. The RCA Victor tape cartridge, utilizing four-track tape at a speed of 3¾ inches per second, had been announced in 1958, but mechanical difficulties in production delayed its actual commercial introduction until the second half of 1959. Critical reports on it were conflicting, and the initial public response to the cartridge does not seem to have been overwhelming.

Meanwhile, the Ampex Corporation, through a subsidiary, United Stereo Tapes (UST), countered with an alternative recorded tape medium—this one also using four-track tape, but on standard open reels and at a speed of 7½ inches per second. There was wide agreement that UST's four-track tape recordings, when played on high-quality equipment, equaled the lofty sonic standards previously set by recordings on two-track tape at 7½ inches per second; and of course the economic advantage of four-track tape (twice as much music on the same amount of tape) was obvious.

Several important producers of classical recordings made their catalogues available to UST for processing and distribution—among them, Everest, Mercury, Vanguard, Vox, and Westminster. In addition, the announcement toward the end of the year that London Records would make its recordings available to UST beginning in 1960 gave further evidence that the open-reel, four-track medium was off to an auspicious start.

In the classical field no large new companies were formed in 1959, though some long-established European labels—Deutsche Grammophon, Odéon, Pathé, and Telefunken—were introduced (or reintroduced) in the United States during the course of the year by American manufacturers and importers. The year was notable for the return to recording activity by Dario and Dorle Soria, creators of the Cetra-Soria and Angel lines, who reappeared as producers of the Soria Series for RCA Victor. Typical of the Soria Series was the new Sir Thomas Beecham recording of Handel's *Messiah*, encased in a leather-spined, linen-covered box and accompanied by a lavishly illustrated book of annotations printed in Switzerland.

Stereo re-recording of more or less standard repertoire continued to provide the major companies with most of their new releases. In many cases the re-recordings were made by the same artists who had previously recorded the music for monophonic discs; for example, the nine Beethoven symphonies conducted by Bruno Walter; the Shostakovich First and Fifth Symphonies conducted by Leopold Stokowski; the Beethoven Opus 18 Quartets played by the Budapest String Quartet; the *Messiah* conducted by Sir Thomas Beecham, Sir Malcolm Sargent, and Hermann Scherchen; Donizetti's *Lucia di Lammermoor*, featuring Maria Callas, and Puccini's *Madama Butterfly*, featuring Renata Tebaldi. However, some fresh ground was broken, too, as exemplified by the first complete recordings of Wagner's *Das Rheingold* and Verdi's *Macbeth*.

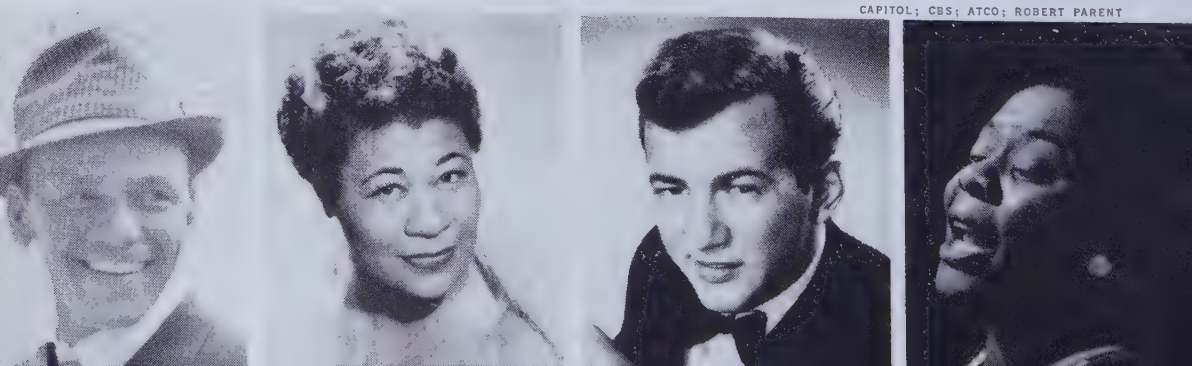
A cutting down of new classical issues was observable throughout the industry as the year progressed. The public had clearly been offered more new merchandise than it could possibly digest, and a trend toward fewer and better recordings was in the making. The previous glut had come about in part because of exclusive recording contracts that guaranteed an artist a certain number of new recordings every year. Thus, along with the trend toward fewer new issues, there was a concomitant trend toward fewer exclusive contracts, which promised the advantage of greater freedom both for the record companies and the artists.

Following is a sampling of notable recordings which appeared in 1959; except where otherwise indicated, all are available in both stereo and monaural form.

Bach, *Brandenburg Concertos:* Stuttgart Chamber Orchestra, Karl Münchinger, conductor (London; 3 LP's).
Bach, *St. Matthew Passion:* Teresa Stich-Randall, Hilde Rössl-Majdan, Waldemar Kmentt, Uno Ebrelius, Hans Braun, Walter Berry, soloists; Vienna Chamber Choirs, Boys' Choir of the Schottenstift, Vienna State Opera Orchestra, Mogens Wøldike, conductor (Bach Guild; 4 LP's).
Beethoven, Concerto for Piano and Orchestra, No. 4, in G: Leon Fleisher, pianist; Cleveland Orchestra, George Szell, conductor (Epic).
Beethoven, The Nine Symphonies: Columbia Symphony Orchestra, Bruno Walter, conductor (Columbia; 7 LP's).
Beethoven, Symphony No. 2, in D: Royal Philharmonic Orchestra, Sir Thomas Beecham, conductor (Angel).
Brahms, Concerto for Piano and Orchestra, No. 2, in B flat: Artur Rubinstein, pianist; RCA Victor Symphony Orchestra, Josef Krips, conductor (RCA Victor).
Brahms, Concerto in D for Violin and Orchestra: Henryk

Outstanding popular record artists in 1959: (from left) Frank Sinatra, Ella Fitzgerald, Bobby Darin, and Dinah Washington.

CAPITOL; CBS; ATCO; ROBERT PARENT



Szeryng, violinist; London Symphony Orchestra, Pierre Monteux, conductor (RCA Victor).

Gesualdo, Madrigals and Sacred Music: Vocal Quintet and String Quartet, Robert Craft, conductor (Columbia).

Glinka, *A Life for the Czar:* Teresa Stich-Randall, Nicolai Gedda, Boris Christoff, and other soloists; Chorus of the Belgrade Opera and Lamoureux Orchestra, Igor Markevitch, conductor (Capitol-EMI; 3 LP's; monaural only).

Handel, *Messiah:* Jennifer Vyvyan, Monica Sinclair, Jon Vickers, Giorgio Tozzi, soloists; Royal Philharmonic Orchestra and Chorus, Sir Thomas Beecham, conductor (RCA Victor; 4 LP's).

Handel, *Messiah:* Pierrette Alarie, Nan Merriman, Leopold Simoneau, Richard Standen, soloists; Vienna Academy Chorus and Vienna State Opera Orchestra, Hermann Scherchen, conductor (Westminster, 4 LP's; stereo only).

Haydn, Symphonies No. 100, in G (*Military*), and No. 101, in D (*Clock*): Vienna State Opera Orchestra, Mogens Wøldike, conductor (Vanguard).

Mozart, Symphonies No. 32, in G, and No. 38, in D (*Prague*): London Symphony Orchestra, Peter Maag, conductor (London; stereo only).

Prokofiev, Concerto for Violin and Orchestra, No. 2, in G minor (with Mendelssohn, Concerto for Violin and Orchestra): Jascha Heifetz, violinist; Boston Symphony Orchestra, Charles Munch, conductor (RCA Victor).

Rachmaninoff, Concerto for Piano and Orchestra, No. 3, in D minor: Van Cliburn, pianist; Symphony of the Air, Kiril Kondrashin, conductor (RCA Victor).

Ravel, Concerto for Piano and Orchestra, in G (with Shostakovich, Concerto for Piano and Orchestra, No. 2): Leonard Bernstein, pianist; Columbia Symphony Orchestra, Leonard Bernstein, conductor (Columbia).

Rossini, *Il Barbiere di Siviglia:* Roberta Peters, Cesare Valletti, Robert Merrill, Fernando Corena, Giorgio Tozzi, and other soloists; Metropolitan Opera Chorus and Orchestra, Erich Leinsdorf, conductor (RCA Victor, 4 LP's).

Schubert, Impromptus, Op. 90, No. 2 and 4 (with other pieces by Schubert and Liszt): Sviatoslav Richter, pianist (Monitor; monaural only).

Schubert, Quintet in A (*Trout*): Clifford Curzon, pianist; members of the Vienna Octet (London).

Shostakovich, Symphony No. 1, in F: Symphony of the Air, Leopold Stokowski, conductor (United Artists).

Strauss, *Capriccio:* Elisabeth Schwarzkopf, Christa Ludwig, Nicolai Gedda, Dietrich Fischer-Dieskau, Hans Hotter, and other soloists; Philharmonia Orchestra, Wolfgang Sawallish, conductor (Angel, 3 LP's).

Stravinsky, *Threni:* soloists; Schola Cantorum and Columbia Symphony Orchestra, Igor Stravinsky, conductor (Columbia).

Tchaikovsky, *Swan Lake:* Orchestre de la Suisse Romande, Ernest Ansermet, conductor (London; 2 LP's; stereo only).

Verdi, *Macbeth:* Leonie Rysanek, Carlo Bergonzi, Leonard Warren, Jerome Hines, and other soloists; Metropolitan Opera Chorus and Orchestra, Erich Leinsdorf, conductor (RCA Victor, 3 LP's).

Wagner: *Das Rheingold:* Kirsten Flagstad, Set Svanholm, George London, and other soloists; Vienna Philharmonic Orchestra, Georg Solti, conductor (London, 3 LP's).

ROLAND GELATT,
Editor, "High Fidelity" Magazine.

JAZZ RECORDS

The recording industry provided an unusually broad coverage of jazz history during 1959—history of the distant and recent past and of the provocative present—and gave insights regarding the future.

The distant past was explored in an adventurous series of four disks, *The Music of New Orleans* (Folkways), for which Samuel B. Charters taped performances by, and talks with, aging musicians who have been associated with jazz in New Orleans since the beginning of the century. Another excellent disk, *Jazz Begins* (Atlantic) by the Young Tuxedo Brass Band, also captured the flavor of early New Orleans jazz. Ragtime, one of the elements contributing to jazz in its formative stage, was put on records by two veteran pianists who were among the most skilled performers in that field: 75-year-old Eubie Blake on *The Wizard of the Ragtime Piano* (20th-Fox) and 64-year-old Lucky Roberts on *Happy-Go-Lucky* (Period).

Those jazz musicians whose style falls between the early traditional and the recent modern, and who have been pointlessly neglected for the past

RCA VICTOR

Sir Thomas Beecham (right) conducts the *Messiah*, one of several monaural classics re-recorded in 1959 for stereo.

decade, finally found a champion in Stanley Dance, an Englishman, who went to the United States to track down and record what he referred to as "mainstream" jazzmen. These recordings, released on the Felsted label, brought deserving new recognition to saxophonist Buddy Tate (*Swinging Like . . . Tate!*), clarinetist Buster Bailey (*All About Memphis*), trombonist Dickie Wells (*Bones for the King*), and pianist Earl Hines (*Cozy's Caravan*). Several other "mainstreamers" also returned to the recording studios in 1959, including clarinetists Joe Marsala, on *Chicago Jazz* (Stere-O-Craft), and Clarence Hutchinrider, on *Music from the Gaslight Era* (Aamco). The burgeoning interest in these middle-era musicians was capped by the release of a two-disk set, *Spirituals to Swing* (Vanguard), which contained highlights of two important concerts presented at Carnegie Hall in 1938 and 1939.

The most provocative jazz group to appear during 1959 was a vocal trio—Lambert, Hendricks and Ross—considered by many to be the first real jazz singing group ever formed. Their stock-in-trade, vocalized versions of well-known instrumental jazz arrangements with exceptionally appropriate lyrics by Jon Hendricks, was caught at its best on *The Swingers* (World Pacific). Nina Simone, a pianist and singer, made a highly promising debut on *Little Girl Blue* (Bethlehem). How-

Recording session for Rossini's *Il Barbiere di Siviglia*, with Erich Leinsdorf conducting, shows use of separate microphones to produce two channels for stereophonic sound.

DAVID DREW ZINGG

ever, the most intriguing peek at a potentially vital force in the future of jazz was offered by Ornette Coleman, who plays a plastic alto saxophone and forms his solos from slashes and smears which are frequently only vaguely associated with any central musical core. His disks were *Something Else* (Contemporary), *Tomorrow Is the Question* (Contemporary), and *The Shape of Jazz to Come* (Atlantic).

The fad of recording jazz versions of Broadway show scores gave way during 1959 to a concentration on background music for private-eye television shows, stimulated by Henry Mancini's *The Music from "Peter Gunn"* (Victor). The film version of *Porgy and Bess* resulted in numerous jazz treatments of its score, of which the most interesting were by Miles Davis (Columbia), Louis Armstrong and Ella Fitzgerald (Verve), and Rex Stewart and Cootie Williams (Warner Brothers). A much more significant connection between jazz and films, however, was the increasing number of film scores written by jazz musicians. Transferred to records, these included Duke Ellington's *Anatomy of a Murder* (Columbia), John Lewis' *Odds Against Tomorrow* (United Artists), and Miles Davis' *Elevator to the Scaffold* (Columbia).

Other interesting jazz records issued in 1959 included:

At His Very Best, Duke Ellington and His Orchestra (Victor)
Breakfast Dance and Barbecue, Count Basie's Orchestra (Roulette)
Concert!, George Lewis' Band (Blue Note)
Duke Ellington at the Cotton Club (Camden)
Free Blown Jazz, Tony Scott (Carlton)
Great Jazz Standards, Gil Evans' Orchestra (World Pacific)
Historic Jazz Concert at Music Inn (Atlantic)
Kid from New Orleans, The, Kid Ory (Verve)
Kind of Blue, Miles Davis Sextet (Columbia)
King of New Orleans Jazz, The, Jelly Roll Morton and his Red Hot Peppers (Victor)
Lightnin' Hopkins (Folkways)
Mingus Ah Um, Charles Mingus (Columbia)
Oh, Play That Thing!, Pee Wee Erwin (United Artists)
Pres and Teddy, Lester Young–Teddy Wilson (Verve)
Songs for Swingers, Buck Clayton (Columbia)
Sweetest Since Gabriel, The, Doc Evans (Audiophile)
You're Getting to Be a Habit with Me, Ruby Braff (Stereo-Craft

JOHN S. WILSON,
Reviewer of Jazz Records, "The New York Times" and "High Fidelity" Magazine.

RED CROSS, American National. Providing assistance to the armed forces, veterans, and their families accounted for nearly 39% of Red Cross expenditures for the 1958–59 fiscal year. Services for members of the armed forces and their dependents included counseling; financial grants or loans totaling $10,749,000; recreational programs; and medical social services and recreation for patients in 286 military hospitals. Veterans and their dependents were given counsel, financial aid, and assistance in obtaining benefits for which they were eligible. In 174 veterans hospitals and domiciliary homes, 17,200 volunteers monthly supplemented institutional services.

Largest of the Red Cross' 298 operations to aid victims of disasters followed floods of late January in New York, Pennsylvania, Ohio, West Virginia, and Indiana. During the emergency phase, the organization handled an extensive inquiry service and operated 84 shelters which provided meals, clothing, medical and nursing care, and housing. Over 27,200 persons received emergency care, including 14,500 rescue and cleanup workers. More than 10,800 families were given long-term financial aid. During the year an additional 61,600 persons and 6,200 families affected by disaster were aided. Red Cross expenditures for disaster services in the United States and abroad totaled $6,904,982. In addition, thousands of volunteers gave their services to carry out programs of disaster relief and preparedness.

Through the Blood Program, over 2,300,000 voluntary blood donations were collected during the year. Two regional programs were opened to bring the total to 54. Some 3,900 civilian and federal hospitals in 49 states and the District of Columbia received Red Cross blood for treatment of patients.

New educational materials and methods were developed to promote safety. Among the innovations were dryland outboard motorboat demonstrations to teach how to reduce boating accidents. The Red Cross also operated 24,300 highway first-aid stations, mobile units, and detachments; enrolled 3,300 persons in 25 aquatic schools; issued over 2,500,000 first aid and water safety certificates; and authorized 156,000 first aid and water safety instructors.

In 1959, Red Cross Nursing Services observed its 50th year, adding to its achievements a program to improve the care of the chronically ill and aged in nursing homes. Over 38,000 professional nurses served as volunteers in community clinics and blood centers and taught home nursing courses. Nurses gave the equivalent of 10 calendar years in caring for the year's disaster victims.

Increased numbers of the organization's 20,500,000 enrolled junior members took part in chapter and community programs. Through programs to foster international understanding, cultural exchanges were arranged, and school, health, and recreation supplies valued at $954,000 were sent to children in some 60 countries.

The international assistance program also provided aid for refugees in Morocco, Tunisia, and India, and to flood victims in Europe and South America. Searches conducted with the help of other Red Cross societies located missing persons in 800 instances; and throughout 1959, Red Cross and family packages were forwarded regularly to all Americans known to be detained in Communist China.

CARROLL L. BRYANT,
Director, Office of Publications.

REFORESTATION. See FORESTRY.

REFRIGERATION. See AIR CONDITIONING AND REFRIGERATION.

REFUGEES AND DISPLACED PERSONS. World Refugee Year.—The most significant development for refugees and displaced persons in 1959 related to the designation of the period July 1, 1959, through June 30, 1960, as World Refugee Year.[1] This international program emphasizes the belief that the tragic situation which affects millions of human beings throughout the world can be relieved only by joint action of voluntary and governmental agencies and greater coordination of services within the United Nations. Special emphasis is being placed on closing the refugee camps in Europe.

The World Refugee Year is being administered by the new Executive Committee of the High Commissioner's Program for Refugees which succeeded the Executive Committee of the U.N. Refugee Fund (UNREF) as of Jan. 1, 1959. The group advises the United Nations high commissioner for refugees (UNHCR), Dr. Auguste R. Lindt, who was re-elected by the U.N. General As-

[1] The United Kingdom's proposal for a World Refugee Year was adopted by the Executive Committee of the U.N. Refugee Fund in September 1958 and received the support of the U.N. General Assembly in a resolution passed on Dec. 5, 1958. Fifty-nine governments joined in proclaiming the year; nine governments (from the Soviet bloc) dissented, and seven (representing Asian and Arab members) abstained.

sembly on Nov. 14, 1958, for a two-year term, and who has expressed the hope that thousands of refugees will be settled during this year.

Special contributions pledged to the World Refugee Year in 1959 included in the following:

Monaco, 1 million French francs; Morocco, payment of charges for unloading inland transport and storage of supplies for refugees from Algiers; Tunisia, same as Morocco; United Kingdom, £100,000 to the national committee of World Refugee Year in the United Kingdom; United States, $4 million (exclusive of the $40 million annual contribution for direct assistance to refugee programs), plus $100,000 for refugees from Tibet, $80,000 for Chinese refugees in Hong Kong, and $150,000 for relief of refugees in Morocco and Tunisia; International Confederation of Free Trade Unions, $50,000 for Office of the U.N. High Commissioner for Refugees programs; Iceland, admission of 20 refugee fishermen; Belgium, resettlement of 100 difficult cases, through the Entre 'Aide Socialiste Belge, in collaboration with the World Council of Churches.

On Nov. 4, 1959, U.N. Secretary General Dag Hammarskjöld, reporting on the progress of the World Refugee Year, said that only $3 million had been donated by that date, two thirds of which came from the United States. He said that 65 countries and territories were participating in the program, in addition to 70 private organizations.

In an earlier statement (May 15) on the special effort, the secretary general reported that there were still 2 million refugees in need of assistance from the United Nations. Refugee statistics are approximate at best, but there are, according to recent estimates of the UNHCR, 135,000 nonsettled refugees throughout Europe. Some 19,000 of these have been in camps for more than 10 years, and one third of their children were actually born in these places. It is hoped that in the near future 13,000 of the 32,000 still living in camps will emigrate, and that 19,000 others will be re-established in the countries where they are now located.

President Eisenhower called a special White House conference on May 21–22 to discuss United States participation in World Refugee Year. About 160 civic and volunteer agency leaders attended the session and called for increased governmental assistance to refugees.

Activities of United Nations Organizations.—In 1959 the number of nonsettled refugees in Europe and within the mandate of the UNHCR totaled 32,000 living in camps and 100,000 living outside of these formal camp communities without permanent settlement. The distribution of these refugees within the mandate of the United Nations who live in camps in Europe was reported by the UNHCR on July 1, 1959, as follows: Austria, 10,300 refugees (including 2,700 Hungarians recently arrived) in 45 camps; Germany, 11,930 in 53 camps; Greece, 820 in 8 camps; and Italy, 3,350 in 8 camps. (Thousands of other refugees are in camps not under United Nations jurisdiction.) Some camps provide temporary shelter; others are converted military cantonments, factories, or former concentration camps.

While there is a slow decline in the refugee population left in Europe following World War II, the general problem has increased in other areas. The Hungarian revolt in 1956 displaced thousands of persons, and over the past four years other refugee movements have occurred in Communist China, Southeast Asia, and North Africa, and a few minor incidents have created local refugee problems. The UNHCR, reporting in 1959 on the Hungarian refugee problem, said that "solutions have been found or are in sight for more than 95% of these refugees."[2]

While the Hungarian refugee problem in Yugoslavia was completely solved before 1959, the expenditures incurred for transportation, housing, and care left the Yugoslavian government with a deficit of more than $3.6 million. The total number of refugees who left Hungary was estimated at 200,000; of these, 180,000 entered Austria and 20,000 went to Yugoslavia. After repatriation or resettlement, there remained in Austria 14,900 refugees, including the 5,000 in official camps. For those who do not wish to settle outside the country, a $3.5 million program has been drawn up for housing, credit facilities, education, and employment opportunities. United States surplus food supplies were made available to assist in the feeding program.

In the past three years, serious refugee problems developed in Tunisia and Morocco when large numbers of refugees from Algeria entered these countries without means of support. The "host" governments were faced with problems of care and maintenance. The situation, beyond the capacity of the local authorities, grew serious. Appeals were made to UNHCR, and contributions of $116,000 were made available to the International Red Cross for distribution in aid and assistance.

Later, the problem of Algerian refugees became worse. It was estimated that 125,000 were in Tunisia and a similar number in Morocco. In late 1958 and 1959, appeals for assistance were made by the League of Red Cross Societies and the Red Crescent Societies, with the support of the UNHCR. It was estimated that by the end of 1959, contributions of $2,440,000 would be necessary, but only a portion of this amount was received.

There are over 1 million Chinese refugees from the mainland living in Hong Kong in almost unimaginable poverty and in overcrowded and unhealthy conditions. Appeals were made to governments and voluntary organizations, but by late 1959 the response had been most disappointing. Funds to aid the Chinese refugees in Hong Kong are included in the United Kingdom's plans for the World Refugee Year. In addition to the mainland refugees, there are in Hong Kong approximately 10,000 White Russian refugees, remaining since World War II, whose problem can best be solved by resettlement in European countries.

Elsewhere in Asia there are about 15,000 refugees from Tibet in Bhutan, Nepal, and India.

Much more complicated and difficult of solution is the problem of the refugees in the Middle East. Because of the serious and, in some instances, exaggerated political, ethnic, or other problems involved, the Palestine refugee programs may eventually be the source of even more serious international involvement in that area. Most authorities agree that the problems will require urgent diplomatic efforts and generous offers of resettlement from many countries requiring skilled and unskilled personnel.

The number of registered refugees living around the borders of the state of Israel in 1959 is placed at 1,087,628 (in 1950 the total registered was 960,021). These are under the supervision of the director of the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). The refugee population approximates 15% of the local nonrefugee resident population, which is placed at 6,923,952. In the Gaza Strip the refugee population is registered at 243,343, compared with the local nonrefugee population of 106,415. In other countries in the Middle

[2] For his efforts on behalf of Hungarian refugees, Oskar Helmer, Austrian minister of the interior in 1956, received the Nansen Medal on Oct. 13, 1959. The award, named for the late Fridtjof Nansen, a Norwegian who was first high commissioner for refugees for the League of Nations, is presented annually for outstanding endeavor in the refugee field.

East, the percentage of registered refugees versus local population is as follows: Jordan, 58.9%; Lebanon, 8.2%; Syria, 2.6%.

In December 1959, authorities of the United Nations announced that more than $35 million was pledged for the support of refugees under United Nations programs. Of this sum, about $25 million will come from the United States. The major portion of this money will be used to support UNRWA during an extension of its mandate for a three-year period beyond June 30, 1960 (approved by the General Assembly on December 9). UNRWA has responsibility for more than 1 million Arab refugees and over 300,000 refugees of World War II and the Hungarian and Algerian conflicts. Israel refrained from voting on the issue because of the controversial clause calling for the return of many of the Arab refugees to Israel for repatriation. It was "the opinion of the Israeli government" that the Arab refugees should be settled in Arab countries as a more compatible solution. (See also UNITED NATIONS—*General Assembly.*)

Voluntary Agencies.—The services to refugees and displaced persons rendered by the United Nations agencies and individual governments are supplemented by those of numerous voluntary agencies. In the United States alone there are nearly 40 such agencies. Generally, these are related to welfare agencies sponsored by various church groups or nationally organized welfare services. Fifteen church-related agencies have been serving the needs of refugees since World War II, and at least one third of these became interested because of the prewar concentration camps in Germany. Ten of these voluntary agencies in the refugee field are sponsored by ethnic or nationalistic bodies. Organizations such as the Red Cross and CARE (Cooperative for American Relief Everywhere, Inc.) have close governmental relations, but are not public agencies as such. The U.S. Committee for Refugees, with headquarters in New York City, is an independent citizens group composed of individuals and persons related to some church or other agency serving refugees. This committee is spearheading the organization of city and state programs for the World Refugee Year.

(For further references, see the Index entry, *Refugees and Displaced Persons.*)

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REHABILITATION, Vocational. See the Index entry, *Vocational Guidance.*

RELIEF, Public. See SOCIAL WELFARE.

RELIGION. Major developments among the principal religions of the world in 1958 are reviewed in this article under the following headings: (1) Introduction: A General Survey; (2) Protestantism; (3) Catholicism; (4) Oriental Religions, Islam, and Eastern Orthodoxy; and (5) Judaism. The largest individual religious bodies in the United States and Canada are treated under separate headings—for example, BAPTIST CHURCHES, CHRISTIAN SCIENCE, CONGREGATIONAL CHRISTIAN CHURCHES, etc.; and membership figures are tabulated in the article CHURCH MEMBERSHIP, U.S.

INTRODUCTION: A GENERAL SURVEY

There were many signs of religious vitality in the world in 1959. Church membership in the United States reached an all-time high, embracing 63% of the population. New records were also established in church attendance, and in contributions to charitable causes. There was a boom in church building, with an increased use of new architectural forms. Moslems stepped up missionary activities in the United States; and in Africa, Islam was gaining ten times as many converts as Christianity. In Chicago, a foundation comprising Orthodox, Reform, and Conservative Jews was begun in 1959 for proselytizing non-Jews. As Protestants throughout the world joined in celebrating the 450th anniversary of the birth of John Calvin, Protestants in the United States reported that the number of missionaries supported by them on foreign fields had increased by 10,000 since 1951.

Yet, many religious leaders questioned the significance of such signs of apparent vitality. It was pointed out that Americans still spend 15% more for cigarettes each year than they give to all charities. Also, sociological studies indicate that the basic religious orientations of Americans have remained relatively unchanged over the past half-century. The worldwide celebration of the 100th anniversary of the publication of Darwin's *Origin of Species* (see GENETICS) recalled centuries of adjusting traditional religious views to new scientific theories, and there were many indications that further adjustment is necessary. For example, the implications for traditional religious thought of space travel and the possible existence of sentient beings in other parts of the universe were widely discussed.

Changing sociological patterns also are bringing about modifications of some traditional religious social views. A World Council of Churches study group recommended planned parenthood through a variety of means acceptable to Christian conscience. Another World Council of Churches conference, meeting in Thessalonika, considered Christian responsibility toward areas of social change, and urged a greater awareness on the part of Christians of the political and economic revolutions occurring in many parts of the world. The first East-Asian Christian Conference, at Kuala Lumpur, concentrated on Asian problems, and one in Denmark considered European problems.

All of the traditional religious bodies of the world continued to grapple with the threat of Marxist ideology and Communist political action. Followers of traditional Asian faiths were especially shocked by the forced flight of the Dalai Lama from Tibet (q.v.). As Buddhists celebrated the 2,500th anniversary of the birth of Gautama Buddha, they heard calls to a greater awareness of the social implications of their faith. Reports from Communist China indicated a further rapid consolidation of Chinese Christian churches under government control.

A National Council of Churches study conference recommended that the United States recognize Communist China and establish closer cultural relations with Communist countries—a recommendation that brought a mixed reception from church leaders. The visit to the United States by Soviet Premier Nikita Khrushchev (q.v.) resulted in varied comments from religious spokesmen. Some felt that steps should have been taken to make the Russian leader more aware of the role of religion in American life. In Germany, the 10th annual *Kirchentag* (literally, church day) brought 40,000 German Protestants from both sides of the Iron Curtain to Munich for 5 days; 370,000 attended the closing service. East German delegates experienced increased difficulties in attending the *Kirchentag.* The East German government claimed that 75% of its youth now participate in ceremonies of the Communist Youth Dedication movement rather than in traditional religious observances.

One response of world religious bodies to these

and other challenges was a greater concern for unity. In January, Pope John XXIII announced a forthcoming Ecumenical Council to consider the divisions now existing among Christians. In some quarters it was felt that a special approach might be made by Roman Catholics toward Eastern Orthodox Christians. Leaders of the World Council of Churches drafted a cautious but friendly statement on the pope's announcement, and called for greater cooperation between Catholic and Protestant Christians in existing economic and social programs. The 10th annual meeting of the Central Committee of the World Council, at Rhodes, urged closer understanding between Protestant and Eastern Orthodox groups, while Eastern Orthodox leaders indicated that their response to the pope's proposed Ecumenical Council would not jeopardize their relations with the World Council. Roman Catholic observers said that in any case only bishops of the Roman Catholic Church would be official members of the council.

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PROTESTANTISM

In 1959 the Protestant world commemorated the 450th anniversary of John Calvin's birth (July 10, 1509) and the 400th anniversary of the final Latin edition of his *Institutes*. The focal point of these celebrations was Geneva, Switzerland (Calvin's permanent home after 1541), where a service on May 31 inaugurated the summer-long Festival of Sound and Light.

A number of events during 1959 testified to growing Protestant efforts to achieve Christian unity. In the United States, two significant developments in the field of student work contributed toward realizing this aim. First, four denominations—The United Presbyterian Church in the USA, Disciples of Christ, United Church of Christ, and Evangelical United Brethren Church—merged their student activities into a newly constituted United Campus Christian Fellowship. Second, the historic Student Volunteer Movement was merged with the Interseminary Movement and the United Student Christian Council to form a single cooperative student work agency, the National Student Christian Federation.

The second General Synod of the United Church of Christ, bringing together the Congregational Christian Churches (q.v.) and the Evangelical and Reformed Church, met at Oberlin, Ohio, in July to complete its organization. A Statement of Faith was adopted by the church, but final consideration of the proposed Constitution was postponed for one year. In Boston, in May, the American Unitarian Association and The Universalist Church of America approved a merger "at the earliest feasible date," probably by May 1961.

In the Netherlands, the Reformed and Lutheran churches adopted an agreement which provides for intercommunion and pulpit exchange. However, in Great Britain, the General Assembly of the Church of Scotland, meeting in Edinburgh on May 26, rejected proposals for closer relations with the Church of England. The Scottish church contended that the creation of "bishops-in-presbytery," which had been put forward in 1957 as a basis for union, were "unacceptable in that they imply a denial of the catholicity of the Church of Scotland. . . ."

One of the conspicuous recent features of world Protestantism has been the drawing together of churches into regional councils. The East Asian Christian Conference was formally constituted at Kuala Lumpur, Malaya, on May 14. Representatives from the Protestant churches of seven Latin

WIDE WORLD

In Washington Cathedral on January 14, the Rt. Rev. Arthur C. Lichtenberger (second from left at top) becomes presiding bishop of the Protestant Episcopal Church, succeeding Bishop Henry Knox Sherrill (second from left, foreground).

European countries formed a similar conference. In addition, an All-European Protestant Conference, aimed at bridging the gap between churches in eastern and western Europe, was held at Frankfurt, Germany, in January. Also in January, an All-European Church Conference met at Nyborg, Denmark; practically all non-Roman Catholic churches, including the Moscow Patriarchate, were represented. In addition to the primary purpose of these conferences, which was to consider the joint responsibility of the various churches in a particular area, there was a manifest concern for religious liberty. In this regard, the Central Committee of the World Council of Churches, in session at Rhodes, Greece, in August, scheduled a full debate on religious liberty in Roman Catholic countries. This debate was planned for the council's meeting to be held in Scotland in 1960.

The annual *Kirchentag* in Germany, a great mass-meeting which brought together nearly 500,000 people, was held in Munich, August 12–16. Including Christians from both East and West Germany, the *Kirchentag* served as a reminder of the "lay renaissance" in European Protestantism. Closely related to the *Kirchentag* are the lay academies which have been established in seven European countries so that laymen may join together to consider their Christian vocations. These academies, linked to each other by the Directors' Association of the Laymen's Colleges of Europe, maintain a close contact with the World Council of Churches' Department of the Laity.

The annual National Church Architectural Conference, held at Los Angeles in February, called attention to the great building boom in American Protestantism. The Board of Missions of The Methodist Church (q.v.) reported that during 1958, Methodists spent almost $125 million on new buildings or building improvements. The Southern Baptist Convention (see BAPTIST CHURCHES) expended even more—$171 million.

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CATHOLICISM

In his first message to the world at large, a radio broadcast on the occasion of Christmas 1958, Pope John XXIII noted that the words "unity and peace" could sum up the living substance of the teaching of his predecessor, Pius XII. Reaffirming this need, the pontiff said: "We intend to pursue humbly but with earnestness the task to which we

are encouraged by the words of Jesus, the divine Good Shepherd . . . that all may be one."

A few weeks later, on Jan. 25, 1959, in the course of an allocution to a group of eminent cardinals, Pope John XXIII gave precise form to the thought expressed in his Christmas message as he announced his intention of calling together representatives of the Christian world for an ecumenical council on the unity of the church. A communiqué issued at the Vatican stated that "the convocation of the ecumenical council in the thought of the Holy Father aims not only at the edification of Christian peoples, but is intended also as an invitation to the separated communities in quest of unity, to which so many hearts aspire in so many parts of the earth."

This council, which may be held within the next two years, will be only the 21st of its kind in the 20 centuries of Christian history. The last ecumenical council was summoned to the Vatican by Pius IX; it met on Dec. 8, 1869, and sat until July 18, 1870. Besides important canons relating to the constitution of the church, the council decreed the dogma of the pope's infallibility when speaking *ex cathedra* on matters of faith and morals.

Addressing himself to heads of states in his Easter message on March 28, 1959, Pope John emphasized the great responsibility resting today upon world leaders. Their high calling, he said, "establishes them not as judges but as guides to the nations." To these nations they are "in duty bound to guarantee respect for the fundamental rights of the human person." The pope pointed out the tormented Catholics of eastern Europe, whose tribulations are "a living and painful witness to the lack of true peace and its proper fruits."

Pope John sent his first encyclical letter, *Ad Petri Cathedram,* on June 29, 1959. Returning again to matters of unity, the pontiff also concerned himself with social order and noted with satisfaction that inequalities among classes provoked by the early period of industrialization have become less marked and that "there is no longer a question merely of employer and employed." Employers, he wrote, "should provide in some suitable way for the workers to share more and more in the fruit of their labor and feel themselves partners in the whole enterprise."

A steadily growing inclination among Roman Catholic scholars and organizations to explore all possible avenues of approach to fruitful dialogue with other religious bodies marked the year 1959. Protestant and Catholic scholars working together in the field of Biblical studies have done much excellent and objective work. Some of these scholars think that agreement in linguistic studies has reached the point where a uniform English translation of the Bible acceptable to both Catholics and Protestants is a real possibility.

American Catholics are helping to create a new image of the United States in the world. Francis Cardinal Spellman in an allocution given in Rome, Italy, on Oct. 13, 1959, commented on the extent and activity of the United States foreign assistance program. The billions of dollars now being spent for economic aid overseas, said the cardinal, represent "a personal contribution by every working American, who, through his taxes, assumes part of the burden of want, of sorrow, of unfulfilled hopes, that lies so heavily upon the peoples of poorer lands."

The Catholic Relief Services, sponsored by the hierarchy of the United States, is one of the most active of the voluntary organizations engaged in works of global charity. In the course of 1958 this agency shipped to 51 countries more than one billion pounds of foodstuffs, clothing, and urgently needed medicines valued at $81 million.

(See also Roman Catholic Church.)

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Oriental Religions, Islam, and Eastern Orthodoxy

An Oriental challenge to Western traditional religion and political ascendancy continued in 1959. In the metropolitan centers of the United States, the results of over fifty years of Hindu, Buddhist, and Islamic activity took form. A steady stream of Oriental religious philosophers visited, lectured, and made converts in the course of the year. Individual followers of such Oriental prophets as Meher Baba, Sri Aurobindo, and Krishnamurti number in the tens of thousands.

There are other followers of Oriental religions who may trace their identity with Asian faith to military service in countries such as Japan and Korea. Among these were budding artists and writers who became deeply impressed with the utter simplicity and charm of Eastern art and searched for the spiritual motivation behind it. Such a quest might occasion an encounter, let us say, with Zen Buddhism and its claim of a direct apprehension of the truth. That encounter was facilitated for many by Daisetz Teitaro Suzuki, the "St. Paul of Zen Buddhism," who as a New York resident gave an impressive support to the Buddhist cause.

Buddhism.—The revival of Buddhism in its Asian homelands was not without significant repercussions in the Western world. Throughout the year, for instance, Boris Erwitt, a New Yorker of Russian-Jewish origin, ordained as a Buddhist monk, presided over a congregation at the American Buddhist Academy in New York City. His was the Shin sect, to which most American Buddhists belong. These constitute a group apart from the Zen Buddhists, who have attained an avant-garde status and have made a lasting impression on the so-called "beat generation." (The success of Jack Kerouac's *The Dharma Bums,* published in 1958, gives an inkling of Zen Buddhism's close touch with certain young intellectuals in the United States.)

On June 20, 1959, the Dalai Lama charged that Communist China was engaged in exterminating the Tibetan people and menacing both the religion and culture of his land. An exile in India since March when he fled his capital, Lhasa, the Dalai Lama pressed his claims throughout the summer as spiritual and temporal leader of Tibet. Despite widespread sympathy in the free world, his appeal to the United Nations on September 9 remained virtually unheeded. (See also Tibet.)

On Sept. 25, 1959, Talduwe Somarama Thero, a Buddhist monk who practiced at a hospital of indigenous medicine, shot the prime minister of Ceylon, S. W. R. D. Bandaranaike, who died the next day. Feelings ran high against the monks, traditionally objects of reverence. Although most of the people of Ceylon are Buddhists, a growing public reaction against the participation of monks in politics had been felt in the country for months. (See also Ceylon.)

Hinduism.—Concern continued to mount within Hindu circles over the mass conversion of untouchables (a low caste) to Christianity. Delegates to a convention of depressed-class workers which met at Hyderabad, India, late in 1958 adopted a resolution on this issue. It appealed to all untouchable laborers to discourage such conversions and requested the government to segregate these converts from other untouchables. Other resolutions asked

WIDE WORLD

Scenes at the dedication (November 20) of the National Shrine of the Immaculate Conception in Washington, D.C.—the largest Roman Catholic church ever built in the United States. (*Above*) A view of the shrine's exterior, with its adaptation of Romanesque and Byzantine styles. (*Right*) Worshipers fill the vast sanctuary during dedication services.

for proportionate representation for scheduled classes in public service, and for state and federal funds to aid such segments of society under a statutory board.

Islam.—The Islamic penetration of Africa continued in 1959. In a country like Nigeria, nearing commonwealth status within the British family of nations, Moslems, despite numerical inferiority, gained an upper hand in public affairs. Indeed, Islam prospered in the wake of ebbing imperialism. In North Africa, even before French President de Gaulle enunciated his new policy for Algeria (q.v.), the rebels had scored something of a moral victory: On April 25, 1959, French Roman Catholic priests serving with their country's army in Algeria formally condemned the use of torture and summary execution of civilian and military prisoners by the French authorities.

Islam could claim adherents in the United States, too, where the Koran was attracting attention, particularly among some elements of the Negro population. In Chicago, Los Angeles, New York, and Washington, Moslem centers of proselyting were established.

About 500 students of Cairo's al-Azhar University, Islam's highest and oldest institution, demonstrated on Sept. 26, 1959. Their protest was against the mass execution of 13 Iraqi army officers and 4 civilians the previous Sunday in Baghdad, Iraq. It was Cairo's second demonstration within a week against the regime of Abdul Karim al-Kassem.

Islamic strength in Asia and Africa increased, although contrary to every precedent in the history of aggressive and missionary faiths. The Moslems offered no education and had no medical institutions. Their religious services and houses of worship lacked color, music, and imaginative ritual. Yet they shared an emotional anticolonialism with their would-be converts.

Eastern Orthodoxy.—The fierce struggle for leadership within Eastern Orthodoxy was accompanied during the year by complex jockeying with both Protestantism and Roman Catholicism. This was particularly the case in late August at the meeting of the Central Committee of the World Council of Churches on the Greek island of Rhodes. When the largely Protestant World Council of Churches was formed in 1948, Russian Orthodoxy refused to join it, denouncing it as a Western imperialist façade. Nevertheless, 11 Orthodox churches did join, including the four historic patriarchates of Constantinople, Alexandria, Antioch, and Jerusalem. In 1959 the Russian Orthodox Church changed its position; it sent observers to Rhodes and asked the World Council of Churches to send a top-level delegation to the Soviet Union in December.

On his September visit to the United States, Soviet Premier Khrushchev, asked about the relatively large crowds of young Russians whom foreign visitors saw at church services, ascribed the phenomenon to curiosity. He did maintain, however, that religious freedom and freedom of conscience are the real reasons why church attendance is so widely practiced in the Soviet Union. The main issues before the 2½ million Eastern Orthodox believers in the United States is the question of acceptance or rejection of Russian Orthodox leadership. Actually, only one small Russian Orthodox group in the United States owes allegiance to Moscow's patriarchal authority.

In the Church of Greece a crisis has arisen over the insistence of the government on overdue church reforms. Included in such long-pending reforms are educational standards for priests and bishops, reorganization of diocesan boundaries, and reactivation of a canon law which prohibits the transfer of bishops. These vital issues were docketed for meetings of the Holy Synod held in the spring and summer of 1959. One complicating factor was an organic cleavage between the hierarchy and the lay leadership. The clergy was inclined to reserve the right of final authority in all matters of ecclesiastical substance, while the laity laid claim to a voice in all basic decisions.

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JUDAISM

Judaism in America is divided into three branches: Orthodox, Conservative, and Reform—each numbering over 1 million formal adherents. Most of the remaining Jewish population has less formal but nevertheless tangible association with Judaism, participating in Jewish customs and ceremonies and Jewish institutional life. The central Reform congregational body, the Union of Ameri-

can Hebrew Congregations (UAHC), reported 585 congregations at its 45th General Assembly in November 1959, when it launched a 3-year campaign to raise $15 million for the development of both the union and its rabbinical seminary, the Hebrew Union College–Jewish Institute of Religion (HUC–JIR). The convention also went on record as opposing the use of gambling "as a means of raising funds for the synagogue." All major national Jewish religious groups are now opposed to any form of gambling in synagogues.

The Conservative body, the United Synagogue of America, reported 685 congregations at its biennial convention, also in November, when it formally inducted 80 congregations into membership. On that occasion, representatives of Judaism in 22 countries joined in creating a World Council of Synagogues (paralleling the Reform group's World Union for Progressive Judaism).

Synagogues have grown markedly, especially in the suburbs. For example, in the New York metropolitan area 57 new Reform congregations were founded since 1946, 57 Conservative since 1947, and 35 Orthodox since 1949. Growth has been impressive also in other areas of the country.

The rabbinical seminaries also reported growth. The HUC–JIR established a new center of learning, the Frank L. Weil Institute of Advanced Studies in Religion and the Humanities, with the object of affording to scholars "the opportunity for an objective and impartial investigation of problems central to religion as they relate to . . . history, philosophy, theology, literature, art and the like . . ."

The Jewish Theological Seminary (Conservative) celebrated in June the 50th anniversary of the founding of its Teachers Institute. Its founder and first dean, Mordecai M. Kaplan, professor of philosophies of religion at the seminary, delivered the commencement address at the 65th annual commencement in June.

Yeshiva University (Orthodox), combining a theological seminary, an undergraduate division, a Women's College, and a Teachers' Institute for Men, opened its 72d academic year in September 1959 with more than 3,500 students (the largest enrollment in its history).

The national rabbinical bodies sought to advance ethical living and the study of Torah. The Reform movement placed special emphasis on social action. In April, Maurice N. Eisendrath, president of the UAHC, issued an appeal to the Reform movement to start a program of education and debate on the question of capital punishment. In May the UAHC appealed to American Jews to work with other religious groups in giving moral and financial support toward solving the Arab refugee problem in the Middle East. Both the Conservative and Orthodox movements stressed adult education, publishing books, study guides, visual aids, and other program materials used widely in synagogues. Both also established marriage counseling services for their adherents.

The Synagogue Council of America, representing the three wings of Judaism, coordinated American Jewish responses to many religious and ethical questions. The New York Board of Rabbis, in April, announced plans for an International Synagogue and Jewish Center at New York International Airport (Idlewild). This center is to complement a Roman Catholic chapel in use and a Protestant chapel under construction.

An important development was the completion in June of the First Study of Jewish Education conducted by the American Association for Jewish Education. It showed an increase of 131.2% in Jewish school enrollment during the past decade, from 239,400 in 1948 to 553,600 in 1959. Enrollment in Sunday schools was 249,600 and in weekday schools, 304,000. Most of these schools were conducted under congregational auspices: 38.6%, Conservative; 28.1%, Reform; and 28.1%, Orthodox. About 11% were noncongregational and 1.3% were Yiddish.

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Bicentenary of Canadian Jewry is observed in Trois-Rivières, Quebec, in September. Here, a plaque is unveiled in honor of Ezekial Hart, the first Jew elected (1807) to the legislature of Lower Canada. Hart was denied his seat because of his faith, but the case led to the granting of full rights to Jews in 1832. At left is L. M. Becker, bicentenary chairman.

P.I.C.

RENT CONTROL. See the Index entry, *Rent and Rent Control.*

REPRESENTATIVES, House of. For list of members, see UNITED STATES; and for legislation, see the Index entry, *Congress, U.S.*

REPUBLICAN PARTY. Preparation for the elections of 1960, with plans and hopes for the reversal of unfavorable election results in 1958, dominated Republican Party activities in 1959. Controlling the national executive departments (but with President Eisenhower constitutionally ineligible to succeed himself), the party occupied a minority position in both houses of Congress and in most of the state governments. Vice President Richard M. Nixon (q.v.) was clearly in the lead for the presidential nomination, especially in organization support but also in opinion polls. Gov. Nelson A. Rockefeller (q.v.) of New York, frequently mentioned as a contender, announced on December 26 that he would not be a candidate. The president remarked (July 1) that he would not publicly or privately attempt to determine the nominee.

With the opening of the 86th Congress, struggles developed over party leadership. House Republicans on January 6 voted 74–70, after a brief, bitter fight, to elect Charles A. Halleck of Indiana as minority leader instead of Joseph W. Martin, Jr., of Massachusetts, who had led his party colleagues for 20 years. In the Senate, where the leadership was vacant because of the retirement of William F. Knowland of California, Everett M. Dirksen of Illinois was elected minority leader by a vote of 20–14, January 7, over John Sherman Cooper of Kentucky. Cooper was supported by senators identified as party liberals.

At a meeting of the Republican National Committee in Des Moines, Iowa, on January 22–23, Chairman Meade Alcorn spoke bluntly of the need to change "the false image of the Republican Party as the party of big business and the vested interests." He obtained approval for a study Committee

on Program and Progress (appointed February 25) and for policies to recruit new precinct workers for 1960, establish local screening committees for candidates, expand party training schools and clubs, and enlarge field work and public relations of the National Committee.

Chairman Alcorn on April 1 announced his resignation to return to law practice, and on April 11, Sen. Thruston B. Morton of Kentucky was elected the new chairman. Some slight advance opposition to his selection was based on the argument that the position demanded full-time service. At its April 11 meeting the National Committee also accepted the invitation of Chicago, with its pledge of $400,000, to house the 1960 Republican National Convention, opening on July 25.

Vice President Nixon told the Young Republican National Federation in Denver, Colo., on June 19, 1959, that the great issues in the campaign of 1960 would be control of inflation and deficit spending. He counseled that the party must not allow its opponents to seem to offer a more effective program and that Republicans must show that through their leadership there were more jobs, homes, highways, slum clearance, medical research, and social security coverage than under Democrats —that "the Republican administration produced the things that the Democrats promised." Reporting to Chairman Morton of the National Committee on September 27, the Committee on Program and Progress presented a preface and four task force statements. "Republicans believe," it said, "in a central government vigilantly alert to the needs of the people and strong enough to defend the people, to help keep the economy in balance, and to make certain that a life of dignity is within the reach of every American."

Important shifts in the administration resulted from the resignation of John Foster Dulles (q.v.) as secretary of state, on April 15, because of cancer, and from Senate rejection, 49–46, on June 19, of Lewis L. Strauss, who had served by recess appointment as secretary of commerce. The succeeding cabinet members, announced respectively on April 18 and July 21, were Christian A. Herter and Frederick H. Mueller (qq.v.).

(See also ELECTIONS, U.S.; UNITED STATES—*The United States in 1959.*)

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RESINS. See Index entry.

RESPIRATORY DISEASES. In 1959 there was further progress in knowledge of the etiology, prevention, and treatment of acute respiratory diseases. Nevertheless, acute respiratory infections continued to be the main cause in the United States of absenteeism from schools and work. According to a United States National Health Survey, 65% of the 438 million acute conditions involving "either restriction of activity or medical attention" from July 1957 to June 1958 were due to respiratory illnesses. The overall incidence of all acute conditions was 2.6 per person. The ratios were approximately the same among male and female groups. This study showed that "respiratory illnesses caused 1,172,000,000 days of restricted activity including 593,000,000 days of bed disability, 219,000,000 days lost from work, and 196,000,000 days from school." The report pointed out that this period covered the time when epidemic Asian influenza occurred and may represent an unusual proportion of acute conditions. It has been repeatedly shown, however, that from 40% to 50% of visits to the doctor's office are for some form of acute respiratory disease. In the National Health Survey the rate of acute respiratory infections was 4.0 for children under 5 years of age and 1.6 for those 65 or over.

WIDE WORLD

Meade Alcorn (right), who resigned as Republican national chairman, raises the arm of his successor, Sen. Thruston B. Morton of Kentucky, after latter's election, April 11.

In a recent paper entitled *The Control of Acute Respiratory Disease in Industry,* Dr. L. H. Whitney, medical director of the American Telephone and Telegraph Company, stated that it is most important that "sickness absence problems be attacked from a broad base. There is good reason to believe that there is strong interrelationship between a man's health, behavior, and job performance with the kind of man he is, where he comes from, what he wants and needs, what he is facing now in his home and personal life and what he faced in the past. There is little doubt that when science has made available to us the means for the prevention and control of the common cold, the favorable impact on absence will be spectacular."

At the present time, if current knowledge concerning acute respiratory disease were implemented, 50% of such sickness could be wiped out because the etiology of 50% of all acute respiratory infections occurring in children and adults now is known. The agents involved are the influenza viruses, types A, B, C, and D; the recently isolated myxoviruses and adenoviruses; the JH2 and 2060 viruses; the ECHO viruses; and other recently isolated but unclassified strains of viruses associated with respiratory tract infections, particularly in children. Preparation of appropriate vaccines with these viruses and their application would be expected to be effective in preventing illnesses. (See also PEDIATRICS.)

The relationship between repeated acute respiratory infections due to viruses and chronic respiratory disease is not clearly defined. Repeated assaults on the respiratory system by these agents may well be a basic cause of chronic bronchitis. An increasing number of investigators consider that a "single cold" may not be serious, but that repeated attacks by one or several groups of viruses may alter lung structure and thereby lower the resistance of the respiratory tract to bacterial agents. Evidence of this fact is that the sixth leading cause of death in the United States continues to be the pneumonias, which often begin with a so-called "minor respiratory illness."

Acute infections of the respiratory tract due to different groups of viral agents cannot yet be differentiated clinically. Laboratory procedures must be depended on to separate them. These include methods for (a) isolating viruses and (b) determining specific antibodies to the causal agent. At best both are laborious procedures and

are only set up for use on a routine basis in a relatively few of the nation's medical and state health department centers. In practice, therefore, most physicians make a diagnosis on the basis of personal judgment derived from direct examination of the patient. They generally divide infections into two groups, those caused by viruses and those caused by bacteria.

The treatment given to both groups is generally the same. Antibiotics are used liberally by physicians to treat minor respiratory illnesses (virus infections) even though they have no effect on the course of the illness. The rationale back of such treatment is that antibiotics might prevent the inception of a bacterial complication. Such so-called "indiscriminate use" of antibiotics is condemned by many physicians. On the other hand it has been pointed out by others that it is probably the widespread use of antibiotics in the treatment of upper respiratory infections of both bacterial and nonbacterial (virus) etiologies which has resulted in the great decline in the prevalence of osteomyelitis, sinusitis, mastoiditis, and bacterial pneumonias. The group of organisms known as staphylococci is the only one manifesting major resistance to therapy with antibiotics. Among these only certain epidemic strains are a problem.

With respect to known virus infections of the respiratory tract, prevention through the development and use of vaccines is promising. The successful use of influenza virus vaccines has been repeatedly demonstrated, and adenovirus vaccines have also been shown to be effective.

It has been and should be repeatedly pointed out that the effectiveness of any vaccine depends on a corresponding specificity of the causal agent. Thus influenza A and B virus vaccines can be expected to prevent infections due to specifically related influenza A and B viruses. It can be expected that the time will come soon when vaccines containing many different groups of respiratory viruses will be available for use.

During 1959 no major epidemic outbreaks of influenza occurred. Sporadic occurrences of Asian influenza infections were reported in the United States and other countries during the fall and the winter of 1958–59. Influenza outbreaks due to type B influenza were also reported. The total prevalence of acute respiratory infections due mainly to viral agents was high. In selected studies in infants and young adults, 50% of the infections could be identified as being due to one of the known viral agents. On the other hand, with available methods, from 40% to 50% of respiratory infections in children and adults still cannot be diagnosed from the etiological standpoint. These infections are generally of a mild nature and fall in the common cold category.

(See also ALLERGIES; MEDICINE; PUBLIC HEALTH.)

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RETAIL STORE SALES. Consumer spending at retail stores in the United States in the fiscal year ended June 30, 1959, totaled $210 billion—an all-time record and 5% above the previous fiscal year. Rising personal income was the major factor contributing to increased consumer purchases. By the fiscal year-end, retail sales were exceeding $18 billion per month.

Approximately 1,960,000 retail firms shared in these sales, with chain stores accounting for $45 billion, or about one fifth of the total sales volume.

Sales have risen more than 275% from the pre-World War II levels, with rising prices playing a major role in the gain. After price adjustment, the physical volume of retail sales rose about 75% in this period. On a per capita basis, retail sales increased from about $420 per person in 1941 to $1,210 per person in the fiscal year 1959.

SALES OF RETAIL STORES
(In millions of dollars)

	Fiscal year ended June 30	
	1958	1959
All retail stores	199,511	208,768
Durable goods stores[1]	65,111	68,344
Nondurable goods stores[1]	134,400	140,424
Durable goods stores:		
Automotive group	35,912	37,248
Furniture and appliance group	10,369	10,661
Lumber, building, hardware group	10,646	11,473
Nondurable goods stores:		
Apparel group	12,432	12,891
Drug and proprietary stores	6,501	6,863
Eating and drinking places	14,811	15,089
Food group	49,489	50,910
Gasoline service stations	15,317	16,317
General merchandise group	21,183	22,514

[1] Includes estimates for other retail stores not shown separately.
(Source: U.S. Department of Commerce: Bureau of the Census and Office of Business Economics.)

Almost two thirds of consumer income after taxes was channeled into retail stores in 1959. Durable goods stores received more than 20%; nondurable goods stores, 43%.

All major types of retailers registered sales gains from the fiscal year 1958 to 1959. Sales of drug stores and gasoline service stations each rose 6%, continuing the substantial growth rate which has prevailed in recent years. New and more diversified drug products and the growing number of automobile registrations have been primary factors in these gains.

Sales by dealers in automotive and building materials recovered from the 1958 sales slump. Automotive store sales rose 4% above the fiscal year 1958, while building material dealer sales rose 8%. The food store sales gain slackened to 3% in 1959, compared with gains in excess of 5% in previous years. Food prices showed little change in 1959; the sales rise reflected the growth in population.

Food stores received 24 cents out of every dollar spent at retail stores. Automotive stores received 18 cents, general merchandise stores 11 cents, gasoline service stations 8 cents, eating and drinking places 7 cents, apparel stores 6 cents, furniture stores and building material dealers 5 cents each, and drugstores 3 cents. The balance was distributed among miscellaneous durable and nondurable goods stores.

Retailers held inventories valued at almost $25 billion in June 1959. Nondurable goods stores maintained their stocks at $13.2 billion throughout the fiscal year. Durable goods outlets during the year added almost $1 billion to their inventories, which totaled $11.7 billion at the fiscal year end; after seasonal adjustments.

(See also BUSINESS DATA, U.S.)

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RÉUNION. An island in the Indian Ocean, about 420 miles east of Madagascar, forming an overseas department of France. Area, 970 square miles; pop. (est. 1958), 318,000, about a fifth of whom are Europeans (mainly French) and the remainder of mixed descent. Saint Denis (41,863) is the capital and chief city. Réunion is governed by a prefect and an elected General Council of 36 members. In 1957 there were 262 primary schools

(55,288 pupils), a secondary school (1,185), and 4 special schools.

The sugar crop, grown on large plantations owned by a few proprietors, is of chief economic importance. Output in 1958–59 totaled 185,000 short tons, raw value. Other crops are tapioca, vanilla, manioc, coffee, tropical fruits, tobacco, and plants for perfume. Manufactures include refined sugar, industrial alcohol, rum, essential oils, and canned goods. Exports in 1958 totaled 6,217 million francs CFA; imports, 10,150 million. Sugar, the chief export, totaled 191,183 metric tons, valued at 5,353 million francs CFA. Foreign trade is mostly with France. Réunion has a 79-mile coastal railway and about 541 miles of roads. Air France provides regular services. French President Charles de Gaulle and Premier Michel Debré visited Réunion on July 9–10, 1959, and pledged continued French aid toward the island's economic development.

REVENUE. See Index entry, *Internal Revenue.*

RHEUMATIC DISEASES. See ARTHRITIS and the Index entry, *Rheumatic Fever.*

RHODE ISLAND (officially RHODE ISLAND AND PROVIDENCE PLANTATIONS). New England state, United States. One of the original 13 states, "Little Rhody" ranks last in area and 37th in population among the 50 states.

Area and Population.—Area: 1,214 square miles (land, 1,058; inland water, 156), divided into 5 counties. Population: (1950) 791,896; (est., July 1, 1958) 865,000. Towns (defining civil divisions) and incorporated places with 1950 populations above 10,000 (unless another date is given):

Bristol town	12,320	N. Kingstown town	14,810
Bristol[1]	10,335	N. Providence town	13,927
Central Falls	23,550	Pawtucket	81,436
Cranston	55,060	Providence[2]	228,000[3]
Cumberland town	12,842	S. Kingstown town	10,148
E. Providence	35,871	Warwick	43,028
Johnston town	12,725	Westerly town	12,380
Lincoln town	11,270	West Warwick town	19,096
Newport	37,564	Woonsocket	50,211

[1] Unincorporated place within town. [2] Capital. [3] 1956 census.

Executive.—Chief state officers in 1959:
Governor: Christopher Del Sesto (Republican)
Lieutenant Governor: John A. Notte, Jr.
Secretary of State: August P. LaFrance
Treasurer: Raymond H. Hawksley
Controller: Charles W. Hill
Attorney General: J. Joseph Nugent
Commissioner of Education: Michael F. Walsh

Constitution and Judiciary.—The present constitution went into effect in 1843. The Supreme Court comprises five justices; chief justice in 1959: Francis B. Condon.

Legislature.—The General Assembly comprises a 44-member Senate (in 1959, 23 Democrats and 21 Republicans) and a 100-member House of Representatives (71 Democrats and 29 Republicans). It meets annually commencing the first Tuesday in January.

The 1959 General Assembly passed a great body of legislation during its longest session in 35 years (January 6–May 25), 97 items of which failed to receive the governor's approval. Besides adopting a 1959–60 fiscal year budget of $79.6 million and continuing some temporary taxes, it established sales and use tax collection procedures and slightly amended the sales tax. Other enactments clarified and expanded existing legislation on wills; authorized the Rhode Island Business Development Company to expand its borrowing in anticipation of taxes; raised state aid to towns for highway maintenance to $1,000 a mile; widened regulations on the sale, distribution, handling, and possession of food, drugs, and cosmetics; and tightened restrictions on obscene literature. Four State Bar Association recommendations enacted into law were a Uniform Declaratory Judgments Act, a Uniform Act for Simplification of Fiduciary Security Transfers, widened service provisions for mechanics lien citations, and expanded powers for guardians of veteran wards.

The Rhode Island College of Education was reorganized as a liberal arts college; the Board of Trustees of State Colleges was directed to consider the establishment of two-year community colleges; a $50,000 fund was created to back bank loans to students; and a State Scholarship Commission was organized to provide scholarships to 5% of each year's high school graduates.

The legislators also tightened control of small arms; required registration of all boats under 65 feet in length; limited combined temporary disability insurance and workmen's compensation payments to $62 weekly; and permitted banks to invest 80% of deposits in mortgages.

Special legislative committees were set up to reapportion the House of Representatives on the basis of the 1960 census and to consider: a uniform commercial code; revision of the banking laws; the feasibility of a central state authority to perform certain functions normally handled by individual communities; and retirement benefits for state employees and teachers.

Finance.—State revenue of $102,433,078 in the 1958–59 fiscal year comprised $78,474,675 from state tax sources, $22,658,209 from the federal government, and $1,300,194 from all other sources. Tax revenue consisted of $22,051,202 from a 3% general sales tax, $6,730,203 from corporate income taxes, $14,306,362 from motor fuel taxes, $3,360,469 from licensing, and $32,026,439 from all other state tax sources. Expenditures of $105,548,359 comprised $17,193,481 for education, $38,108,558 for health, welfare, and safety, $21,808,595 for highways, and $28,437,725 for all other purposes. Long-term indebtedness on June 30, 1959, amounted to $76,812,946, exclusive of $11,965,000 for self-supporting enterprises guaranteed by the state.

Banking.—As of June 10, 1959, there were four national banks with assets of $542,867,000, demand deposits of $237,646,000, and time deposits of $241,932,000. State banks numbered 15 on June 30, 1959, with $913,750,952 in assets, $229,214,537 in demand deposits, and $587,261,534 in time deposits.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures of $43,544,411.20 ($385 per pupil) for public elementary and secondary education in the 1958–59 school year included $33,095,840 from local school districts, $9,206,081 from the state, and $1,242,488 from the federal government. Outlays for construction and improvements amounted to $3,897,088.26, and teachers' salaries averaged $5,025 (high school, $5,172.96; elementary, $4,938.64).

RHODE ISLAND SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k–6; k–8)	280	3,112	82,766
Public junior high (7–9)	41	1,186	23,670
Public senior high (10–12)	29	1,246	24,074
Private and parochial elementary and secondary	127	1,655	50,123
Colleges and universities	8	...	16,677

Social Welfare.—Public assistance expenditures in the 1957–58 fiscal year from state and federal funds (excluding institutional costs) totaled $16,748,215, including $6,172,974 for the aged, $6,105,399 for dependent children, and $2,481,897 for general relief. For the 12 months ending June 30, 1959, the number of recipients of public assistance averaged 35,199 monthly.

State expenditures in the 1957–58 fiscal year for mental health activities totaled $7,356,079; for correctional and penal programs, $2,285,120. State institutions (with inmate populations as of July 1, 1959) include: 1 hospital for the mentally deficient and epileptic (887); 1 hospital for the mentally ill (3,419); 2 training schools for delinquents (143); 2 adult correctional institutions (277); and 1 maximum custody penal unit (248).

Labor Force.—In July 1959 the state's labor force totaled 345,000. Nonfarm employment reached 282,300 on August 15, which was below the average of 284,000 for the year ending August 1958 but slightly above the 275,300 for the latter month. Of those employed in mid-August 1959, 41.1% were in manufacturing, 18% in trade, 13.6% in government, and 11% in service industries. Unemployment dropped sharply to 25,200 in July 1959 from the 40,000 of the previous August. The state paid $24,393,575 in unemployment compensation during the 1958 calendar year.

Manufacturing.—There were 119,917 employees in manufacturing plants in 1957 who earned $456,111,000 in wages. Value added by manufacture totaled $766,887,000, and outlays for new plant and equipment amounted to $35,238,000.

The state's new plan for financing industrial construction was well under way in 1959, and substantial gains were in evidence. (See also below, *Principal Events, 1959.*) Production workers averaged $71.58 for an average workweek of 38.9 hours in August 1959.

RHODE ISLAND MANUFACTURES, 1957

Product or industry	Average no of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1] (thousands of dollars)
Textile mill products	30,671	$103,558	$150,722
Nonelectrical machinery	12,708	58,248	93,439
Primary metal industries	7,511	35,806	68,916
Fabricated metal products	7,847	31,675	55,708
Food and kindred products	5,355	22,737	43,803
Rubber products	4,993	22,221	38,921
Printing and publishing	4,149	17,290	29,002
Electrical machinery	3,196	9,714	19,977

[1] For definition, see text footnote 1 in the article, *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958, Rhode Island ranked 49th among the states in the value of its mineral output, with .01% of the national total. Valued at $2,249,000, the 1958 output was the highest ever recorded, marking a rise of more than 64% over the $1,369,000 total for 1957. The gain resulted from increased production of sand and gravel, which achieved a value of $1,883,000 for 2,038,000 short tons in 1958. Stone ranked second in output in the state, which also produces all the nation's domestic amorphous graphite.

Fisheries.—The commercial fish and shellfish catch in 1958 was valued at $4,604,744, a slight rise from the $4,511,231 for 1957. The chief species were hard clams (3,246,012 pounds of meat valued at $1,474,824) and fish for reduction (77,910,271; $648,615).

Agriculture.—Cash farm income for the first seven months of 1959 totaled $10,493,000, compared with $11,905,000 for the same period of 1958. For the full year 1958, income comprised $15,688,000 from livestock and livestock products, $6,331,000 from crops, and $76,000 from government payments. Principal cash sources were dairy products, $8,473,000, and eggs, $3,889,000. Forest, greenhouse, and nursery products yielded $2,726,000.

RHODE ISLAND CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	169	125	160
Corn (1,000 bu.)	284	282	264
Hay (1,000 tons)	41	39	35
Peaches (1,000 bu.)	14	19	16
Potatoes (1,000 cwt.)	845*	987	959

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 2,100 farms in 1958. Total acreage (1954) was 154,674 (34,980 acres in harvested cropland). Livestock on farms (Jan. 1, 1959) included 22,000 cattle and 499,000 chickens (excluding commercial broilers). Family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1954, numbered 3,989.

Transportation and Communications.—State and federal funds disbursed for roads and highways in the calendar year 1958 totaled $29,373,345, and 44.607 miles of new highways were completed.

Highways and roads on Jan. 1, 1959, totaled 4,177 miles (3,153 surfaced). Registered *motor vehicles* numbered 325,937 on July 31, 1959, including 267,078 passenger cars. There were (1958) 6 *railroads* operating 181.58 line miles and (1959) 5 regularly scheduled *airlines* and 10 *airports and airfields* (5 commercial and municipal, 2 military, 2 private, and 1 other).

Communications media (1959) included 12 AM and 5 FM *radio stations;* 2 VHF *television stations;* 7 daily *newspapers* (circulation, including Sunday, 473,339) and 17 other newspapers; and (January 1) 87,300 business and 236,600 residential *telephones.*

Principal Events, 1959.—Christopher Del Sesto, who narrowly missed election two years previously, became the state's first Republican governor in 20 years, with his inauguration on January 6.

The year was marked by a strong recovery from the 1957–58 recession. During the first nine months of 1959, nonfarm employment averaged a 2.7% increase (7,200 jobs) over the comparable period of 1958, with much of the increase (5,000 jobs) attributed to manufacturing. All three major industry groups—textiles, metals and machinery, and jewelry—shared in the rise, with machinery and electrical and electronic equipment recording the chief gains. Also for the first nine months, sales tax receipts showed retail sales of nonfood items up 13.7% over the comparable period of 1958. Residential construction contracts for the first eight months rose 36.4% in dollar value.

Industrial construction was stimulated by the state's new plan for financing industrial plants. This arrangement provides for private financing, through nonprofit industrial foundations, with mortgage insurance for up to 90% of the cost furnished by the Rhode Island Industrial Building Authority. Partly as a result of such favorable terms, new construction started or announced by October 1959 amounted to 765,000 square feet of plant space, up about 48% over the full-year totals for either 1957 or 1958. Included in the 1959 figure were three new plants for out-of-state industry. In addition, Rhode Island firms purchased or leased over 500,000 square feet of existing space for expansion. It is estimated that new industry and expansion in 1959 will have provided up to 2,800 new job opportunities, with operations from out-of-state accounting for 1,800 of the total.

The Sixth Annual Jazz Festival (July 2–5) provided its usual complement of outstanding jazz musicians in concert at Newport. Featured, in addition to the Jazz Festival All Stars and the Kingston, Erroll Garner, and Oscar Peterson trios, were three major band groups led by Johnny Dankworth, Maynard Ferguson, and Count Basie.

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RHODES. See DODECANESE ISLANDS.

RHODESIA AND NYASALAND, Federation of. Comprising a British federal state since 1953, these Central African territories are bordered by the Belgian Congo and Tanganyika on the north, Mozambique on the east, the Union of South Africa and Bechuanaland Protectorate on the south, and Portuguese West Africa on the west. The federation comprises the self-governing territory of Southern Rhodesia and the protectorates of Northern Rhodesia and Nyasaland. Total area, 487,640 square miles. The federal capital is Salisbury, Southern Rhodesia.

The population was estimated at 7,990,000 in June 1959, compared with 7,780,000 in June 1958. It comprised 7,660,000 Africans, 297,000 Europeans, and 36,000 Asians and non-African Colored persons. In 1958 there were 16,951 immigrants, including 14,317 British subjects of European stock.

FEDERATION OF RHODESIA AND NYASALAND

Component	Square miles	Population[1]	Capital
Northern Rhodesia	288,130	2,360,000	Lusaka
Southern Rhodesia	150,333	2,860,000	Salisbury
Nyasaland	49,177[2]	2,770,000	Zomba
Total	487,640	7,990,000	

[1] June 1959, est. [2] Including 12,298 square miles of lakes.

Government and Political Events, 1959.—A governor general (Lord Dalhousie took office in 1957) is assisted by an appointed Executive Council of cabinet ministers.

The first African member of the council, Jasper Zengeza Saranhu, was sworn in on April 1 as parliamentary secretary to the minister of home affairs, with particular responsibility for racial affairs. There is also an African Affairs Board composed of 3 European and 3 African members. The Federal Assembly has 59 members, of whom 57 are elected (including 12 Africans). Following the elections to the assembly in 1958, the United Federal Party, which is moderate in its racial policy and is headed by Prime Minister Sir Roy Welensky, held 44 seats and thus commands the two-thirds majority needed to make constitutional amendments. The Dominion Party, which advocates "white supremacy," has 8 seats. The formation of a liberal political group, the Central African Party, was announced on Feb. 9, 1959, by Sir John Moffat, who said the party would follow a multiracial policy.

It was announced by British Prime Minister Macmillan on July 21 that an advisory commission to prepare in 1960 the next constitutional steps to be taken by the federation would consist of 11 members from the United Kingdom, 2 from the Commonwealth, and 13 from Central Africa, including 5 Africans. Sir Roy Welensky, who had conferred with British government officials in London on July 4–16, described the formation of the commission as an "imaginative and constructive step." Southern Rhodesia's Legislative Council approved the commission's formation on July 28, but African members of Northern Rhodesia's Legislative Council objected to the lack of parity between the number of Africans and Europeans on the proposed commission.

States of emergency were declared in Southern Rhodesia on February 26 and in Nyasaland on March 3 after numerous clashes occurred between political demonstrators and security forces. Federal troops dispatched to the disturbed areas restored peace and order by late March, but 52 Africans were killed during the riots and other disturbances in February and March. The demonstrations in Nyasaland were reportedly led by the Nyasaland African National Congress in protest against federal racial policies and the territory's inclusion in the federation. Dr. Hastings Banda and other leaders of the congress were arrested on March 3, and the congress itself was banned. Other African political organizations in Rhodesia were also outlawed. A Nyasaland Committee of Inquiry headed by Sir Patrick A. Devlin investigated the situation and reported on July 16 that the government had been justified in proclaiming a state of emergency, that the Nyasaland African National Congress had created the disturbed situation by following a policy of violence, and that there "was no detailed plan for massacre and assassination," as had been charged.

Finance.—Budget revenues for the 1960 fiscal year were estimated at £53,137,000; expenditures, at £72,300,000, including £18,215,000 provided from loan funds. With a revenue surplus of £3,322,000 brought forward, a surplus of £2,374,000 was anticipated for the fiscal year. Expenditures included £19,754,000 for administration and development services, £14,777,000 for social services, and £4,571,000 for defense. Capital expenditures for fiscal 1960 were: Federal Power Board, £5,660,000; railways, £4,308,000; government buildings, £3,584,000; communications, £1,456,000; roads and bridges, £865,000; and other public works, £1,318,000.

Education.—In 1958 there were 249 federal and 54 nonfederal schools attended by 73,813 pupils of European, Asian, and mixed ancestry. African pupils attend nonfederal (chiefly mission) primary and secondary schools. There were 467,567 pupils enrolled in 1958 in these schools in Southern Rhodesia, 246,703 in Northern Rhodesia, and 271,302 in Nyasaland.

Transportation.—Public roads in the federation aggregate 63,000 miles. The state-assisted Central African Airways provides services between major towns and to Nairobi and certain other foreign cities, as well as weekly service to London. There are international airports at Salisbury and Livingstone.

Production and Trade.—The economy is dependent to a great extent on mining, particularly copper, and the federation is the world's second largest copper exporter. A decline in world copper prices and a curtailment of foreign investment led in 1958 to a reduction in business activity, unemployment, and a decrease in national income. By the end of the year, however, a recovery in copper prices (from £160 per ton in January to £260 in November), combined with increased copper production and government belt-tightening measures such as credit controls, had improved the general economic situation. Due to the slump in copper prices early in the year, total mining value declined in 1958 to £102,557,000 (Northern Rhodesia, £77,225,000, including £71,098,000 from copper output) from £122,100,000 in 1957.

Total exports of the federation in 1958 totaled £133 million (down 18% from 1957); imports, £158 million (down 10%). Exports of tobacco, the federation's chief cash crop, totaled 143,274,000 pounds and were valued at £27,834,000. Food exports in 1958 included: maize (corn), 116,000 tons (valued at £1,620,000); tea, 20,880,000 pounds (£2,955,000); and peanuts, 20,311,000 pounds (£584,000). Mineral exports from Southern Rhodesia were: asbestos, 94,981 tons (valued at £7,397,000); gold (£6,780,000); chrome ore, 411,081 tons (£3,026,000); and zinc, 31,000 tons (£1,673,000).

CENTRAL PRESS

Kariba Dam, huge hydroelectric project on the Zambezi River between Northern and Southern Rhodesia, will have an installed capacity of 1.2 million kw. Here, G. C. M. Heathcote (l.), race affairs officer, and Sir Mwanawina Lewenika, paramount chief of Northern Rhodesia, tour site.

Manufactures, including chiefly tobacco products, textiles, and metal, are produced in more than 1,200 factories. Chief exports of processed and manufactured goods in 1958 were: apparel (£1,456,000); cobalt metal, 1,046 tons (£1,431,000); ferro chrome, 7,150 tons (£1,002,000); hides, 7,098 tons (£701,000); radio sets, 39,332 (£521,000); cotton piece goods, 3,293,000 square yards (£460,000); fresh and preserved meats, 5,494 tons (£871,000); and cigarettes, 1,118,000 pounds (£474,000).

Major imports in 1958 included: wheat, 92,825 tons (£1,957,000); cotton piece goods, 35,997,000 square yards (£3,941,000); electrical machinery and appliances (£4,481,000); other industrial machinery (£4,481,000); gasoline (£3,594,000); other petroleum products (£4,179,000); mining machinery (£2,232,000); and fertilizers (£2,454,000). Imports from the United States totaled £7,711,000.

Four-Year Development Plan.—The federation's new development plan for 1959–63 was presented to the Federal Assembly in 1959. It is estimated to cost £76,764,000, of which £57 million is for economic services, including over £31 million for electric power projects and £18,250,000 for transportation and communications facilities (including £10,742,000 for the Rhodesia Railway). Allocations for education totaled £5,072,000, and for health services, £4,013,000.

About £25 million of development expenditures is for completion of the Kariba hydroelectric power project to dam the Zambezi River. Closure of the new Kariba Dam on Dec. 3, 1958, began the formation of the world's largest man-made body of water, Lake Kariba, which when completed in July 1959 totaled about 175 miles in length and 20 miles in average width. The first electric power from the dam was expected early in 1960. During the inundation of about 2,000 square miles of forest land, government game wardens transported to safety thousands of wild animals which otherwise would have perished from drowning or starvation.

Southern Rhodesia

The population of 2,860,000 (est. mid-1959) includes about 2,630,000 Africans, 215,000 Europeans, and 15,200 of other races.

Government and Political Events, 1959.—On July 10, 1959, Humphrey V. Gibbs was appointed governor (succeeding Sir Peveril William-Powlett), thereby becoming the first local resident to assume the office. He is responsible to a 30-member elected Legislative Assembly. Premier Sir Edgar Whitehead heads the United Federal Party, which won 17 seats in the 1958 elections while running on a middle-of-the-road racial platform. The minority Dominion Party, pledged to maintain "white supremacy," has 13 seats. A new political group, the Constitutional Development Party, announced its formation on May 25, 1959, as a segregationist party advocating "separate development" of the races.

The government banned the Southern Rhodesian African National Congress and 3 other African political organizations in February 1959 as a result of political unrest, but on May 20 lifted the state of emergency it had imposed in February. Measures taken to implement the political ban included the Preventive Detention Bill which was approved by the assembly after important modifications. Other legislation in 1959 removed discriminatory bars against Africans, the most important of which was the Industrial Conciliation Bill to permit multiracial trade unions.

Government revenue for the 1960 fiscal year was estimated at £19,517,000; ordinary expenditure from revenue funds, at £21,719,000; and disbursements from loan funds, £6,258,000.

Transportation.—The highway network in 1958 aggregated about 5,000 miles, and secondary roads totaled some 32,000 miles. The government-owned Rhodesia Railways operates 1,544 miles of railway, exclusive of 400 miles of line to Lourenço Marques, Portuguese East Africa. Central African Airways serves the territory, using the main airports at Salisbury and Bulawayo.

Northern Rhodesia

The population of 2,360,000 (mid-1959 est.) includes about 2,280,000 Africans, 73,000 Europeans, and 8,800 of other races. The seat of government is at Lusaka; other important towns include Ndola, Luanshya, Mufulira, Kitwe, and Chingola.

Government and Political Events, 1959.—Evelyn Dennison Hone, chief secretary in Northern Rhodesia, was sworn in as governor on April 23, 1959, succeeding Sir Arthur E. T. Benson, who retired in May. The governor is assisted by a 10-member Executive Council (comprising 4 official and 6 nonofficial legislators) and a 30-member Legislative Council (including 6 official, 2 nominated, and 22 elected members).

The first general elections to the Legislative Council held under the new constitution took place on March 20, 1959, and resulted in the election of 14 Europeans and 8 Africans. Only about one third of approximately 25,000 qualified African voters participated in the elections, however, partly because the Zambia African National Congress, which had been banned by the governor on March 12, urged Africans to boycott the elections. The ruling United Federal Party won 13 seats in the new Legislative Assembly; the Central African Party, a newly organized political group, captured 4 seats; the Dominion Party and the African National Congress each received 1 seat; and 3 independent candidates were elected. The newly formed Executive Council, announced on March 27, 1959, consists of 5 United Federal nonofficial members and 1 independent nonofficial member.

Government revenue for the fiscal year 1960 was estimated at £15,838,000; expenditure, £16,180,000.

Transportation.—Rhodesia Railways operates 507 miles of main line, from the Victoria Falls to the Belgian Congo, and 229 miles of branch lines. Roads aggregate about 20,000 miles, including 4,000 miles of main highways. Central African Airways operates internal and external services from airports at Lusaka, Livingstone, and Ndola.

Nyasaland

The population is estimated (mid-1959) at 2,770,000, including 2,750,000 Africans, 8,800 Europeans, and 11,900 others.

Government and Political Events, 1959.—The governor (Sir Robert P. Armitage, appointed in 1956) announced on Aug. 24, 1959, that the number of Africans in the new Legislative Council would be increased from 5 to 7 members, thereby increasing the nonofficial representatives to 13 in number, and that government official representation would be raised from 12 to 14 members. On September 23, two Africans were appointed for the first time to the 7-member Executive Council. In addition, an all-African Protectorate Council, composed of 20 representatives of 3 African councils, advises the government on legislation affecting the African population.

As a result of the serious disorders in Nyasaland during early 1959, the government detained some 600 members of the African National Congress and charged them with "crimes of a political nature." The state of emergency declared in March remained in effect for most of the year.

In 1959–60, government revenues were estimated at £5,928,000; expenditures, £6,140,000.

Transportation.—The Nyasaland Railway system has a 524-mile main line from Lake Nyasa to Beira (on the east coast) which crosses the Zambezi River by means of the world's longest railway bridge (12,064 feet). The road system totals about 6,000 miles, including 2,000 miles of highways. Central African Airways serves the territory.

W. R. F.

RICE. See Grains.

RIO DE ORO. See Spanish Colonies.

RIO MUNI. See Spanish Colonies.

ROADS. See Highways.

ROBBERIES. See Crime.

ROCKEFELLER, Nelson Aldrich, governor of New York State: b. Bar Harbor, Me., July 8, 1908. Overwhelmingly elected Republican governor of New York on Nov. 4, 1958, in a year when the national political tide ran heavily against his party, Nelson A. Rockefeller was considered throughout most of 1959 as Vice President Nixon's leading prospective contender for the Republican presidential nomination in 1960. On December 26, however, he withdrew from the race and, at the same time, announced his resolve not to accept the vice presidential nomination if offered.

Rockefeller was graduated from Dartmouth College in 1930. In addition to his vast business interests, he actively participated in government affairs, especially in the international field. His posts included those of assistant secretary of state for Latin American Affairs (1944–45), chairman of the Advisory Board for International Development (1950–51), and special assistant to the president on foreign policy (1954–55). In 1958, beginning his New York gubernatorial campaign as a "dark horse" candidate, he quickly overtook his opponent, Democratic incumbent Averell Harriman, who had been favored to win.

During the first year of his administration, Rockefeller proved to be a vigorous administrator. Although in regard to some of his proposals he met with opposition from Republican legislators as well as from Democrats, his program was, in the main, favorably considered. Of particular interest to the governor were sufficient taxation for a "pay-as-you-go" budget, ways to combat juvenile crime, efficient reorganization of the state government, and means of meeting the increased costs of education. (See also New York.)

ROCKETS. See Missiles; Space Flight; and the Index entry, *Rockets.*

RODEOS. See Circuses and Rodeos.

ROGERS, William Pierce, U.S. attorney general: b. Norfolk, N.Y., June 23, 1913. A former deputy attorney general of the United States (1953–57), Rogers took office as attorney general on Nov. 8, 1957. He had served as assistant district attorney of New York County (1938–42; 1946–47) and as chief counsel of both the Senate's War Investigating Committee (1947–48) and its Permanent Subcommittee on Investigations (1948–50).

Civil rights matters continued to occupy much of the attention of Attorney General Rogers in 1959. On January 15, at a news conference in Washington, he called on Negroes to exercise their right to vote under the Civil Rights Act of 1957, which empowers the Justice Department to sue on behalf of citizens denied voting privileges. He later recommended, in Boston on March 21, a stronger voting measure "to meet deficiencies in the present federal statute."

Although Rogers cautioned Congress on March

11 to go slow in enacting legislation that would broaden the federal government's power to enforce civil rights, and although he earlier expressed confidence that the Southern states would achieve a peaceful solution to their school segregation problems, he urged (March 20) before the Senate Judiciary Subcommittee that the use of force or threats of force to block court integration orders be made a federal crime.

On December 31, in a report to President Eisenhower relative to the disclosure of rigged quiz shows and other shady practices on television (see RADIO AND TELEVISION), Rogers recommended "more timely and vigorous action by the regulatory agencies" and new laws to end "the spectacle of corruption in the broadcast industry."

ROMAN CATHOLIC CHURCH. Since his coronation on Nov. 4, 1958, Pope John XXIII has created 31 new cardinals: 23 in 1958 and 8 in 1959. Among those elevated in 1959, at a consistory held in Rome on December 17, were two Americans: Archbishop Aloisius Muench, the apostolic nuncio to Germany, and Archbishop Albert G. Meyer of Chicago. The new appointees raised the number of Americans in the Sacred College to six, and the total number of cardinals to 79—nine more than the strength decreed by Pope Sixtus V in 1586. Three cardinals died during the year: Georges Cardinal Grente, on May 4 at Le Mans, France; Cristano Cardinal Luque, on May 7 at Bogotá, Colombia; and Federico Cardinal Tedeschini, on November 2 at Rome.

In 1959 the Roman Catholic population of the world was estimated at 496,512,000. That of the United States (including Alaska and Hawaii) reached 39,505,475, an increase of 3,481,498 over the 1958 total. The new total includes for the first time all Catholic families of the defense forces abroad and in all other services (diplomatic, specialized agencies, etc.) outside of the continental United States. Roman Catholics in Canada numbered 7,546,000 in 1959, and the total Catholic population of Latin American countries was estimated at 191,055,000.

Guiding Roman Catholics throughout the world are approximately 381,500 priests, of whom 116,000 are members of various religious orders and 265,500 belong to the secular clergy.

Seven of the 26 United States archdioceses (Chicago, Boston, New York, Philadelphia, Newark, Detroit, and Los Angeles) report Catholic populations in excess of one million. Brooklyn is the largest diocese, with a Catholic population of 1,473,480. The United States hierarchy in 1959 counted 224 prelates: 6 cardinals, 33 archbishops, and 187 bishops.

Ordained priests in the United States totaled 52,689 in 1959, or 2,506 more than in the previous year. A total of 16,185 parishes with resident pastors was reported. (Including the 568 parishes without resident clergy, there was a record total of 16,753 parishes in the United States.) The Catholic missions reported 595,155 Negro Catholics in 1959, a gain of 20,000. Catholic American Indians numbered approximately 100,000.

Again in 1959 the growth of church-sponsored schools and universities in the United States paralleled the increase in Catholic population. The number of full-time pupils in elementary and high schools showed an increase of 189,951. Pupils in 9,814 parish elementary schools numbered 3,994,001, while those in the 473 private elementary schools totaled 89,859. The 1,583 parish and diocesan high schools reported 500,304 pupils, a gain of 13,298. The 845 private high schools, with 310,464 students, showed a gain of 14,315. Enrollments in Catholic colleges and universities reached 290,867, an increase of 19,374 students over 1958. The total number of all Catholic educational establishments in 1959 was 13,619, and their full-time teaching staffs comprised 10,429 priests, 4,506 brothers, 920 scholastics, 96,516 sisters, and 43,745 lay teachers.

Studies for the priesthood in 1959 were pursued in 94 diocesan seminaries and 424 religious order seminaries, novitiates, and scholasticates. A total of 38,105 candidates were reported.

Three new establishments increased the number of Catholic hospitals in 1959 to 942. General hospitals offered 133,819 beds; specialized hospitals, 11,371. Patients treated increased by 344,541 to a new high of 12,084,317.

The 580 Catholic newspapers and magazines reached a circulation of 24,273,972 in 1959, or a gain of more than a half a million copies over 1958.

WIDE WORLD

American Archbishops Aloisius J. Muench (l.), apostolic nuncio to West Germany, and Albert G. Meyer of Chicago meet in the Vatican prior to the ceremony on December 17 in which they were elevated to cardinal by Pope John XXIII.

Pope John assisted at the ceremony marking the 100th anniversary of the North American College in Rome, Italy, on Oct. 11, 1959. In a gracious gesture of affection for the American church, the pontiff delivered his first public address in English, a language acquired since his elevation to the papacy. He spoke warmly of the "vigorous faith" showed by the church in the United States.

Archbishop Egidio Vagnozzi, the seventh apostolic delegate of the Holy See to the United States, arrived in Washington in May 1959. He succeeds Amleto Giovanni Cardinal Cicognani. The new apostolic delegate stated on his arrival that the United States of America "is today not only one of the great powers on earth, but *the* great power of the Western, democratic, Christian free world."

Pope John announced on November 28 that the African territories of the Belgian Congo and Ruanda-Urundi had been transformed from missionary territory into ecclesiastical territory, comprising eight archdioceses. At the same time, in his fourth encyclical letter, the pope urged greater missionary activity and expressed his confidence in the native clergy.

On November 20, the new National Shrine of the Immaculate Conception in Washington, D.C., was dedicated in the presence of eminent Catholic churchmen. The building, classed as the largest Roman Catholic church in the United States, was begun in 1922 and is not yet finished. The total cost of the structure, an adaptation of Romanesque and Byzantine architectures, is estimated at $30 million when completed.

(See also RELIGION.)

JOHN LAFARGE, S.J.,
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ROWING. See SPORTS, GAMES, AND SHOWS.

RUANDA-URUNDI. A United Nations trust territory in central Africa, administered by Belgium. Area, 20,916 square miles; pop. (est. 1958), 4,700,000, including 7,109 Europeans, mostly Belgians. The majority of the population consists of Bahutu tribesmen, who have been dominated by the aristocratic Batutsi, comprising about 15% of the population. Usumbura (54,796) is the capital and chief city.

Government.—The territory has been united for administrative purposes with the neighboring Belgian Congo.

The Belgian governor (who is under the governor general of the Belgian Congo) is aided by an advisory General Council of Europeans and Africans appointed by himself. Each of the two states (Ruanda and Urundi) is headed by a native *mwami* (chief) and has a native High Council. Elected native councils serve on the local level. (See below, *Principal Events.*)

Finance.—Revenue in 1958 was estimated at 1,024.1 million Belgian francs; expenditure, 1,018.1 million. Under a 10-year development plan begun in 1952, Belgium has provided about 3.3 billion francs in grants and interest-free loans (through 1959) for the expansion of transport facilities, modernization of agriculture, and improvement of native welfare.

Education.—About 40% of children aged 7 to 12 attend school, but only about 1% proceed beyond the elementary level. Most schools are conducted by missions, chiefly Roman Catholic. In 1957 there were 2,817 schools on the primary and preschool levels (241,263 pupils), 24 secondary and technical (2,904), and 25 teacher-training (2,060). A few score students attend universities in the Belgian Congo and Belgium.

Transportation and Communications.—Ruanda-Urundi has no railroads. Usumbura, on Lake Tanganyika, is served by steamers which connect with the railhead of the Tanganyika railroad. The territory has 1,626 miles of principal and secondary roads, and about 4,400 miles of local roads and tracks. Usumbura has a major airport. Motor vehicles number 4,550 (1957); telephones, 1,514 (1958).

Economy.—Ruanda-Urundi's marginal economy is faced with the constant possibility of famine. Close to 90% of the population is engaged in subsistence farming and cattle raising. Principal food crops are bananas, sweet potatoes, maize, manioc, sorghum, beans, and peanuts. Cash crops, grown mainly on European-owned plantations and by a few African farmers, include coffee (28,873 metric tons in 1957), cottonseed, palm oil, and pyrethrum. There are a few small industries for processing foodstuffs and serving other local needs. Cassiterite (2,511 metric tons in 1957), tungsten ore, and a few other minerals are mined in small quantities. Exports in 1957 totaled 2,414.6 million francs; imports, 2,536.0 million.

Principal Events, 1959.—Early in November the Bahutu tribes in Ruanda rose up against their former overlords, the Batutsi, and burned and pillaged Batutsi villages for several days. Congolese troops were rushed to Ruanda on November 8, and Belgian paratroopers from the Belgian Congo arrived as reinforcements three days later. A total of 124 persons were reported killed (unofficial estimates were higher) before order was restored in mid-November. On November 10 the Brussels government announced a reform program for 1960 designed to establish Ruanda and Urundi as constitutional monarchies with increased self-rule. Administrative subordination to the Belgian Congo was to be ended, and indirectly elected state councils were to be constituted to exercise legislative power jointly with the *mwami* in each of the two states.

RUBBER. A new world record for consumption of new rubber (free world consumption plus natural rubber imports into Soviet bloc countries) was established in 1959 and amounted to 3,600,000 long tons (2,100,000 natural; 1,500,000 synthetic), as compared with 3,230,000 long tons (1,982,500 natural; 1,247,500 synthetic) used in 1958.

Consumption of new rubber in the United States in 1959 amounted to 1,600,000 long tons, an increase of 17% over the 1,364,000 tons used in 1958. Synthetic rubber accounted for 65.5% of this consumption in 1959. The other free nations of the world used 450,000 tons of synthetic rubber in 1959, or about 30% of the total synthetic rubber usage.

Industry shipments of all pneumatic tires in the United States in 1959 totaled more than 114 million units, an increase of 11% over 1958. Shipments of replacement tires for passenger cars were at a record 65.5 million units, up more than 6%; replacement truck and bus tires totaled 9.9 million units, up more than 7%; and shipments of tractor and implement tires for both original and replacement use aggregated 1.96 million units, up almost 8% over 1958.

Inflated with 50,000 gallons of water, this dam, made of nylon coated with neoprene, stretches 150 feet across the Los Angeles River, and may be deflated in case of flood.

FIRESTONE NEWS SERVICE

WORLD RUBBER PRODUCTION, 1957–59
(In 1,000 long tons)

Country	1957	1958	1959[1]
Natural Rubber:			
Indonesia	685	668[2]	700
Malaya	638	664	700
Thailand	133	137	140
Ceylon	98	100	90
Vietnam	69	71	70
British Borneo	62	69	60
Liberia	38	39	40
British Africa	43	48	45
Cambodia	31	33	35
Belgian Africa	34	37	35
Burma	13	12	10
French Africa	4	4	5
Papua	4	4	5
Other countries	51	69	55
	1,903	1,955	1,990
Synthetic Rubber:			
United States	1,118	1,055	1,360
Canada	132	135	115
Europe	13	34	125
	1,263	1,224	1,600

[1] Estimates by Natural Rubber Bureau. [2] Data incomplete, according to International Rubber Study Group.

Synthetic Rubber.—Two new fluorinated organic rubbers for improved service at high temperatures while in contact with various liquids, and a fluorinated silicone rubber with similar properties were announced in 1959. A new easily processed chlorosulfonated polyethylene and two new castable urethane rubbers were also marketed. Shell Chemical Company announced the commercial availability of synthetic natural rubber at 30 cents a pound, and Phillips Chemical Company marketed *cis*-4-polybutadiene at 35 cents a pound. Montecatini in Italy began semicommercial production of ethylene-propylene copolymers that could be of interest to rubber products manufacturers.

Industry Developments.—Emphasis continued on the further development of methods of latex masterbatching of carbon blacks in general-purpose styrene-butadiene rubber (SBR). Dehydrating and drying of synthetic rubber in the Banbury internal mixer instead of in oven dryers, which could be followed by dry mix masterbatching of carbon black or other materials, was another new development. High-speed and fully mechanized two-roll mills were suggested for improving and speeding up dry mixing operations at reduced cost.

Materials and Products.—Several new antiozonates (materials for preventing premature cracking and failure of tires from exposure to the increasing concentration of ozone in certain urban areas) were put on the market. New catalysts for

the manufacture of polyether-type urethane foam rubber made possible "one shot" processes that have aided in reducing the cost of such foam. A new nylon tire cord based on caprolactam entered the field, and improvements in rayon tire cord continued.

New products included an all-butyl rubber passenger car tire with improved traction on wet surfaces and low noise level, more wire-cord truck tires of various constructions, more low-profile tires, timing and V-belts that transmit power from both sides of the belt, turnable conveyor belts, space suits for use above 45,000 feet altitude, and urethane solid industrial tires with outstanding wear resistance. (See also CHEMISTRY.)

R. G. SEAMAN,
Editor, "Rubber World."

RUHR. See Index entry.

RUMANIA. A Communist-type people's democracy in southeastern Europe, Rumania is bounded on the south by Bulgaria, on the west by Yugoslavia and Hungary, on the north and northeast by the Soviet Union, and on the southeast by the Black Sea. It occupies an area of 91,700 square miles and has a population (1956 census) of 17,489,794. The country is divided into 16 administrative regions, including the Hungarian (Magyar) Autonomous Region. The capital is Bucharest (Bucureşti), with a 1956 population of 1,236,906. Other principal cities (with 1956 populations) include Cluj, 154,752; Timişoara, 142,251; Stalin (formerly Braşov), 123,882; Ploeşti, 114,560; Iaşi, 112,989; Arad, 106,457; and Brăila, 102,491. These and other urban areas account for 31.3% of the total population, compared with 23.4% in 1948. The Rumanians are the principal ethnic group. The largest minorities (1956 census) are: Hungarians 1,650,000 (1957 est.); German, 365,000 (1957); Jewish (Yiddish), 144,198; Ukrainian, 58,112; and Yugoslav (Serb and Croat), 46,464.

Government.—Rumania has a totalitarian government similar to those of other Communist states, although the constitution (1952) declares the country to be the Rumanian People's Republic. The Grand National Assembly, a 437-member parliament (1957) with only nominal powers, is defined as the supreme legislative body. The assembly elects a 19-member Presidium which exercises the legislative functions in the interim between its sessions. Present chairman of the Presidium is Ion Gheorghe Maurer, elected Jan. 11, 1958. A Council of Ministers is headed by Premier Chivu Stoica.

The government relies for political support on the Democratic Popular Front (DPF), a Communist-controlled mass organization. The principal force within the front is the Rumanian Workers' Party (RWP), founded in 1948 by the fusion of the Communist and Social Democratic parties; in 1958 it had an estimated membership of 720,000. First secretary of the Central Committee of the RWP is Gheorghe Gheorghiu-Dej. The DPF also includes the late President Groza's Ploughmen's Front, the Hungarian People's Union, and various Communist labor, youth, and other organizations.

The judicial system is similar to those of other Communist states. The constitution guarantees universal suffrage and the secret ballot, but only the names of DPF candidates are allowed on the ballot. Regional and local people's councils are instruments of the central authorities. By means of an interlocking party-state system, the Rumanian Workers' Party has complete control over the country.

Education.—The country's educational system is state-controlled and secularized. Seven years of free education is obligatory. In 1957–58 there were 6,641 preschool centers (with 281,141 children); 15,683 primary schools (1,818,979 pupils); and 448 secondary schools (156,290). There were also 2,023 elementary and secondary schools (219,612 pupils) for minorities, instruction being given in some 15 different languages. There are about 628 specialized and technical schools (123,954 pupils) and 13 teacher-training institutions (2,683). In 1957, Rumania had 42 institutions of higher learning, including 4 universities, with 80,919 students.

The country's educational system is being modeled on that of the Soviet Union by the establishment of 7-year schools and 11-year schools. In line with Soviet policies, Rumania in 1959 embarked on a system of education requiring students to work for a certain number of days in industry. During 1959 the authorities criticized on several occasions the minority-language schools, particularly those in the Hungarian Autonomous Region, which felt the effects of the Hungarian revolution of 1956. A unification of the Hungarian and Rumanian universities of Cluj was effected in 1959. The University of Bucharest, founded in 1864, is the most important institution of higher learning, and the Rumanian Academy of Science in Bucharest is the country's principal center of research.

Religion.—Over 75% (13,670,000 in 1950) of Rumania's population belongs to the Rumanian Orthodox Church. Under pressure from the government, the Uniate Church (Greek Catholic)—the religion of 9% of the population in 1947—broke off relations with the Vatican in 1948 and joined the Orthodox Church. Like all other religious communities, the Roman Catholic Church has been persecuted and restricted in its activities. It embraces approximately 8% of the population. The Law on Religious Cults, passed on Aug. 4, 1949, theoretically guarantees freedom of religion, but imposes full state control over the church.

Finance.—The 1959 budget provided for revenues of 51.8 billion lei (1 leu = U.S.$0.1470)[1] and expenditures of 51.0 billion lei. Of the expenditures, 28.9 billion lei were allocated for the national economy, 11.9 billion lei for social and cultural affairs, and 3.6 billion lei for national defense.

Defense.—The peace treaty of 1947 limited Rumanian armed forces to 138,000 men, but this restriction has been violated, and it was estimated that Rumanian military and police forces numbered about 215,000 officers and men in 1955. Rumania "agreed" at the Warsaw Treaty Organization meeting in May 1958 to cut her armed forces by 55,000 men. The Rumanian armed forces are "Sovietized," and the Soviet Union has access to Rumanian military and naval installations.

Transportation.—Rumania had 7,610 miles of railroads in 1955, of which only about 400 miles were double-tracked. There were 61,794 miles of roads in 1956, but only a small percentage of this figure represents modern hard-surfaced roads. The Second Five-Year Plan (1956–60) provides for a modernization of about 1,500 miles of roads. Rumania has small Danube and Black Sea fleets.

Agriculture.—In 1959 the government continued to emphasize expansion of collectivized agriculture. The socialist sector—cooperative, collective, and state farms—included an estimated 67% of the country's arable land (35.8 million acres) in early 1959. In 1957 there were 2,819 collective farms, representing 415,000 households and embracing 1,524,000 hectares of land. In 1958, agricultural production fell off sharply from the previous excellent crop year. Grain production declined from a record high of 11.5 million tons in 1957 to 7.3 million tons in 1958. Principal crops and 1957 output (in thousands of metric tons) are as follows: wheat, 3,701.4; rye, 152.1; corn, 6,337.9; barley, 417.3; oats, 392.6; potatoes, 3,058.0; sugar beets, 2,043.0; and sunflower seed, 255.0. Output of milk in 1958 totaled 1.1 million hectoliters; meat, 226,296 tons; sugar, 188,082 tons; and cheese, 36,636 tons.

In attempts to reach complete socialization of the agricultural sector of the economy, the government in 1959 announced a series of decrees concerning both the status of private peasants and socialized farmers. In March, private peasants were prohibited from keeping more land than they could work, and the collectives were authorized to seize any land worked by hired laborers. Leasing of agricultural land was also prohibited. A reorganization of state farms also reportedly increased responsibilities for both farm councils and party organizers. The success of these measures seems to be indicated by a series of government reports claiming the addition of as many as 300,000 new families and 850,000 hectares of farm land to the socialist sector in the first quarter of 1959.

Industry.—According to official reports, industrial production for 1958 was 9.7% above that in 1957. Industrial targets for 1958 were reportedly exceeded by 3.9%. Chief industrial products with

[1] Although the official rate is 6.80 lei to U.S.$1, the tourist rate is approximately 12 lei to U.S.$1.

production figures for 1958 and 1957 are shown in the accompanying table.

RUMANIAN INDUSTRIAL PRODUCTION
(In thousands of metric tons, unless otherwise noted)

Product	1957	1958
Coal	7,055	7,387
Iron	686	737
Steel	864	932
Coke	435	563
Petroleum	11,180	11,336
Cement	2,421	2,687
Chemical fertilizers	18	28
Electric power (billion kw.-hr.)	5.4	6.2
Tractors (units)	5,500	7,003
Grain combines (units)	2,301	5,901
Motor vehicles (units)	5,334	6,842
Radio sets (units)	112,982	138,642

The government continued in 1959 to draw attention to economic crimes against the state, such as theft and embezzlement. The Ministry of Transport and Telecommunications was particularly under fire at the beginning of 1959 for deficiencies in economic control. Construction on major projects completed in 1958 included two rolling mills, three chemical plants, and three steel furnaces. A new pipeline (227 miles in length) was completed between Rumania's gas fields and Tiszapolkoniya in northeastern Hungary, thus enabling the Soviet Union to move forward in its plans for a coordinated industrial pattern in eastern Europe.

Foreign Trade.—About 70% of Rumania's foreign trade is with the countries of the Soviet bloc. Trade with Western, Middle Eastern, Asian, and South American countries continued to expand in 1959. In 1958, trade with France increased 48% over 1957, and trade with Greece was up 47%. Among the more important treaties of trade concluded in 1959 are those with Yugoslavia and Sweden. In February 1959 the arrival in the United States of a shipment of Rumanian residual fuel oil, purchased by a Pennsylvania oil company, created much protest. Industrial machinery and equipment accounted for 13% of Rumania's total exports in 1958; petroleum, wood products, cereals, fruits, vegetables, and ores are other major export items. Rumania's chief imports include coke, iron ore, cotton, pharmaceutical products, and machinery.

Principal Events, 1959.—At the beginning of the year the Rumanian government allowed relatively free emigration of Rumanian Jews to Israel, and it was estimated that in January alone 8,000 exit permits were issued. The government claimed its policy was based on "humanitarian" considerations of the problems of families long divided. The emigration tapered off, however, after a series of protests by the United Arab Republic, and by midyear it virtually ceased.

Several governmental changes were announced during 1959. On April 11 it was reported that Dimitru Simulesen succeeded Emil Bodnaras as minister of transport and telecommunications, Alexandru Sencovici succeeded Stefan Voitec as minister of the consumer goods industry, and Carol Loncear took Gherasim Pope's place as minister of heavy industry. The three persons who lost their portfolios were retained as deputy premiers. It would seem that the changes were made necessary as a result of criticism of economic practices and failures. Other changes included the dismissal of Petru Costache as minister of local government, and the appointment of Gheorghe Radulescu as minister of commerce in place of Marcel Popescu.

Cases involving embezzlement, theft, and other crimes against the state continued to plague Rumania in 1959. Certain Rumanian writers and composers continued to draw official criticism for failure to abide by the tenets of "socialist realism." There have been constant complaints in periodicals about "sterility in style and message" in some literary creations.

A general salary increase (8% to 25%) was announced on August 1 for all state employees. On August 28, price reductions on about 2,500 items went into effect, mainly on food and consumer goods, but certain items such as meat and dairy products were increased in price.

In foreign affairs Rumania followed the Soviet lead. At the meeting of the Council for Mutual Economic Assistance in May at Tiranë (Albania), Rumania was included in the proposed electric power complex linking Russian and eastern European networks. In the resultant specialization of machine production in the Soviet-bloc countries, Rumania is to emphasize production of oil drilling and processing equipment. In June, Rumania suggested a conference of Balkan states to examine a "peace zone" proposal, but it was rejected by Greece as a propaganda move. Relations with Yugoslavia generally followed the pattern of the Soviet bloc, with a period of tension and recrimination in the first half of the year followed by a period of easier relations at midyear.

During his secret visit to Rumania on October 19–25, Soviet Premier Khrushchev conferred with Rumanian leaders.

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RURAL ELECTRIFICATION ADMINISTRATION. The Rural Electrification Administration (REA) is a lending agency of the U.S. Department of Agriculture, created in 1935 to finance the extension of central station electric service to persons in rural areas. A loan program for the improvement of rural telephone service was authorized by Congress in 1949.

Electrification Program.—At the close of fiscal year 1959, REA-financed electric systems were serving more than 4.6 million farmers and other rural consumers in 46 states, Puerto Rico, and the Virgin Islands. Its 985 active electrification borrowers included 926 cooperatives, 42 public power districts, 13 other public bodies, and 4 electric companies.

Slightly more than half of the electrified farms in the United States are served by rural electric systems financed by REA. Farm consumption of electricity reached an average of 3,816 kilowatt hours per farm in 1958. Consumption of electricity by farm and other rural consumers served by REA-financed systems has been increasing at a rate of about 11% a year.

About 63% of the $177.3 million loaned by REA during fiscal year 1959 will be used to finance system improvements and to provide for additional sources of power. The loans, approved to 234 borrowers in 45 states, will provide about 163,000 kilowatts of new generating capacity, as well as initial electric service for 95,869 rural consumers. Congress has authorized $136 million in new loan funds for the fiscal year 1960, and $25 million in reserve. In addition, $210,589,749 in carry-over funds is available for lending purposes.

The following are cumulative statistics on the REA electrification program through June 30, 1959, unless otherwise noted:

Miles of line energized (Dec. 31, 1958)	1,424,441
Number of consumers served (Dec. 31, 1958)	4,596,540
Total congressional loan authorizations	$4,152,928,288
Total loans approved	$3,942,338,539
Total funds advanced	$3,358,263,066

As of July 1, 1959, REA electric borrowers had paid to the federal government a total of

$1,147.5 million on their loans. This included $628.1 million repaid on principal, $373.0 million paid in interest, and $146.4 million paid ahead of schedule. Only two borrowers were overdue in payments amounting to $100,877.

Telephone Program.—Through the use of REA loan funds, 665 telephone borrowers are in the process of providing new or improved telephone service to 1,191,324 rural subscribers in 45 states. As of June 30, 1959, REA had approved a cumulative total of $575,213,415 in loans to these borrowers, of which $402,878,138 had been advanced. The assistance available through REA has enabled 531 systems to place 2,062 new dial exchanges in service. An estimated 65% of the farms in the United States now have telephone service.

The program continues to advance. During the fiscal year 1959, REA loans amounting to $98.9 million went to 216 telephone systems in 38 states. The funds will provide new or improved telephone service to 179,050 subscribers.

REA telephone borrowers had paid to the federal government a total of $22.3 million on their loans by July 1, 1959. This included $11.6 million repaid on principal, $9.1 million paid in interest, and $1.6 million paid ahead of schedule. Thirteen borrowers were overdue in payments amounting to $300,000.

DAVID A. HAMIL,
REA Administrator.

RUSSIA. See UNION OF SOVIET SOCIALIST REPUBLICS.

RUSSIAN LITERATURE. See SOVIET LITERATURE.

RYE. See GRAINS.

RYUKYU ARCHIPELAGO. See PACIFIC ISLANDS.

SAAR. An industrial and mining area on Germany's western border, comprising a state of the Federal Republic of Germany. For several years after World War II, the Saar was under a semiautonomous regime economically linked with France. Under the Franco-German agreement of Oct. 27, 1956, the Saar reverted politically to West Germany on Jan. 1, 1957, but remained in a customs and monetary union with France during a temporary transition period. On July 5, 1959, the Deutsche mark replaced the French franc, customs barriers with West Germany were abolished, and the Saar became economically linked with West Germany. France retains certain long-term rights to the purchase of Saar coal.

SAFETY. See INDUSTRIAL HEALTH AND SAFETY and the Index entry, *Safety.*

SAHARA, French. See Index entry, *French Sahara.*

SAINT CHRISTOPHER. See WEST INDIES FEDERATION.

SAINT CROIX. See VIRGIN ISLANDS OF THE U.S.

SAINT HELENA. This British crown colony in the South Atlantic (aggregate area, 119 square miles; pop., 5,385 in 1958) comprises St. Helena (47 square miles; pop., 4,802 in 1958), lying some 1,200 miles from the west coast of Africa, and two widely separated dependencies: Tristan da Cunha (38 square miles; pop., 257 in 1958), a small group of islands lying 1,500 miles south-southwest of St. Helena and including the uninhabited islands of Gough, Nightingale, and Inaccessible; and Ascension (34 square miles; pop., 326 in 1958), which lies 750 miles northwest of St. Helena. Jamestown (pop., 1,568), the capital, is St. Helena's chief port. A governor (Robert Edmond Alford, appointed Feb. 12, 1958) is assisted by an Executive Council consisting of not more than 7 members, and by an Advisory Council of not more than 10 members.

Saint Helena.—Revenue in 1958 totaled £194,946, and expenditure, £210,213. There were 12 schools (11 primary and 1 secondary), with 1,262 pupils in 1958. Cultivation of New Zealand flax is the major industry; from 3,250 acres, 916 tons of hemp and 275 tons of tow were produced in 1958. Manufactures include rope, twine, and lace; principal products of the fishing industry are mackerel, albacore, tuna, and bonito. Exports in 1958 were valued at £80,798 (flax fiber, £42,226); and imports, £231,136, including £138,355 from the United Kingdom. All-weather motor roads total 65 miles.

Ascension.—Ascension is a barren, rocky peak, volcanic in origin and destitute of vegetation except for about 10 acres on which vegetables and fruit are grown for the inhabitants of Georgetown, the only settlement. The island is the site of an important cable and wireless station, and lies near the end of the Atlantic range for rockets fired from Cape Canaveral, Fla. Late in 1959, Canadian scientists were building a base where they could conduct research on the detection of intercontinental missiles in flight.

Tristan da Cunha.—The island consists of an extinct volcano rising to 7,640 feet. There is a habitable area of 12 square miles (30 acres cultivated). Meteorological and signal stations are maintained by the Royal Navy. An administrator (Peter Andrew Day) is assisted by a 10-member Island Council (8 elected) and by the Island Women's Council. A South African company conducts a fishing operation for rock lobsters, and by agreement maintains on the island a doctor, nurse, agriculturist, and schoolteacher.

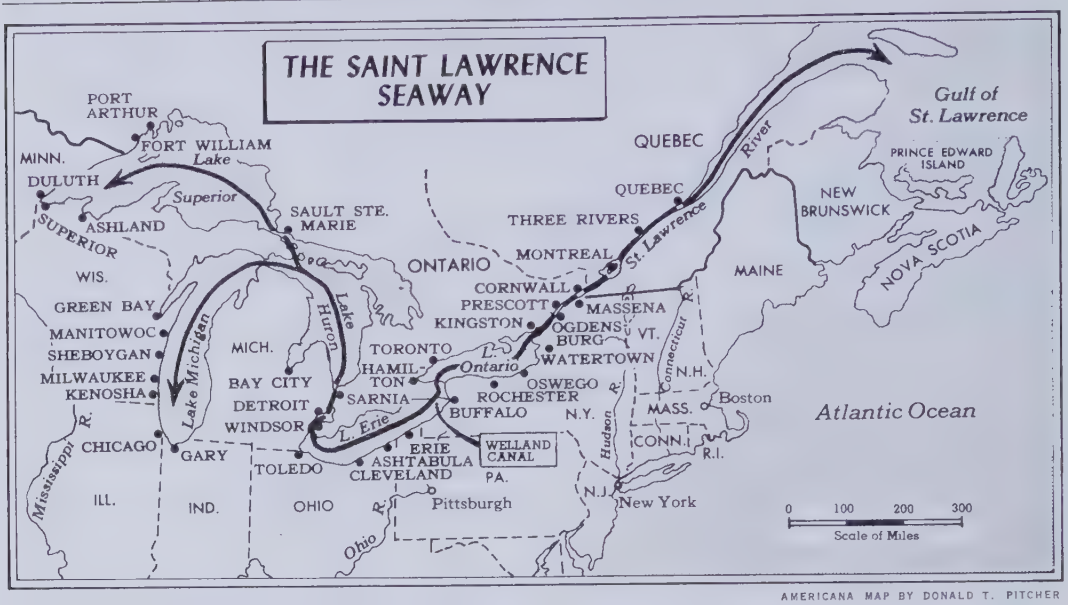
SAINT JOHN. See VIRGIN ISLANDS OF THE U.S.

SAINT KITTS-NEVIS. See WEST INDIES FEDERATION.

SAINT LAWRENCE SEAWAY AND POWER PROJECT. In 1959 the billion-dollar construction project on the International Rapids section of the St. Lawrence River was completed and dedicated. About $650 million worth of dams and international powerhouses were finished, and roughly $350 million in navigation locks were completed. Including the Canadian locks downstream (at the Beauharnois Power Project in Quebec and at the Lachine Rapids near Montreal), the total expenditure on the St. Lawrence Seaway had been $471 million for navigation, in addition to $650 million for power.

On June 26, 1959, President Dwight D. Eisenhower and Queen Elizabeth II joined in ceremonies at St. Lambert, near Montreal, to open the seaway officially. Thousands gathered to hear the speeches of dedication and to watch the royal yacht *Britannia* move ceremoniously into the St. Lambert Lock, first step into a man-made navigable waterway that now extends to Duluth, Minn.

On the next day, the queen and her party reached the United States and were greeted by Vice President Richard M. Nixon at Eisenhower Lock, second of the two United States locks in the international waterway to the Great Lakes. From the lock Queen Elizabeth rode to the Moses-Saunders Dam, a unit in the $650 million hydroelectric power project on the United States–Canada border near Cornwall, Ontario. At the center of this power dam, at the international border, the queen and



AMERICANA MAP BY DONALD T. PITCHER

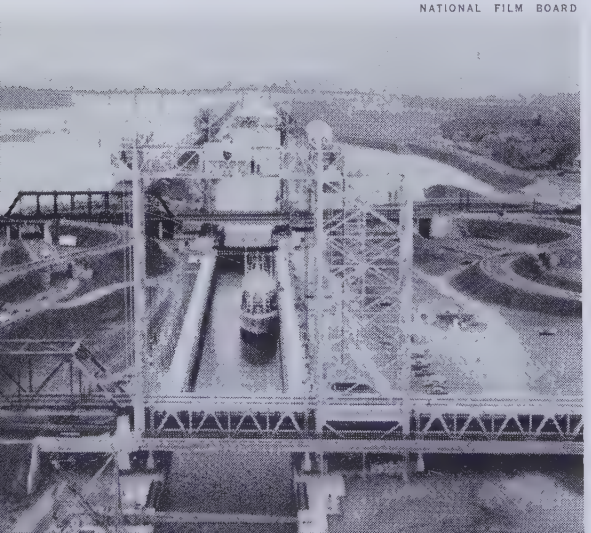
the vice president unveiled an International Friendship Monument.

Construction Progress.—The power dam which the queen helped to dedicate was the key to the whole seaway. Indeed, the St. Lawrence Seaway would not yet be built were it not for the St. Lawrence Power Project. The marketable power in the river, and particularly Ontario's need for it, made the whole dual-purpose development feasible. In effect, the power structures created the pool where for ages there were rapids, and it remained only to construct the locks to enter this pool.

Actually, there are four major structures in the power project, plus many miles of earth dikes: (1) the power dam itself; (2) Long Sault Spillway Dam, the curved, gated structure upstream from the power dam which lets flood flows spill down the south channel of the river; (3) Massena Intake, a combined concrete dam and pumping station which plugs a power canal that formerly flowed into Massena, N.Y., and in its place pumps a new water supply for domestic and industrial purposes for the city; and (4) Iroquois Control Dam, 25 miles upstream from the power dam where it can keep water levels under control through the Thousand Islands section of the river, even though the power pool level may be fluctuated radically.

Aerial view of the St. Lambert Lock (near Montreal) of the St. Lawrence Seaway, dedicated on June 26. Vertical lifts enable ships to pass under twin spans of Victoria Bridge without delay. In background is Jacques Cartier Bridge.

NATIONAL FILM BOARD



Bertram H. Snell Lock and Eisenhower Lock each lift shipping 45 feet along the 10-mile Wiley-Dondero Canal on the New York State side of the river and into the pool behind the major power project structures. Then, at the upper end of the power pool, the low-lift Iroquois Lock on the Ontario side of the river allows shipping to move past Iroquois Control Dam and the difference in river levels (up to 5 feet) which the dam will create in controlling the river's level upstream.

The St. Lawrence Seaway, to be navigable to 80% of the world's oceangoing vessels, is intended to be the whole stretch of water from the Gulf of St. Lawrence to and through all five of the Great Lakes. But that part of the seaway and power project dedicated in 1959 was only enough to admit 27-foot navigation up the St. Lawrence to Lake Ontario. From there on through the lakes much remains to be done if this inland waterway is to become truly the continent's "fourth seacoast."

First, the Welland Canal, deepened to accommodate seaway traffic, must be widened to carry the volume of ships that the St. Lawrence River locks can bring to it. The 27-mile Welland Canal provides passage between Lake Ontario and Lake Erie. Its guard lock at the Lake Erie end and its seven lift locks elevate shipping by the 326-foot-high Niagara escarpment. Three of the Welland Canal's locks are twin structures now, and there is an immediate need that the other five be made double if the 37-year-old waterway is not to be the bottleneck of the seaway.

Once past the Welland Canal, westbound ships that use the seaway have the water-levels problem behind them but the problem of water depths still prevails throughout the Great Lakes. Early in 1958 it was predicted that it will be 10 years before most seaway ports can handle fully loaded ships.

The waterway at Buffalo, N.Y., needs dredging; so do such important seaway ports as Erie, Pa., Cleveland and Toledo, Ohio, Chicago, Ill., Milwaukee, Wis., and Duluth, Minn.; and to these may be added such cities as Ashtabula, Lorain, and Sandusky in Ohio, Port Huron, Saginaw, and

Marquette in Michigan, and Ashland, Wis., all with harbors that need deepening to accommodate cargoes from overseas.

Detroit is one large city with enough draft for the seaway's vessels, but it typifies the second need of the ports along the lakes and their connecting waterways. Like most of the seaway cities, it lacks berth space for oceangoing vessels.

In the connecting channels alone, the United States government has spent about $46 million and must spend another $100 million to deepen such rivers as the Detroit, St. Clair, and St. Marys.

Seaway Traffic.—Although the new seaway was officially dedicated on June 26, ships first began using the waterway on April 25, 1959. Two Canadian icebreakers, used for ceremonial purposes, led the way as nearly a score of ships entered the entrance at St. Lambert. The first oceangoing vessel through the seaway reached Chicago on April 30, little more than 4½ days after entering. The city greeted the 353-foot Dutch vessel with a festive celebration as it berthed at Navy Pier.

Before the seaway was closed down to oceangoing vessels for the winter early in December, officials estimated that 6,600 ships and 20 million tons of cargo will have passed through in its first season. Ships were using the new route at the rate of 30 a day. By the end of September, 14.2 million cargo tons had been carried on the seaway from Montreal to Lake Ontario, an increase of 67% over a comparable period in 1958 by ships using the old canals. The tonnage in 1959 fell short of the 25 million total which was forecast, but the deficit was laid to the late start of shipping and to the steel strike. Seaway tolls, announced in March 1959 by the United States and Canada, were predicated on a volume of 25 million tons for the first year, gradually rising to 50 million tons annually. Amortization would be achieved in 50 years under this schedule of revenue.

(For further references, see the Index entry, *Saint Lawrence Seaway and Power Project.*)

ARTHUR J. FOX, JR.,
Senior Staff Editor, "Engineering News-Record."

SAINT LOUIS. The largest city (in population) in the Mississippi River Valley, St. Louis, Mo. (pop. in 1950 census, 856,796; est. pop. Jan. 1, 1958, 870,000), is the core city of a standard metropolitan area which includes four counties in Missouri and three counties in Illinois with a population estimated at 2 million.

Since there is no practical way by which the city boundaries can be extended, most of the population growth in the area has occurred in St. Louis County, which surrounds the city west of the Mississippi River. County population has increased from 274,230 in 1940 to an estimated 600,000 in 1959. This population growth was reflected in the fact that in 1958 public elementary and high school enrollment in the county exceeded city enrollment for the first time. County enrollment in 1959 was 111,650, compared with 103,235 in the city.

The city has a mayor-council form of government created by a home-rule charter adopted in 1914. Raymond R. Tucker (Democrat) was serving his second term as mayor in 1959, and his party was firmly in control of all officers elected on a citywide basis. The city government performs functions of both a city and a county.

A significant change in 1959 city tax yields resulted from an increase in the earnings tax from ½% to 1%, effective August 1. This tax is applicable to the earnings of all who work in the city.

Business activity in 1959 recovered from the decline which had affected the nation generally. In September 1959 total employment in the metropolitan area was 854,000, compared with 847,700 in the same month in 1958, and unemployment was 41,400, compared with 64,300 a year earlier. Contracts for residential construction for the first eight months in the St. Louis area amounted to $128.9 million, an increase of 54.6% over that for the same period of 1958.

Significant progress on major civic improvement projects was realized during 1959. An eight-mile section of the Mark Twain Expressway, which will link downtown St. Louis with Interstate Route 70 to the west, was opened to traffic in July. Completion of the Daniel Boone Expressway linked the Red Feather Highway in the city with U.S. Route 40. The Urban Redevelopment Corporation had six 13-story apartment buildings near completion in the Plaza project and plans ready for a large office building for the Blue Cross Hospital Plan. Clearance of 462 acres of land in the Mill Creek Valley project, which will be developed for both industrial and residential use, was proceeding on schedule.

Work was finally started to clear the way for the Jefferson National Expansion Memorial along the downtown riverfront. This memorial, a joint project of the city and the National Park Service, is scheduled for completion in 1964. A corporation financed by local businessmen has developed plans for construction of a 50,000-seat municipal stadium near the waterfront north of the memorial.

On Nov. 3, 1959, the voters of both the city and the county overwhelmingly defeated a proposed plan for city-county coordination. The plan was prepared by a 19-member Board of Freeholders created in 1958. The proposal would have created a City-County District with authority to perform seven governmental services (traffic, transit, planning, economic development, civil defense, sewers, and certain police functions) on an area-wide basis. Existing governments in the area would have remained but would have given up jurisdiction over the functions assigned to the district. Defeat in the county indicated an unwillingness to accept any formal plan for joining the city and county governments, while opposition in the city was led by those who favored complete consolidation of all governments in the area under a single government of the City of St. Louis.

An important addition to the educational and cultural facilities of the St. Louis area was the completion of the Pope Pius XII Memorial Library on the campus of St. Louis University. This library is the only place in the United States which has microfilms of the historic documents of the Vatican Library in Rome.

(See also NEWSPAPERS.)

CARL A. MCCANDLESS,
Professor of Political Science, Washington University (St. Louis); Former Associate Director, Metropolitan St. Louis Survey.

SAINT LUCIA. See WEST INDIES FEDERATION.

SAINT PIERRE AND MIQUELON. Main islands of two small island groups off the Grand Bank south of Newfoundland, forming an overseas territory of France. Total area, 93 square miles; pop. (1958), 4,904. The town of Saint Pierre (3,400) is the capital. The territory is ruled by a governor and an elected General Council of 14 members. On Dec. 16, 1958, the council decided that Saint Pierre and Miquelon would retain its status as an overseas territory under the new French Constitution. Primary school pupils numbered 1,078 in 1958 (mainly in Roman Catholic schools); those in secondary and vocational schools, 247. Fishing (mainly cod) and the manufacture of fish products are the chief industries. Silver fox and mink are bred. Exports, mainly fish products, totaled 341 million francs CFA in 1958; imports, 780 million. The territory is linked by cable and steamship service with Europe, and by steamship and air service with Nova Scotia and Prince Edward Island.

SAINT THOMAS. See VIRGIN ISLANDS OF THE U.S.

SAINT VINCENT. See WEST INDIES FEDERATION.

SALES. See RETAIL STORE SALES; WHOLESALE SELLING.

SALT. The United States produced about 27% of the world's output of common salt (sodium chloride) in 1958. United States production declined from 23,844,000 short tons in 1957 to 21,-

911,000 tons in 1958. Four leading companies with 12 plants supplied 50% of the output, and over 1 million tons were produced by each of five plants. Six states provided 88% of the total. The 1958 output included 3,761,000 tons of evaporated salt, 5,407,000 tons of rock salt, and 12,743,000 tons of salt in brine. Imports for consumption were 611,043 tons in 1958, compared with 650,845 tons in 1957, a decrease of about 6%. Exports declined from 390,707 tons in 1957 to 363,009 tons in 1958, or a 7% decrease. Apparent consumption decreased from 24,107,000 tons in 1957 to 22,159,000 tons in 1958, or about 8%. Chemical uses claimed about 68% of the total produced. As in the past four years, chlorine manufacturing was the most important single use. (See MINERAL PRODUCTION for table showing output of major countries.)

SALVADOR. See EL SALVADOR.

SALVATION ARMY. During 1959 The Salvation Army maintained its operations in 86 countries and colonies, and preached the Gospel in 120 languages. Figures for 1957 indicate there are 26,887 commissioned officers and cadets and 26,408 full-time employees in its service, augmented by several hundred thousand volunteer lay members. At its headquarters in London, England, Gen. Wilfred Kitching continued as international leader.

Among Salvation Army worldwide services are 136 hospitals, dispensaries, and clinics, treating 164,204 in-patients and 759,044 out-patients; 140 children's homes; 828 day schools; 214 residences for various age groups; 16 industrial homes for women; 90 homes for unwed mothers; 13 training schools for girls; 140 good-will centers and slum posts; 4 prison-gate homes; 187 shelters and workshops for men; 83 employment bureaus; 8 leprosaria; and 6 institutes for the blind.

The United States command of The Salvation Army continued in 1959 under Commissioner Norman S. Marshall, national commander, and four other commissioners, each commanding a number of states as follows: Eastern, Commissioner Holland French; Central, Commissioner Claude Bates; Southern, Lt. Commissioner William Davidson; and Western, Lt. Commissioner Samuel Hepburn. In the United States there are 8,019 centers of operation, including 1,108 corps, 167 outposts, 720 institutions, and other centers of work. More than 5,000 commissioned officers are assisted by 10,000 full-time employees.

Among The Salvation Army's social institutions in the United States are 113 men's social service centers, which in 1957 provided a rehabilitation program for 62,181 homeless men; 34 maternity homes and hospitals, which provided service for 10,610 persons, primarily unmarried mothers and over 8,000 babies; 5 general hospitals, which cared for 15,514 patients; 15 Evangeline residences for young business women; and 76 homes and lodges for men, women, and children. In addition, 35,879 mothers and children were sent to summer camps; 1,128 missing persons were located through missing persons' bureaus, and 99,610 persons were assisted in finding jobs. Assistance was given 12,209 prison inmates or their families, and 2,864 prisoners were paroled to The Salvation Army during the year. Emergency assistance was given persons stranded in strange communities and also at disasters, floods, fires, and storms.

During 1959 General and Mrs. Kitching visited Salvation Army facilities throughout the United States, and for the first time in The Salvation Army's 22-year history in Mexico, an international leader of the organization conducted services there.

Active in Alaska since 1899, The Salvation Army in 1959 organized a service extension program to serve the interior, including Nome, Kodiak, and Seward. Its services to the aged were augmented by the opening of a residence in Detroit, Mich., accommodating 300 persons, and garden apartments with 18 units in Redondo Beach, Calif. In the Southwest, Salvationists are teaching English to migrant Mexican farm workers, and are otherwise aiding them.

NORMAN S. MARSHALL,
National Commander.

SAMOA. This group of Polynesian islands lies in the South Pacific some 2,700 miles east of Australia and 4,200 miles southwest of San Francisco. Samoa comprises the political units of American Samoa, lying east of longitude 171°W., and Western Samoa, lying west of that line. The total area of 1,205.3 square miles supports a population (1958 est.) of 124,820.

AMERICAN SAMOA

An unincorporated insular possession of the United States, American Samoa lies between 13° and 15° south latitude and between 167° and 171° west longitude. It has an area of 75.3 square miles and a population of 21,960 (1958 estimate). It consists of seven islands divided into three groups: (1) Tutuila (on which is the capital, Pago Pago) and Aunu'u; (2) Manu'a (includes Ofu, Olosega, and Ta'u); and (3) Rose (uninhabited) and Swains' islands.

Government.—The governor and the territorial secretary are appointed by the secretary of the interior with the approval of the president of the United States. Peter Tali Coleman was named governor on Oct. 15, 1956, and Alan Mills MacQuarrie was appointed territorial secretary in February 1954. The executive branch also comprises departments of Legal Affairs and Public Safety (attorney general), Agriculture, Budget and Finance (treasurer), Public Works, Education, Medical Services, Port Administration, and Local Government (Samoan affairs). The organization of the government is defined in the Code of American Samoa, which contains all local laws. Citizens of American Samoa are nationals of the United States.

The local government officials of the territory are all Samoans, and village, county, and district councils have full authority to regulate local affairs within their jurisdiction. The advisory Legislature, or Fono, is composed of a Senate of 15 members, elected in accordance with Samoan custom from among the chiefs, and a House of Representatives of 18 members, elected by secret ballot.

An Executive Council, established by the governor in 1956, comprises three district governors, the president of the Senate, and the speaker of the House, who act as consultants to the governor on all legislative matters and on other matters pertaining to local problems.

In addition to five district courts, the judicial branch includes one high court of three divisions (appellate, trial, and probate) presided over by Judge Arthur A. Morrow.

Finance.—During the fiscal year ending June 30, 1959, the government of American Samoa operated under a direct federal appropriation of $130,625 and a federal grant-in-aid of $1,219,400. Receipts from local sources during the fiscal year were $911,818.34, and disbursements totaled $1,990,103. The Bank of American Samoa, which is owned and operated by the government, showed resources totaling $2,147,441.82 as of June 30, 1959.

Education.—School attendance is compulsory for all children of ages 7 to 15, inclusive. About 99% of the total population of 10 years of age and over is literate. The villages provide the elementary school buildings (grades 1–6) and the living quarters for teachers, and the territo-

SCHOOL STATISTICS, MAY 1959

Type of school	No.	Teachers	Pupils
Village elementary (grades 1–6)	45	180	3,529
Demonstration school (grades 1–8)	1	4	111
Government school for stateside children	1	3	48
Junior high schools (grades 7–9)	5	46	1,393
High school (grades 10–12)	1	11	193
Vocational school (grades 10–13)	1	4	53
Teacher-training college (grade 13)	1	1	12
Nursing school	1	5	40
Private and parochial elementary (grades 1–9)	7	34	1,070
Total	63	288	6,449

rial government furnishes school buildings, teachers, equipment, and supplies for secondary schools (grades 7–9 and grades 10–13). For the school year 1959–1960 the government appropriated $368,397 for education.

Public Health and Social Welfare.—In general, the adult population is well nourished, but malnutrition in infants is not uncommon. Poor infant feeding is a result more of ignorance than of unavailability of food. The government spends approximately $454,000 per year on medical care and public health and provides a central hospital of 154 beds, a 56-bed tuberculosis unit, and a 20-bed leprosarium, besides district dispensaries and a number of village public health nurses.

The government employs American-trained staff physicians who work with Samoan medical practitioners and nurses. Modern facilities for surgery, obstetrics, and other treatment are available at the general hospital. About 50,000 outpatient visits are made to the hospital clinics annually.

Production and Trade.—Essentially agrarian in economy, American Samoa has approximately 1,500 plantations averaging 10 acres and representing approximately 31% of the land area. The government operates a 248-acre experimental farm through its Department of Agriculture. Subsistence crops (with approximate annual tonnages) consist of bananas (2,500), breadfruit (2,400), and taro (1,500). Other subsistence crops include papayas, pineapples, sweet potatoes, tapioca, coffee, cacao, and yams. Swine (numbering 3,500), poultry (16,000), and dairy cattle (266) are the principal livestock. Copra production during the fiscal year 1959 amounted to 1,100 tons with a value of $114,393.06.

A modern and efficient tuna packing cannery, employing approximately 400 Samoans, is operated by a California concern. During the fiscal year 1959 this concern exported fish and fish products valued at an estimated $8,029,557.

Foreign trade for the 1959 fiscal year comprised imports valued at $2,029,266 and exports worth $8,319,894. Imports were mostly from the United States, Australia, New Zealand, and Japan.

Transportation and Communications.—During the early part of 1959 Transocean Air Lines commenced nonscheduled biweekly plane service nonstop from Honolulu to Samoa. In October 1959 Pan American World Airways eliminated its Honolulu-Samoa flight through Nandi, Fiji, but also began a scheduled nonstop operation from Hawaii to Samoa. Samoan Air Lines began a twice-daily scheduled operation, six days a week, between Western and American Samoa. Preliminary rough clearing of some 167 acres of the new Tafuna airport runway has been accomplished. This marks the first tangible step in the development of a modern international airport, which will have a 9,000-foot runway able to accommodate jet aircraft. It is expected that the airport will be used as a midway stop on flights between Australia and New Zealand and Honolulu.

Two passenger liners call at Pago Pago every three weeks en route to the United States from a South Pacific tour. A New Zealand vessel calls every month. Freighters from the United States call from time to time. Four interisland vessels maintain schedules between Western Samoa and American Samoa and four motor launches are maintained for intraisland use.

There are approximately 80 miles of roads, 40 miles of which are considered main roads, with 4 miles surfaced. Of 274 registered motor vehicles, 146 are private automobiles. The government operates a telephone system and a small local radio station (WVUV), which broadcasts programs in both English and Samoan. Newspapers and periodicals include a daily news sheet, the Samoan-language weekly *Failauga Samoa* and the quarterly *O le Fa'atonu,* in English and Samoan.

PETER TALI COLEMAN,
Governor of American Samoa.

WESTERN SAMOA

Until World War I a German territory, Western Samoa has been administered by New Zealand since 1919 (from 1946 under a trusteeship agreement with the United Nations). Its area of 1,130 square miles, supporting a population (Dec. 31, 1958) of 102,860, comprises the islands of Savai'i (700 square miles) and Upolu (with Manono, Apolima, and other small islands, 430 square miles). In the 1956 census the population was 97,237 (Upolu, 70,429; Savai'i, 26,898), of whom 88,036 were full Samoans. Apia, located on Upolu, is the chief port, center of trade, and capital.

Government.—In 1959 Western Samoa took a major step toward complete independence planned by the end of 1961, by instituting a cabinet in October. Throughout most of the year the government had comprised the New Zealand high commissioner (G. R. Powles, who assumed office on March 1, 1949); a Council of State of which he, as presiding official, and the two Samoan *fautua* (high chiefly advisers) were members; an Executive Council of ministers; and a Legislative Assembly.

The new cabinet, sworn in on October 1, grew out of an authorization bill passed by the New Zealand House of Representatives two days earlier. The cabinet is headed by a prime minister (Mr. Mataaba) and comprises all former elected members of the Executive Council, which it replaces, and two additional members. It was planned that the high commissioner would withdraw from active administration except through the exercise of his powers in the Council of States.

The Legislative Assembly, for which new elections are scheduled in 1960, comprises 48 members (41 Samoans, 5 Europeans and 2 officials).

Government revenue in 1958 totaled £NZ1,305,000; expenditure, £NZ1,037,000. (The Samoan and New Zealand pound have the same value.)

Education.—Government expenditure on education was £NZ204,000 in 1958. In government schools there were some 15,000 pupils; in mission schools, 8,000. Higher education facilities are provided by the Samoa College at Apia and by St. Mary's College at Vaimoso.

Economy.—Principal food crops are taros, bananas, and coconuts. In 1958, imports were valued at £NZ2,221,000 (£NZ739,000 from New Zealand, including chiefly meat (£NZ207,000), sugar (£NZ86,000), and cotton goods (£NZ99,000). Exports totaled £NZ2,948,000 in value, chiefly to the United Kingdom (£NZ1,298,000) and New Zealand (£NZ1,287,000). Major exports were bananas (885,000 cases valued at £NZ1,008,000), copra (10,000 tons, £NZ619,000), and cocoa (4,000 tons, £NZ1,237,000).

Transportation and Communications.—In 1959, roads totaled 380 miles, of which 227 miles were in main roads. Steamship sailings and air services of Tasman Empire Airways, Ltd. link the territory with Tahiti, Fiji, Australia, and New Zealand. Communications with Pago Pago (American Samoa) are maintained on frequent schedules by launches and the newly established Samoan Air Lines which now makes two regular daily trips six days a week between the two Samoas.

SAN FRANCISCO. Second most populous city in California and 11th in rank (1950 census) in the United States, San Francisco has approximately 822,200 residents (Jan. 1, 1960) living in an area of 44.8 square miles.

The consolidated city and county is governed by a mayor and 11-member Board of Supervisors who serve four-year terms. The budget for the fiscal year 1960–61 was $225,045,010, and the tax rate, $8.09 per $100 assessed valuation, to yield $111,236,923. Other revenue, estimated at $143,808,087, was derived from state and city sales taxes and other sources.

During 1959 the city's economic health was stimulated by a marked upsurge in building which, to a lesser degree, was paralleled in other phases of the city's activity. During the first eleven months of the year, traffic at the municipal airport, for example, was up 8.3% over that of the corresponding period of 1958; bank debits topped $54.5 billion for the year (a climb of over 8%); and employment increased an average of 2.5%. The number of vehicles crossing the Bay Bridge was up 5.6%, and that over the Golden Gate Bridge rose 8.0%.

WIDE WORLD

Workmen prepare Candlestick Park, new home of the San Francisco Giants, for the 1960 season. The 45,000-seat stadium was turned over to the baseball club in February 1960.

As the year drew to a close, San Francisco was in the midst of the greatest building boom of its history, with close to $625 million in new construction either under way or in the planning stages. Among the dozen major structures reshaping the downtown skyline were the new office of the Crown Zellerbach Corporation, an impressive, glass-walled building; the John Hancock Building, of brown granite; the headquarters of the Bethlehem Pacific Coast Steel Corporation; and the head office of the American Trust Company. Numerous other buildings were under construction, including a group of tall apartment houses on Telegraph, Nob, and Russian hills and on the heights overlooking the Golden Gate.

At the municipal election of Nov. 3, 1959, the voters authorized further construction by approving two bond issues: $7,575,000 for the rehabilitation of the Civic Auditorium, and $1,800,000 to complete the restoration of the Palace of Fine Arts. Toward the financing of the latter project, $4 million had previously been made available—$2 million by the State of California, and a $2 million gift by a San Franciscan, Walter S. Johnson. Earlier approved by the voters and under way was a new $19 million Hall of Justice.

Plans to meet the problems posed by the skyrocketing population of the city and its environs moved forward. One of the greatest of these is the $220 million Golden Gateway Project, by which an area of 28 blocks near the center of the city is to be transformed into a district of large apartments and office buildings interspersed with landscaped parkways. To relieve vehicular congestion in the business and industrial areas, off-street parking was being provided by the city on an ever-growing scale. One such facility, nearing completion in 1959, was a 972-car garage under the Civic Center Plaza. A second garage, with a 1,000-car capacity, is scheduled for completion in 1960.

In the November election the chief interest was in the race for mayor (traditionally nonpartisan) between the incumbent, George Christopher (Republican) and Russell L. Wolden (Democrat), county assessor. After a spirited campaign, the voters returned Christopher to office with a plurality of more than 50,000. Six incumbent members of the Board of Supervisors were also re-elected.

Six weeks earlier, national interest centered on San Francisco's politely hospitable welcome of September 20 to Soviet Premier Nikita Khrushchev during his United States tour.

Throughout the 1959 baseball season the San Francisco Giants continued to receive the warm support of northern California fans. The team's new home, a handsome $11 million stadium with a capacity of 45,000, was being built at Candlestick Point near the city's southern boundary. It was expected to be completed in time for the opening of the 1960 season.

(See also BRIDGES; NEWSPAPERS.)

OSCAR LEWIS,
Co-editor of "A History of San Francisco"; Author of "The Big Four," "The Autobiography of the West" (1958), and other books.

SAN MARINO. The world's smallest republic, located in the Apennine Mountains of Italy, 140 miles north of Rome. Area, 23 square miles; pop. (est. 1959), 15,000. The capital is San Marino (2,481). Language and currency are Italian, and a customs union exists with Italy. A 60-member Grand and General Council is elected every 4 years by male suffrage. Two members are appointed to serve as regents for six-month periods. The budget for the fiscal year ended March 31, 1958, totaled 853 million lire. San Marino has 35 elementary schools, a technical school, and a high school. Wine, woolen goods, hides, and building stone are exported, and tourism is an important source of income.

On April 29, 1959, the council passed a new electoral law which extended the life of the council to 5 years, gave women the right to vote (effective in 1960), and provided that San Marinese residents in North and South America may vote by mail. In the elections of September 13, the Christian Democrats obtained 27 seats; the Social Democrats, 9; the Communists, 16; and the leftist Socialists, 8. The ruling coalition consists of Christian Democrats and Social Democrats. On October 8, several Communist and leftist Socialist leaders were sentenced to long prison terms on charges of having sought illegally to extend the tenure of the leftist regime in 1957.

SAND AND GRAVEL. United States output of sand and gravel in 1958 was 647,736,000 short tons, of which 249,512,000 tons was sand and 398,224,000 tons was gravel. In 1957, output totaled 631,506,000 (revised) tons, comprising 235,757,000 tons of sand and 395,748,000 tons of gravel. Production of sand and gravel continued on an unbroken upward swing for the ninth year, with an increase of 8% in 1958. The principal markets were for construction projects such as highways, airfields, commercial and industrial buildings, and public utilities.

SANITARY ENGINEERING.[1] The development of sanitary engineering during 1959 was characterized by an increasing awareness of the intensifying hazard of microchemical factors in man's environment.[2,3] This hazard is engendered (1) by the widening use in household, industry, and agriculture of the varied products of our developing chemical industries; (2) by the increasing concentration and variety of the waste matters released to air, water, and soil by these industries and by the burning of fuels and the agricultural use of chemicals; and (3) by the exposure of a mounting labor force to dangerous manufacturing processes.

[1] Based in part on the Chadwick lecture presented by the author before the Royal Society of Health at Harrogate, England, in April 1959.

[2] Fair, G. M., *New Factors in Man's Management of His Environment* (The Chadwick Trust, London, 1959).

[3] *Man Versus Environment* (Government Printing Office, Washington, 1959).

Air Pollution.—Some of the microchemical substances that reach the atmosphere from industrial operations and the combustion of fuels are toxic or irritating in themselves. Others, such as ozone, are shown, by important researches in Los Angeles and elsewhere, to be generated by photochemical reactions in the atmosphere. Certain of these secondary air pollutants are known to cause temporary eye irritation, atmospheric haze, rubber cracking, and crop damage. The possibility of more serious effects on higher animals remains under study for both primary and secondary air pollutants.

By contrast with the eye-irritating smogs of Los Angeles, where petroleum products compose most of the fuels used and the principal air pollutants are oxidizing substances, such as nitrogen oxides and ozone, the recurrent London "peasoupers," which have been responsible for bronchial irritations and sometimes for death among people with respiratory or cardiac ailments, have been shown to contain reducing (principally sulfur) compounds released by the combustion of coal.

Strontium-90 discharged into the atmosphere in the testing of nuclear weapons has remained the isotope of chief concern in radioactive fall-out.[4] Attention has been called, however, to the further danger of carbon-14, which is produced in the atmosphere by the reaction of neutrons with nitrogen nuclei.[5] Fall-out of nuclear debris has been found to be taking place more rapidly than expected, and the contamination of high-flying aircraft by such debris has come under observation.

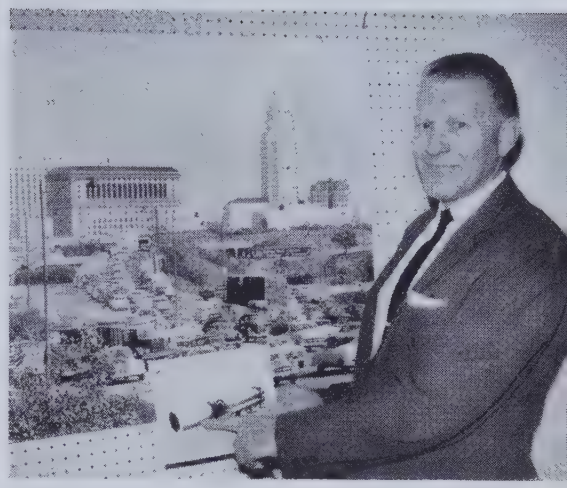
In order to ascertain the degree of atmospheric pollution, the U.S. Public Health Service has expanded the National Air-Sampling Network, and a number of states have elaborated their own networks for more intensive coverage of sources of air pollution. Thus far, the national network measures only the concentration of particulate matter: solid particles and liquefied droplets. However, the incidental radioactivity of these substances is also being recorded.

Water Pollution.—For the monitoring of water supplies, the U.S. Public Health Service has established water-sampling stations on the Great Lakes and many interstate streams. Here the effects of radioactive fall-out, radioactivity induced in water that has been used as a coolant in the nuclear energy industry, and radioactive waste materials from various sources are being measured. At the same time, other significant properties of polluted waters are being evaluated with special reference to the odor- and taste-producing and toxic contributions of chemical industries.

The increasing competition for water by agriculture (supplemental irrigation), municipalities, and industries has been responsible for the creation of water resources commissions in a number of states. North Carolina, for example, will eventually assign to its commission the water functions of all agencies that have a part in water use. The resulting loss of one of the most important engineering functions of the state board of health is a radical departure from established administrative practice. The need for changing the water laws of states in which the doctrine of riparian rights prevails in order to ensure a more equitable and effective exploitation of water as a natural resource is also being debated in a number of state legislatures.

[4] *Proceedings, National Conference on Air Pollution*, Nov. 18–20, 1958 (Government Printing Office, Washington, 1959).

[5] Pauling, Linus, "Genetic and Somatic Effects of Carbon-14," *Science*, 128:1183 (1958).



UPI

S. Smith Griswold, Los Angeles air pollution control officer, points to photo of an auto exhaust purifier which he hopes will become standard equipment on all new cars.

Water Treatment.—The fluoridation of public water supplies has continued to increase with no untoward experiences reported. The preferred source of fluorides remains sodiumsilico fluoride, but there has been an increase in the use of hydrofluosilicic acid, a liquid. Altogether, there appears to be an orientation toward the purchase of liquid rather than dry water-treatment chemicals. Liquid alum is a notable example.

Sewage Disposal.—In the disposal of municipal sewage, two processes, both of them relatively simple in conception, have found wider adherence. The first process is the discharge of settled sewage of coastal cities into the sea through long submerged outfalls extending into deep water far from shore, and the release of the anaerobically digested settled solids through the same or parallel pipes. Secondary treatment, which normally follows primary sedimentation, is thereby avoided. The other process is the treatment of the sewage from relatively small communities in stabilization ponds, constructed as rude earth basins. Sedimentation and benthal digestion of settleable solids, combined with the photosynthetic activity of algal blooms, as well as evaporation, are held responsible for the good performance of these ponds. By contrast, tertiary treatment of sewage after trickling filtration or activated-sludge treatment is coming under study for the purpose of producing an effluent that is substantially free from oxygen-consuming or taste- and odor-producing pollutants. Where water is in short supply, tertiary treatment may permit the more immediate re-use of the treated water. For the stabilization of strong organic industrial water, such as packing-house wastes, a heated anaerobic contact process, in principle not unlike the activated-sludge process, is being developed.

The mushrooming of dwellings in the fringe areas of cities has created serious problems of sewage disposal. The installation of public sewerage has often presented technical as well as economical and administrative difficulties. In its absence, individual lots have been provided with disposal devices. Where septic tanks followed by subsurface leaching systems cannot be employed satisfactorily because of the tightness of the soil, aerobic treatment units, either with re-use of their effluent in the flushing system of the dwelling or with disposal of the greatly purified effluent to the soil, are under test.

The opening of the St. Lawrence Seaway (q.v.) has called attention to the need for sewage treatment systems that will operate equally

well in both fresh and saline waters. Means for the safe disposal or stabilization of human wastes in rocket ships are also under study.

Nuclear Energy Wastes.—The U.S. Atomic Energy Commission has followed two general precepts in its management of radioactive waste materials: "Concentration and containment of high-level radioactive wastes, and dilution and dispersion in nature of low- and intermediate-level wastes." It is generally admitted that the present practice of storing high-level wastes is only an *ad hoc* solution of the problem, and that the method of their ultimate disposal remains to be determined. Research and development are currently oriented toward fixation of the wastes—that is, their incorporation in chemically inert media—on the one hand, and toward their direct and deep discharge into the ground on the other. Fixation would permit their safe storage in the sea as well as in the ground. (See also CHEMISTRY.) The recommended maximum permissible concentrations of radioactivity in air and water have been reduced by a factor of ten for areas of dense population in order to keep the genetic effects of radiation to a minimum.[6]

Food Sanitation.—It is estimated that some 400 chemicals, including antibiotics, are being added to foods as preservatives, antioxidants, thickeners, thinners, moisteners, emulsifiers, and coloring agents. The allowable concentration of these substances needs to be determined before they are admitted to commercial use. Their number has become so great that the federal Food and Drug Administration (q.v.) has been forced to shift to producing groups the burden of proof of the nontoxicity of marketed products in recommended amounts. The increase in the radioactivity of milk as a result of radioactive fallout on pastures and forage crops is being monitored by the U.S. Public Health Service in a number of regions.

(See also INDUSTRIAL HEALTH AND SAFETY; PUBLIC HEALTH; RADIATION.)

GORDON M. FAIR,
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SANITATION. See SANITARY ENGINEERING and the Index entry, *Sanitation.*

SANTO DOMINGO. See HISPANIOLA.

SÃO TOMÉ. See PORTUGUESE TERRITORIES.

SARAWAK. See BORNEO.

SARDINIA. An island in the Mediterranean Sea west of the Italian Peninsula, forming, with nearby islands, an autonomous region of Italy. Area (of the region), 9,301 square miles; pop. (est. 1954), 1,322,898. Cagliari (pop. 1951, 138,539) is the capital and chief city. Principal occupations are farming, livestock raising, mining, and fishing.

SASKATCHEWAN. Situated between Alberta and Manitoba, Canada's other Prairie provinces, Saskatchewan extends over 251,700 square miles, including 13,727 square miles of lakes. The province's population totals 906,000 (est., September 1959), and its largest cities are Regina, the capital, 100,800; Saskatoon, seat of the provincial university, 82,769; Moose Jaw, 31,800; and Prince Albert 22,000.

Government.—The crown is represented by a lieutenant-governor, who is advised by an Executive Council (cabinet) drawn from the majority party in the unicameral legislature. Elected for a maximum term of five years, the Legislative Assembly is subject to dissolution on advice of the cabinet. The Co-operative Commonwealth Federation (CCF), under the leadership of Premier Thomas C. Douglas, has been in office since 1944. In the 1959 legislature, which was elected in 1956, the CCF held 36 seats, while the official Liberal opposition had 14, and the Social Credit Party, 3. The province was represented by 16 Progressive Conservative members and one CCF member in the federal House of Commons; it has six seats in the Senate.

Finance.—Estimated budgetary revenues for the fiscal year ending March 31, 1960, are $133,325,210, and expenditures, $133,245,440. The net debt of the province was $41,283,921 on Dec. 31, 1958.

Education.—During the 1957–58 school year there were 151,667 pupils in public elementary schools, 40,280 in public secondary schools, 3,196 in private schools, and 147 in the provincial School for the Deaf at Saskatoon. The University of Saskatchewan had 3,544 full-time degree students, while the two teachers colleges graduated 585.

Transportation and Communications.—There are 165,000 miles of municipal and provincial roads, the latter accounting for 8,155 miles of the total, including 2,011 miles of paved and 6,090 miles of graveled roads. Railway mileage in the province is 8,739. On March 31, 1959, there were 314,178 licensed motor vehicles, of which 199,495 were passenger automobiles. The government transportation company operated 52 buses on runs totaling 3,210,385 miles in 1958. The major cities are served by national airways, while the provincial government operates an air service to the north and an air ambulance. There were 210,237 telephones in service at the end of 1958, and 14 radio and 5 television transmitting stations.

Agriculture.—Cash farm income in 1958 was estimated at $571,600,000, the major items being wheat, $271,925,000; oats, $7,210,000; barley, $32,555,000; flax, $17,880,000; cattle, $102,793,000; dairy products, $29,183,000; poultry and eggs, $20,617,000; and hogs, $33,737,000. Adverse weather conditions, including a heavy early snowfall, threatened to reduce materially the quality and yield of the 1959 grain crops, about 25% of which were still unharvested in mid-October 1959. The preliminary estimate of grain production for 1959 was (in millions of bushels) wheat, 192; oats, 83; barley, 87; rye, 2.5; and flax, 11.3.

Mineral Production.—Preliminary figures for 1958 indicate that the value of mineral production was $213,720,594, an increase of $52,233,562 over 1957. Values and quantities of the chief minerals were: uranium, $58,705,000 (5,869,500 pounds); copper, $19,160,327 (75,345,369 pounds); zinc, $10,611,504 (97,711,822 pounds); gold, $3,030,302 (89,179 ounces); silver, $1,149,996 (1,323,813 ounces); coal, $4,021,596 (2,073,985 tons); sodium sulfate, $2,764,651 (167,397 tons); salt, $1,290,000 (45,500 tons); structural materials (cement, clay, sand, gravel), $8,993,038; oil, $100,905,000 (46,500,000 barrels); natural gas, $1,431,000 (15.9 billion cubic feet). During 1958, 507 oil wells (to total 3,664) and 18 gas wells (to total 191) were drilled.

Other Production.—For the year ending March 31, 1958, commercial fish production was valued at $2,010,084, forest products at $7,693,874, and ranch-raised and wild fur at $3,253,059. Gross capital investment for 1958 was $627 million, and construction of all types totaled $376 million. Net commodity production, including agricultural products ($807 million) and manufacturing products ($326 million), reached $1,133 million in 1958. Retail trade was estimated at $902 million in 1958. Personal income in 1958 totaled approximately $1,095 million.

Principal Events, 1959.—On the provincial political scene, party standings in the Legislative Assembly remained the same as the CFF retained the Kinistino electoral division in a June by-election. In September the Liberal Party elected W. Ross Thatcher, a rancher and former businessman of Moose Jaw, as its leader.

At the 1959 session of the legislature, 111 public and 13 private bills were passed. Enactments included a provision for new types of liquor outlets for both men and women, subject to local option, and the institution of a farm credit plan to

[6] "Congressional Atomic Energy Group Studies Waste Disposal Problem," *Science*, 129:375 (1959).

assist young farmers to establish themselves on economic farm units.

In July the government appointed a South Saskatchewan River Development Commission to guide development of provincial aspects of the huge water, irrigation, and power project announced in 1958. Construction of the dam on the South Saskatchewan River near Outlook had commenced earlier in the year. The Saskatchewan Power Corporation began operating new generating stations at Saskatoon and Estevan which would increase its total generating capacity to 514,000 kilowatts by the end of 1959.

Saskatchewan farm organizations sponsored a mass delegation to Ottawa to request deficiency payments on grain delivered to the Canadian Wheat Board during the crop years 1955 to 1958. The delegates were accompanied by farmers from the other Prairie provinces when they met the federal cabinet on March 10, 1959.

The University of Saskatchewan celebrated its 50th anniversary, and Dr. J. W. T. Spinks, dean of graduate studies, was appointed to succeed Dr. W. P. Thompson, who retired as president of the university on November 1.

In July, Queen Elizabeth II and Prince Philip visited Saskatchewan. Principal stops were made at Saskatoon (July 22) and Regina (July 23).

ALLAN R. TURNER,
Archival Assistant, Saskatchewan Archives Board.

SATELLITES, Earth. See ADVANCED RESEARCH PROJECTS AGENCY; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; SPACE FLIGHT; and the Index entry, *Satellites, Earth.*

SAUDI ARABIA. This kingdom in the Arabian Peninsula covers an area of 609,841 square miles and is bounded by Jordan and Iraq on the north; Kuwait on the northeast; the Persian Gulf, Qatar, the Trucial States, and Muscat and Oman on the east; Aden and Yemen on the south; and the Red Sea on the west. The distance along the Red Sea is about 1,100 miles, and bordering it is a coastal plain, called Tihama, which varies in width from 30 miles in the south to a few miles in the north at ʿAqaba. From the plain, mountains rise abruptly to 8,000–9,000 feet in the region around Mecca, and a plateau descends gradually eastward to the Persian Gulf region where there are wide mud flats and a barren limestone desert marked by oases.

Population.—No census has ever been taken, but the population is about 6 million, divided among the four provinces as follows: Hejaz, 1,250,000; Nejd, 1,500,000; Asir, 1,000,000; and al-Hasa, 2,250,000. Jidda, the most populous city (250,000), is the main port and commercial city, and, until 1958, the site of most departments of government, as well as the residence of most accredited foreign diplomats. Other cities in the Hejaz are Mecca (125,000), the holy city of Islam; Medina (50,000); and al-Taif (25,000). In the oil-producing area on the east coast, principal cities are Ras Tanura, Dhahran, Hofuf, Dammam, and al-Khobar, and in the interior the capital city of Riyadh, with an expanding population of nearly 200,000 in 1959, is fast becoming a modern and urbanized center.

Government.—King Saud ibn Abd al-Aziz ibn Abd al-Rahman al-Faisal al-Saud succeeded his father on the throne in 1953 and immediately appointed his brother Faisal as crown prince and prime minister. Absolute control of the state is in the hands of the Saud family. On May 11, 1958, King Saud issued a royal decree revising the Statute of the Council of Ministers. The new statute, consisting of 50 articles which for the present serve as a constitution for the government of the state, provides for a president of the Council of Ministers appointed by the king. Other ministers are appointed by the king on the recommendation of the council's president, who has been Crown Prince Faisal. On the resignation of the president, all members of the council must resign, and the president may also demand the resignation of an individual minister. Meetings of the council are secret, and the council acts as a legislative body as well as the executive cabinet of the government. Its membership is limited to ministers of state, department ministers, and royal advisers who may be appointed to the council by the king on the recommendation of the council president. Every minister has the right to present to the council a project of law within the scope of the functions of his ministry, and the council may pass or reject it. Veto power over acts of the council rests with the king.

WIDE WORLD

Arriving in Cairo, August 31, on state visit, King Saud of Saudi Arabia is escorted by UAR President Nasser (right).

Religion and Education.—The great majority of Saudis adhere to the Wahhabi sect, which follows the Hanbalite legal code of the Sunnite creed and was developed in the 18th century as a puritanical movement to oust non-Moslem philosophies and practices from Islamic society. The government removes most fees and charges for pilgrims entering the holy cities of the Hejaz, and encourages the influx of pilgrims from all Moslem lands.

Primary education throughout the land is free of charge but schools are not available in every locality. A considerable portion of the budget is spent for education. The buildings of King Saud University in Riyadh were ready for use in 1959, although not many students were prepared for entrance. ARAMCO has established training schools for the children of its employees and has about 3,000 pupils enrolled. In addition, there are numerous religious schools for the education of jurists and theologians.

Finance.—The Saudi Arabian currency is based on the riyal (SR), which is officially equal to U.S.$0.27 but was sold on the free market for U.S.$0.193 during most of 1959; 40 riyals are equal to one gold Saudi sovereign (SS), which has a gold content of U.S.$8.24. In 1952 the Saudi Arabian Monetary Agency was established to strengthen and stabilize the currency of the state and to fix its value in relation to foreign currencies, to act as the central banking agency for the government, to regulate commercial banks and exchange dealers, and to approve imports and allocate foreign exchange for imports. The state budget for 1959 announced in January balanced revenues and expenditures at SR1,410 million, with SR160 million set aside for debt retirement. About 90% of the income of the government is derived from oil royalties and taxes on oil industries. A very sizable portion of the expenditures goes to support various Arab tribes and their leaders who are almost entirely dependent on the king's largess.

Transportation and Communications.—Over 10% of the budget is expended on expanding and maintaining means of transport and communication. Most highways in Saudi Arabia are inadequate for the limited traffic. Hard-surfaced roads are too expensive for the number of motor vehicles, and the difficult volcanic terrain, shifting sands, intense heat in summer, and flash floods in winter present engineering problems of the first order. The government-owned railroad connecting Riyadh with Dammam and Dhahran has 351 miles of main track and has proved very important in developing and modernizing Riyadh. The government hopes to extend the railroad to Jidda on the west coast, via Mecca and Medina.

The principal seaports are Jidda (on the Red Sea), which handles about one third of all imports, and Dammam (on the Persian Gulf), which handles nearly half of all imports. Two other ports, Ras Tanura and al-Khobar, process the remainder of the imports. Jidda, Dhahran, and Riyadh are stops on international air lines, and the Royal Saudi Arabian Airlines serves Riyadh, Medina, Dhahran, Hofuf, and al-Kharj, and has scheduled service to Egypt, Syria, Lebanon, Jordan, Yemen, Sudan, Ethiopia, and Pakistan.

Petroleum Resources.—The Arabian American Oil Company (ARAMCO) originally held concessions for the development of oil resources in 440,000 square miles of territory, including rights in Saudi Arabia's share of the Neutral Zone and preference rights considerable distance west of the exclusive concession area. Since 1933, when the concession was granted, ARAMCO has relinquished rights in the Neutral Zone, all preference rights west of the 46th meridian, and in about

100,000 square miles. The Paul Getty Oil Company holds the concession for the Neutral Zone, and the Japanese Petroleum Trading Company in 1957 obtained concession for oil resources in the Neutral Zone's offshore area.

ARAMCO continues exploration and geological work throughout Saudi Arabia; in 1959 three groups of seismographers and three structural drilling parties were working in the remote Rub al-Khali (Empty Quarter), and two other teams were exploring northern regions. A complicated grid of pipelines has been constructed to carry crude oil to tankers and refineries. A new line in Khursaniyah was being built in 1959. The Ras Tanura refinery has an estimated capacity of 189,000 barrels daily.

In 1958, ARAMCO produced 370,485,754 barrels of oil, and its total production since 1933 was 3,400,339,604 barrels of crude oil. Furthermore, its estimated proved reserves were about 36,700,000,000 barrels. Additional reserves undoubtedly will be found as exploration reveals new fields. ARAMCO also operates a 1,068-mile-long pipeline connecting the Abqaiq field with Sidon, Lebanon. The western portion of the line is operated by Trans-Arabian Pipe Line Company (TAPLINE), an ARAMCO subsidiary.

About 50% of ARAMCO's net income goes to the Saudi Arabian government in taxes and royalties. About 14,600,000 barrels were produced by Getty Oil for Saudi Arabian account. Estimated oil receipts for the Saudi Arabian government in 1958 were about $304,000,000.

Agriculture.—Due to lack of water, less than 15% of the land is arable. The principal agricultural crop is dates; annual production approximates 500,000 tons, all of which is consumed locally, and sizable amounts are imported from Iraq. Sorghum is the second largest crop. Other crops are wheat, rice, coffee, fruits, and vegetables. The raising of sheep and goats is the main occupation of the Bedouin tribes. The raising of horses and camels has greatly decreased in recent years. Experimental agricultural institutes have been set up at al-Kharj and in the province of al-Hasa. When irrigation projects under construction are completed, more water for agricultural purposes will be available, although most of the water to be brought into Riyadh from the Euphrates will be used by the urban population.

Principal Events, 1959.—The main problems of the state have centered around a financial crisis. Oil expansion slowed very materially in 1956 and greater production was not resumed until 1958. World oil markets were depressed, thus reducing expected oil income to Saudi Arabia. With government expenditures running ahead of income in 1957, drastic curtailment was ordered in 1958 and was continued throughout 1959. Strict budgetary control was instituted and various import items such as automobiles were cut back drastically. All commercial banks were ordered to deposit 15% of their capital with the Saudi Arabian Monetary Agency to strengthen the finances of the state. Pressure was put on the oil companies to produce more oil and to increase royalties paid to the government. Of the 15 fields discovered by ARAMCO, only eight were operated in 1958, and the government believed that far greater production was possible.

Abdallah al-Tariki, director general of petroleum and mineral affairs for Saudi Arabia, led an 8-man delegation to the Arab Petroleum Congress at Cairo in April and took a leading part in its deliberations. After ARAMCO had offered two seats on its board of directors to representatives of the Saudi Arabian government, Abdallah al-Tariki and Hafidh Wahhab were nominated in April 1959 to serve as the two members.

Resumption of diplomatic relations with Great Britain were refused until the Buraimi Oasis dispute was settled. During the year, Japan established diplomatic relations with Saudi Arabia, and West Germany raised its representation to the level of an embassy.

King Saud paid an official state visit to the United Arab Republic on August 31–September 4. He and President Nasser reportedly agreed to cooperate in opposing Communist expansion in Iraq and to continue the blockade of the Suez Canal (q.v.) directed against Israel.

(See also MIDDLE EAST.)

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SAVINGS. Liquid savings of individuals in the United States totaled more than $216 billion at the beginning of 1959. During 1958 these savings, which include currency, checking and savings accounts, and United States government securities, increased by $11 billion. This was the largest yearly gain in liquid savings in nine years. Saving in these liquid forms continued at a very high rate in the first three quarters of 1959.

The increase in total liquid assets stemmed almost wholly from growth in savings accounts (including shares in savings and loan associations), as is shown in Table 1. Savings accounts amounted to more than $129 billion at the end of 1958, a gain of more than $12 billion during the year. Both demand deposits and currency increased only slightly during 1958. These liquid assets, which earn no interest, totaled a little more than $57 billion at the end of 1958. Individuals continued to reduce their holdings of United States government securities as their yield became less competitive with other forms of investment. A decline of $2.5 billion in holdings of these securities during 1958 was the largest in several years and brought the total held at the end of the year to about $29 billion.

Table 1—ESTIMATED LIQUID ASSET HOLDINGS OF INDIVIDUALS IN THE UNITED STATES
(In billions of dollars)

Assets	1956[1]	1957[1]	1958[1]
Currency	21.1	21.1	21.4
Demand deposits	35.9	35.2	36.0
Time deposits	73.3	79.3	86.3
Savings and loan shares	33.9	38.2	43.6
U.S. government securities	31.1	31.6	29.1
Total[2]	195.3	205.4	216.4

[1] End of the year. [2] Includes the holdings of farmers and professional persons, but not trust funds administered by corporate trustees. (Sources: Federal Reserve Board and Securities Exchange Commission; data adjusted for differences in coverage.)

The large increase in total personal liquid assets in 1958 was brought about by a rise in average holdings as well as by a small increase in the number of spending units that possessed liquid assets. Approximately 42.5 million of the 57 million spending units had some liquid assets at the end of 1958, compared with 42 million a year earlier, according to the Federal Reserve Board's *1959 Survey of Consumer Finances.* Liquid assets of $5,000 or more were held by 10% of spending units, while smaller amounts were held by 65%, as is shown in Table 2.

Although some low-income consumers had large holdings of liquid assets, the higher the level of income, the more likely were large holdings to be possessed. Liquid assets of $5,000 or more were held by 34% of spending units at the income level

Table 2—SIZE OF LIQUID ASSET HOLDINGS WITHIN SELECTED INCOME GROUPS, EARLY 1959

Amounts of total liquid assets held[2]	Percentage distribution of spending units within income groups[1]				
	All spending units	Under $1,000	$3,000–$3,999	$6,000–$7,499	$10,000 and over
None	25	61	28	7	2
$1–$499	31	17	36	43	12
$500–$1,999	22	12	18	29	26
$2,000–$4,999	12	5	11	15	26
$5,000 and over	10	4	7	7	34
Total[3]	100	100	100	100	430

[1] Liquid assets are based on interviews in January through March 1959. [2] Includes all types of United States government securities, checking accounts, and savings accounts in banks and savings and loan associations and credit unions; excludes currency holdings. [3] Details may not add to totals because of rounding. (Source: *1959 Survey of Consumer Finances.*)

of $10,000 and over, compared with 4% of units with incomes of less than $1,000.

IRVING SCHWEIGER,
Associate Professor of Marketing, University of Chicago.

SAVINGS AND LOAN ASSOCIATIONS. See the Index entry.

SCHOLARSHIPS. See the Index entry, *Scholarships and Fellowships.*

SCHOOLS. See COLLEGES AND UNIVERSITIES; EDUCATION; OFFICE OF EDUCATION, U.S.; and the section on *Education* in articles on the countries and states.

SCIENCE. See articles on the various sciences: ASTRONOMY, CHEMISTRY, PHYSICS, etc.; for science in education, see EDUCATION.

SCOTLAND. Occupying the northern part of the island of Great Britain, Scotland (area, 30,410 square miles) comprises 33 counties and 196 burghs within the United Kingdom. The population was 5,223,000 on June 30, 1958, compared with 5,150,000 in mid-1957. Principal cities and their 1957 estimated populations are: Glasgow, 1,085,100; Edinburgh (the capital), 467,000; Aberdeen, 186,800; and Dundee, 178,500.

Scotland is represented by 16 Scottish peers in the House of Lords and by 71 members in the House of Commons. In local elections completed on May 7, 1959, the Conservatives won five municipal councils previously controlled by the Labour Party. Lord Strathclyde is secretary of state for Scotland in the present British government. The Scotland Bill of Aug. 1, 1958, provided for a general government grant to local authorities in place of specific grants for such purposes as education, health, and town planning.

In 1957–58 there were 2,903 primary schools (with 605,719 pupils); 785 secondary schools (239,454 students); and 1,079 centers for further education (213,512 students). University enrollment in 1958–59 totaled 17,576 students (St. Andrews, 2,391; Glasgow, 6,557; Aberdeen, 2,062; and Edinburgh, 6,566).

Grains were grown on 1,060,086 acres in 1958; green crops (including beans, peas, and potatoes) occupied 499,268 acres; and grazing land, 1,230,383 acres. In 1958 the fish catch (excluding salmon and sea trout) was 292,443 tons, valued at £13,879,011. Shipbuilding, steelmaking, and mining are principal industries. Scotland's first nuclear power plant was put into operation at Chapel Cross on Feb. 25, 1959. Construction was under way in 1959 on the new Firth of Forth Bridge (see BRIDGES).

SCULPTURE. See PAINTING AND SCULPTURE.

SEATON, Frederick Andrew, U.S. secretary of the interior: b. Washington, D.C., Dec. 11, 1909. A newspaper publisher, he was appointed secretary of the interior by President Eisenhower on May 28, 1956, and remained in that position after Eisenhower's inauguration for a second term.

Educated at Kansas State College (1927–31), Seaton became the head of several firms that published newspapers and operated radio and television stations in the West and Middle West. He served two terms in Nebraska's unicameral legislature (1945–59), and in 1951 was appointed to fill a U.S. Senate vacancy. Named assistant secretary of defense on Sept. 3, 1953, he was transferred to the president's White House staff in 1955.

Seaton, who had been an active proponent of Alaskan statehood, presented to the House Committee on Interior and Insular Affairs in January 1959 the administration's case for the admission of Hawaii to statehood. On several occasions he also defended the administration's program for achieving a balanced budget by holding down expenses and increasing taxes.

SECRET SERVICE, U.S. A branch of the Treasury Department, the Secret Service was established on July 5, 1865. In 1959, Secret Service agents made security arrangements and protected the president during his visits to Canada, Mexico, Europe, and Asia. They also made security arrangements and protected the vice president when he visited the USSR and Poland.

During the fiscal year ended June 30, 1959, Secret Service agents captured 19 plants for the manufacture of counterfeit money, and $1,924,536 in counterfeit bills. Of that total, only $260,329 was successfully passed on storekeepers and cashiers. The balance was captured before it could be put into circulation. Seizures of counterfeit coins totaled $7,173.57, of which $6,766.32 was passed. There were 308 new counterfeit note issues and variations thereof during the fiscal year, and 343 persons were arrested for violating the counterfeiting laws. There were 40,655 forged government checks received for investigation. Agents completed investigations of 32,173 forged checks worth $3,015,304 and arrested 2,878 check forgers, but on June 30, 1959, there was a backlog of 24,659 forged checks awaiting investigation. There were 5,232 forged United States savings bond cases received for investigation, and agents completed investigation of 3,618 forged bonds worth $518,190, and arrested 67 persons for bond forgery.

Arrests for all other offenses totaled 167. There were 3,163 convictions, representing 98.1 per cent of convictions in all cases prosecuted, some of which were pending from the previous year.

Cases of all types received for investigation totaled 53,271, and 19,060 cases were pending at the beginning of the year. Although 42,816 cases were closed during the year, there were 29,515 cases awaiting investigation as of June 30, 1959.

U. E. BAUGHMAN,
Chief, U.S. Secret Service.

SECURITIES. See STOCKS AND BONDS.

SECURITIES AND EXCHANGE COMMISSION. A bipartisan, quasijudicial agency of the United States government, the Securities and Exchange Commission (SEC) administers several laws in the general field of securities and finance which were enacted during the years 1933–1940 for the protection of the investing public. In 1959 the commission celebrated its 25th anniversary.

Securities Act of 1933.—This law requires registration with the commission of securities offered

for public sale. It also prohibits fraud and deceit in the sale of securities (buttressed by SEC powers of investigation and enforcement), and it provides recovery rights to defrauded investors.

The objective of the registration requirement is to provide disclosure of financial and other information concerning securities offered for public sale. A prospectus containing the salient facts must be delivered to investors. Registration does not connote commission approval of the merits of securities, nor is registration a warranty of the accuracy of the facts disclosed. However, penalties attach to the filing of false information, and investors who suffer losses in the purchase of registered securities have important recovery rights if the facts are misrepresented.

The filing of registration statements during fiscal 1959 reached a new high of 1,226, proposing public offering of securities aggregating $16.6 billion, some $300 million less than the all-time high of $16.9 billion recorded in fiscal 1958. Securities registered for public sale in fiscal 1959 aggregated $15.7 billion, bringing the total of registered securities to $162.9 billion.

Securities Exchange Act of 1934.—Under this law, companies whose securities are listed on national securities exchanges must register with the commission and file annual and other periodic reports, thus providing disclosure of current financial and other information for the investing public. At the end of fiscal 1959, 3,808 security issues of 2,236 issuing companies were so listed, and the trading volume therein during the year amounted to $53.4 billion.

Under the law, holders of listed securities also must be provided pertinent information when their proxies are solicited on corporate matters. In addition, management officials and large stockholders of listed companies must report their transactions in the equity securities of such companies and are accountable to the issuer for short-term trading profits therein—measures designed to curb misuse of "inside" information. During the year 1,975 proxy statements and 39,275 insider trading reports were filed.

This law further provides a system for the regulation of securities markets designed to eliminate all impediments to free and open markets, and the commission exercises a continuing surveillance in the interest of promoting just and equitable principles of trade and curbing fraud, manipulation, and other unlawful conduct. Persons or firms who conduct an over-the-counter securities business must register with the commission and conform their trading practices to the law and SEC rules thereunder. At the end of fiscal 1959, 4,907 brokers and dealers were so registered. Also registered were 14 exchanges and one over-the-counter securities association.

To augment this regulatory system, the commission is empowered to investigate complaints or other indications of law violation and to enforce sanctions against violators. In the exercise of these law-enforcement activities, the commission during fiscal 1959 referred 45 cases to the Department of Justice for prosecution, sought court injunctions for fraud or other law violations in 58 cases, and instituted 111 administrative proceedings on the question of whether the registration of broker-dealer firms should be denied or revoked.

Public Utility Holding Company Act of 1935.—This law provides for SEC regulation of the financial and related activities of holding company systems of electric and gas utility companies in the interest of protecting investors and consumers against certain abusive practices. It also provides, generally speaking, that holding company operations shall be confined to an integrated system of utility properties, that their corporate and capital structures be simplified, and that voting power among security holders be redistributed on a fair and equitable basis. Each such system must register with the commission.

The law prescribes standards governing mergers, consolidations, purchase of utility securities and assets, issuance and sale of securities, servicing contracts, and similar matters.

Offerings of system securities to the public and financial institutions in late 1959 were running at about $480 million per year, and sales of securities by subsidiaries to their respective parent companies approximated $372 million a year. Most of these funds are used for property additions and improvements.

The integration and simplification program was virtually completed by 1959. This program, together with exemptions from the law because of the intrastate character of operations or otherwise, has resulted in the release from SEC jurisdiction of 2,064 of the 2,387 companies which at one time or another were subject to the law. Of the 2,064 companies, 924 with aggregate assets of $13 billion were divested by holding companies because they were not retainable under standards of the law; 777 were dissolved or absorbed in consolidations; and 363 were exempted or converted to some other status. It is expected that 18 holding company systems with assets of about $10.8 billion will continue as registered systems subject to continuing regulation by the commission.

Investment Company Act of 1940.—This law provides for the regulation of companies engaged primarily in the business of investing and trading in securities in order to curb certain abusive practices. The commission is not empowered, however, to supervise the investment activities of such companies. The extent of public investor interest in the securities of investment companies is evidenced by the growth of registered investment companies from $2.5 billion in 1941 to $20 billion at the end of fiscal 1959, when 512 investment companies were registered.

Other Functions.—The commission also administers the Trust Indenture Act of 1939, which governs trust indentures pursuant to which debt securities are issued, as well as the Investment Advisers Act of 1940, which prescribes certain standards governing the activities of investment advisers, and it serves as adviser to federal courts in corporate reorganization proceedings under Chapter X of the Bankruptcy Act.

ORVAL L. DUBOIS,
Secretary.

SECURITY, National. See NATIONAL SECURITY.

SECURITY COUNCIL (U.N.). See UNITED NATIONS.

SECURITY COUNCIL, National. See the Index entry, *National Security Council.*

SEGRÈ, Emilio Gino, American physicist: b. Tivoli, Italy, Feb. 1, 1905. On Oct. 26, 1959, the Swedish Academy of Sciences announced that Segrè and Owen Chamberlain (q.v.) would share the 1959 Nobel Prize in physics. The two scientists, colleagues at the University of California at Berkeley, performed successful experiments in 1955 which confirmed the existence of the antiproton.

After serving in the Italian Army, Segrè took his doctorate at the University of Rome in 1928, and from 1930 to 1935 he taught physics there under Enrico Fermi, who later played a key role in developing the atomic bomb for the United States. Segrè left Rome to become professor of physics and director of the physics laboratory at the University of Palermo. One of a group of Italian scientists who chose exile to escape the Fascists, Segrè in 1938 went to the United States and became a researcher at the University of California's radiation laboratory. From 1943 to 1946 he headed a team of nuclear scientists working at Los Alamos, N. Mex.; he then returned to Berkeley as professor of physics.

Working with Chamberlain and other scientists, Segrè succeeded in creating and observing an antiproton in 1955. This was accomplished by directing a stream of protons of 6.2 billion electron volts at a copper block, creating a profusion of subatomic particles, a few of which were antiprotons. The mutual annihilation of a proton and an antiproton, with a resultant release of energy, was photographed at the radiation laboratory in April 1958.

SEGREGATION, Racial. See EDUCATION; NEGROES, AMERICAN.

SEISMOLOGY. Earthquakes in 1959.—The year 1959 was unusually quiet in regard to seismic occurrences. The year began with a slight quake near the coast of Brittany, France, on January 2, and minor damage was reported in the Channel Islands. Numerous slight quakes occurred around the globe in the first three months of 1959, but only one shock was of magnitude 7 or over (on a scale of 0 to 10). That came in Peru on February 7, but it caused no damage.

Activity increased somewhat in the second quarter. Extensive damage was done in the Mugla Province of Turkey on April 25, but the first casualties of the year resulted from a quake (magnitude 7½) centered off the northern coast of Taiwan (Formosa) on April 26; several persons were killed, but property damage was minor.

The sharpest earthquake of the year (magnitude 8 to 8¼) occurred on May 4 near the east coast of Kamchatka, off the Bering Sea. Only one person was killed, but several were injured. On May 24, Mexico experienced a quake which was only of magnitude 6¾, but it was felt strongly in Mexico City and one casualty was reported from Oaxaca. Slight damage was done, with one casualty, in northern Chile on June 14 by a quake of magnitude 7¼.

Three of the year's most severe earthquakes, from the standpoint of loss of life, came in August, including one in the United States. Southern Taiwan suffered 16 fatalities on August 15 in a quake of magnitude 6¾. On August 17–20 a series of earthquakes struck the Yellowstone Park area in Wyoming and Montana. An estimated 28 persons, mostly campers and vacationers, were killed in the resulting landslides, including a major slide on the Madison River in Montana. Many of the familiar landmarks in the park were affected by the tremors and extensive damage was caused to park facilities. (See also MONTANA; WYOMING.)

The largest number of casualties from an earthquake in 1959 resulted from shocks which struck Mexico on August 26, claiming 40 lives in the State of Veracruz. Albania suffered two fatalities and considerable property damage in a quake on September 1. In the South Pacific, the Kermadec Islands were shaken by a series of quakes on September 14–15, and the shocks continued intermittently throughout September and October, but without damage. At least 8 were killed in a quake on October 25 in the Erzurum area of Turkey. On December 24 a slight earthquake occurred in southern Peru.

Seismological Research.—The most important event in research seismology in 1959 was the release by the State Department in July of the report of President Eisenhower's Panel on Seismic Improvement, a special group of the President's Science Advisory Committee. The panel, headed by Dr. Lloyd V. Berkner, president of Associated Universities, Inc., was appointed on Dec. 28, 1958, and charged with reviewing the feasibility of improving seismic nuclear detection.[1]

When a disturbance, whether artificial explosion or natural earthquake, occurs within the earth, waves are generated both through the earth (body waves) and along the surface (surface waves). The body waves are compressional when the earth's motion is longitudinal in the direction of the wave, and torsional when the motion of the earth is transverse to the wave. An explosion in a homogenous earth, being a symmetrical source, gives rise only to compressional waves and to transverse waves with a vertical component. Moreover, an earthquake, being a fracture, generates a compression ahead of the pushing rock and a rarefaction behind it. An explosion, on the other hand, generates compression in all directions. Body waves can therefore be used to discriminate between an explosive and an earthquake source.

[1] The question of underground nuclear tests and means of detecting, or concealing, them played a key role in the continuing East-West talks in Geneva in 1959, and the report of the Berkner panel was presented to the conference by the United States in June.

UPI

Earthquakes in Yellowstone Park area (August 17–20) produced this massive landslide at Madison Canyon in southern Montana. Series of slides caused an estimated 28 deaths.

Surface waves are channel waves or guided waves, in which the energy is confined or guided by the outer layers. They form two distinct groups: Love waves, in which the earth particles move in a horizontal plane, and Rayleigh waves, in which the earth particles move in elliptical orbits in the vertical plane. Love waves have a higher velocity, and hence arrive earlier at a seismic observatory. Both types cover a complete spectrum within periods of a few seconds to several minutes, the wave length or period increasing with the depth of penetration. Columbia seismologists, using seismographs of much longer periods than hitherto thought feasible, have detected surface waves which have penetrated halfway down into the earth, a finding which opened a completely new field of investigation.

The president's special panel suggested practical research in the investigation of both body waves and surface waves which would provide a seismic means of differentiating between an earthquake and an explosion. The panel conceded that the Soviet Union in recent years, by its financial emphasis on seismic research, has come "to enjoy a position superior in many respects" to that of the United States. But the group gave the assurance that the United States has "sufficient talent and instrumentation . . . to match and surpass this Soviet effort." Dr. Frank Press, formerly of Columbia and now of the California Institute of Technology, was named chairman of a committee to implement the recommendations of the president's panel.

(See also COAST AND GEODETIC SURVEY; GEOLOGY.)

J. JOSEPH LYNCH, S.J.,
Director, Fordham Seismic Observatory.

SELECTIVE SERVICE. The Selective Service System has been in continuous operation in the United States since 1948. On March 23, 1959, Congress extended to July 1, 1963, the authority to induct men under current legislation.

The Selective Service System registers men at age 18, classifies them as to availability for service, and selects men to fill calls for military personnel issued by the Department of Defense, which an-

nually requires several hundred thousand men to maintain the strength of the armed forces. Most of this requirement is met by enlistment, but the difference between the numbers enlisting and the number required is supplied by the Selective Service System through inductions.

Deferments from active duty are provided for men who satisfactorily participate in the Reserve and the National Guard. If a man is discharged from the Reserve after 6 years of satisfactory Ready Reserve participation, he is eligible for draft classification IV-A as having completed service under the Universal Military Training and Service Act. The effect of this deferment policy is to induce men to enter and remain in the Reserve, thus maintaining the strength and stability of the Reserve forces.

One effect of Selective Service classification is to divide manpower between military and civilian needs. Deferments in the national interest are provided for persons engaged in study or activities vital to the nation. Through its responsibility to defer such persons, the Selective Service System influences men to prepare for, enter, and remain in occupations contributing to the national health, safety, or interest. This channeling of civilian manpower to strengthen the nation is a main function of the Selective Service System.

Deferments are provided in cases where induction would result in extreme hardship to dependents. Also deferred are apprentices and agricultural workers. Exemptions are provided for ministers and divinity students, some aliens, some officials, veterans, and sole surviving sons. Particular stress in recent years has been accorded to the deferment of scientists, engineers, and teachers, in order to help ease the nationwide shortages in these critical occupational fields. Deferment of students has been a traditional Selective Service concern. Since 1951 the system has administered tests to more than 600,000 college students. The results of these tests provide local boards with a guide in considering students for deferment. College class standing is an alternative criterion.

The Selective Service System is also responsible for the deferment of members of the Standby Reserve, numbering more than 1.6 million men and women by the autumn of 1959. These reservists, subject to recall in the event of war or a national emergency declared by Congress, may be recalled only after their availability has been determined by Selective Service. Local boards determine whether a standby reservist is available for recall, should remain in vital civilian work, or should remain in civil life because his recall would result in extreme hardship to dependents.

The Selective Service System also selects applicants for enlistment in the "critical skills" reserve program. Under this program, a man who believes he possesses a critical skill which is being utilized in an industrial or research activity affecting national defense, may apply to the local board for selection for enlistment in the Ready Reserve. If selected, he enlists, performs 3 to 6 months of active duty for training, then serves the remainder of his 8-year enlistment in the reserve.

The fourth major responsibility of the system is to be prepared to function in an emergency. To meet this responsibility, the system engages in planning and training to the end that any of its components will be in a position to supply manpower and manpower information under emergency conditions.

Through December 1959, inductions under the law totaled 2,619,507. Of these, 2,508,283 were inducted into the Army, 83,858 into the Marine Corps, and 27,366 into the Navy. During 1959 the Department of Defense called for the following number of men: January and February, 9,000 each; March, 8,000; April, 7,000; May and June, 6,000 each; July, 8,000; August and September, 7,000 each; October, November, and December, 9,000 each.

The Selective Service System has National Headquarters in Washington, D.C., and 56 divisional headquarters—in each state, New York City, the District of Columbia, Guam, Puerto Rico, the Virgin Islands, and the Canal Zone. Local boards, nearly 4,000 in number, are manned by volunteers in every county or comparable political subdivision with the exception of heavily and sparsely populated areas. Nearly 40,000 citizen volunteers fill many posts in the system. Paid personnel are provided for local board clerical work and for duties in state and national headquarters.

LEWIS B. HERSHEY,
Lieutenant General, U.S. Army;
Director, Selective Service System.

SENATE, U.S. For list of members, see UNITED STATES; and for legislation, see the Index entry, *Congress, U.S.*

SENEGAL. The Republic of Senegal, situated on the northwest coast of Africa, is an autonomous republic of the French Community (q.v.) and a member of the Mali Federation (q.v.). Estimated area, 76,124 square miles; pop. (est. 1958), 2,300,000, including (in 1956) 48,593 nonindigenous persons, mainly French. French is the official language. Chief cities and populations (est. 1957): Dakar, the capital, 234,500; Rufisque, 49,800; Kaolack, 46,800; and Saint-Louis, 39,800.

Government.—A former French overseas territory included within the federation of French West Africa (q.v.), Senegal chose the status of a member state of the French Community on Nov. 25, 1958. As an autonomous republic, Senegal has the right of self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Senegal adopted its constitution on Jan. 24, 1959. The Legislative Assembly consists of 80 members elected by universal suffrage for a five-year term. The president of the council (premier) is invested by a majority in the assembly. Mamadou Dia, a leader of the African Federalist Party, is premier.

Education and Religion.—In 1958 there were 457 schools with a total of 86,575 pupils (25.6% of the school-age population). Expenditure on education totaled 1,856 million francs CFA, or about 12.5% of the budget. The University of Dakar had 1,069 students in 1958. The majority of the natives are Moslems; the remainder are mostly animists, with some Christian communities existing among the Diola and other ethnic groups.

Finance.—The ordinary budget for 1958 totaled 13,876 million francs CFA; the extraordinary budget, 1,068 million (the franc CFA equals 2 metropolitan francs). In the period 1947–57, French financial aid granted under the Economic and Social Investment Development Fund (FIDES) was equal to about $140.5 million.

Transportation.—The republic's railway (641 miles) runs from Dakar to the eastern border and has branches to Saint-Louis, Linguère, and other towns. Roads and trails total 7,286 miles (1956), including 1,011 miles of highways. Dakar is an important international air terminus and a major port of western Africa.

Production.—Agriculture is the chief occupation and provides the bulk of exports. There is some livestock raising (cattle, sheep, and goats), and fishing is important along the coast. Output of peanuts, the principal cash crop, totaled 808,467 metric tons (unshelled) in the 1957–58 season. Of secondary importance are palm kernels, castor beans, gum arabic, tobacco, and sisal. Chief subsistence crops are millet, manioc, maize (corn), peanuts, and rice. Industries, centered mainly in Dakar, include cement, chemicals, soap, beer, peanut oil (132,000 metric tons in 1958), and other foodstuffs. Native handicraftsmen produce pottery, jewelry, and woven goods. The chief minerals are phosphates and titanium concentrates.

Foreign Trade.—Exports in 1958 totaled 28.8 billion francs CFA; imports, 43.8 billion (figures include data for Mauritania and Soudan, whose foreign trade passes mainly through Dakar). Senegal's chief exports are peanuts, peanut oil, and phosphates (105,000 metric tons in 1958).

Principal Events, 1959.—Elections to the Legisla-

tive Assembly on March 22 were won by the Progressive Senegalese Union, led by Premier Mamadou Dia and Léopold Senghor. The Union (which on March 25 was absorbed in the new African Federalist Party) obtained all 80 seats in the assembly. The chief election issue was Senegal's participation in the Mali Federation (q.v.), supported by the victorious party, and opposed by the leftist African Regroupment Party and leading Moslem elements. Balloting was marked by attacks on polling places and other violence, and the army was required to restore order in several towns. Mamadou Dia was re-elected premier on April 5. French President Charles de Gaulle, in an address in Saint-Louis on December 12, declared that the Mali Federation would attain to full sovereignty with the aid and accord of France.

M. J. G.

SEYCHELLES. This British crown colony (area, 156¼ square miles; pop., est., 41,081 in 1957) lying in the Indian Ocean 970 miles east of Zanzibar consists of 62 coral reefs and some 30 islands; of the latter the largest is Mahé (56 square miles), on which is Victoria, the capital and chief port. Other principal islands are Praslin, Silhouette, La Digue, Curieuse, and Félicité; dependent islands include the Amirantes, Alphonse, Bijoutier, St. François, St, Pierre, and the Cosmoledo group.

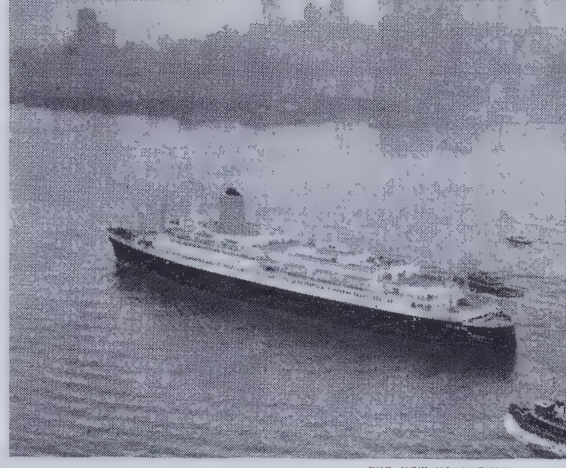
A governor (Sir John Thorp, assumed office in 1958) presides over the 8-member Executive Council and the 12-member Legislative Council. Revenue in 1958 was Rs.4,622,819; expenditure, Rs.5,395,796 (1 Seychelles rupee = U.S.$0.21); the 1959 approved recurrent estimates also showed a substantial deficit. Some Rs.5 million was allocated to development in 1959. A further sum of Rs.13,333,000 is to be expended on a 5-year development program beginning in 1960. There are 33 primary schools and 5 secondary schools.

In 1958 the chief exports were copra (5,598 tons), cinnamon leaf oil (82,190 kilograms), guano (16,805 tons), salt fish (144 tons), patchouli leaves (9,713 kilograms), and vanilla (600 kilograms). Imports were valued at Rs.9,495,612; exports at Rs.8,165,878. About 84 of the 120 miles of roads are motorable. A system of 40 miles of tarmac roads is nearing completion. Steamships on the Bombay-Mombasa-Durban run call at Victoria.

SHETLAND ISLANDS. Situated northeast of the Orkney Islands (q.v.) and off the northern coast of Scotland, this archipelago of about 100 islands forms a Scottish county (known also as Zetland). Aggregate area, 551 square miles; estimated population, 18,400 in December 1957, compared with 19,352 at the 1951 census. The most populous among 19 inhabited islands are Mainland, on which is Lerwick (1951 pop., 5,538), the capital and chief port; and Yell, Unst, Whalsey, West Burra, and Bressay. Principal industries are fishing, wool production and weaving, and the cultivation of oats, barley, and potatoes. The breeding of sheep, cattle, and the islands' famous ponies is also important.

SHIPBUILDING. United States.—Private shipbuilding in the United States during 1959 reflected the worldwide drop in ship construction from the 1958 peacetime high. Falling back from 5th to 8th place in world shipbuilding, United States yards maintained significant activity largely through U.S. Navy contracts and the continuing subsidization of private ship replacements by the Maritime Administration.

Department of Labor statistics for all construction and repair workers in private shipyards showed a decrease to 124,700 in January 1959 from 125,400 for the previous January, with a further drop to 123,100 by July. Average hourly earnings, however, were up in July 1959 to $2.73 for a 39.3-hour workweek from the $2.58 for 39.8 hours reported a year earlier.



THE NEW YORK TIMES

West Germany's newest luxury liner, the *Bremen*, moves into New York harbor, July 16. A former French troopship (the *Pasteur*), the 32,336-gross-ton liner was bought by North German Lloyd and reconditioned at a cost of $17 million.

On Jan. 1, 1959, there were 75 merchant ships (aggregating 1,542,500 gross tons) on order, under construction, or awaiting delivery in privately-owned shipyards.[1] In the following 9 months, contracts were awarded for 19 new vessels, including 15 general cargo fleet replacements for 5 berth line operators; 2 diesel-powered container cargo vessels; a tanker; and a Great Lakes ore carrier. The 25 deliveries for private accounts in the same period included 21 tankers, 2 ore carriers, a self-unloader, and a ferry. Launchings comprised 18 tankers, including the 810-foot *National Defender;* the Maritime Administration's 21,000-ton N.S. *Savannah,* world's first nuclear-powered merchant ship (see ATOMIC ENERGY); 1 ore carrier; 1 ferry; and 1 Coast and Geodetic Survey vessel.

U.S. Navy contracts awarded to private shipyards through September 1959 totaled $279 million. Congress also approved construction of 3 guided-missile frigates; 3 guided-missile destroyers; 4 nuclear-powered submarines; 1 fleet ballistic missile submarine tender; 1 amphibious transport dock; 1 amphibious assault ship; 2 escort vessels; 1 submarine chaser; 1 escort research ship; and 1 oceanographic research ship.

Future construction plans envisage continuation of the Maritime Administration's subsidization of private operators; a sister superliner to the *United States;* an American President Line passenger ship; Great Lakes ore carriers; roll-on roll-off, lift-on lift-off, and container-type ships; and Maritime Administration nuclear projects.

The opening of the St. Lawrence Seaway (q.v.) increased foreign and domestic commerce on the Great Lakes during 1959. Iron ore shipments to July 1 were up to 27,463,168 tons, compared with 11,800,000 for the first six months of 1958. The steel strike, however, curtailed fleet activity and consequently decreased lake shipbuilding and repair work. Fleet shipments fell to 34,202,000 gross tons by October 1 from the 38,277,000 for the same date in 1958, and only 2 commercial vessels were built, compared with 4 for 1958.

[1] The 75 ships comprised 47 tankers, 19 cargo vessels, 3 Great Lakes ore carriers, 2 ferries, and 1 each of a seatrain, self-unloader, Coast and Geodetic Survey vessel, and a nuclear-powered passenger-cargo ship. The seatrain and 1 tanker were cancelled during the year.

Maritime Administration studies have resulted in the adaptation of Great Lakes ship construction to withstand the rigors of constant docking impact. The seaway, however, with its 15 locks, has raised navigational problems which must be resolved to accommodate the expected increase in traffic foreshadowed by the now more than 30 steamship companies using the route. Operators of ocean-going ships will have to adapt their vessels to meet these problems. Coastal and intercoastal shippers already rely on roll-on roll-off, lift-on lift-off, and container-type ships for such traffic. For inland waterway commerce, self-propelled and nonpropelled small craft provide the best service. (See also INLAND WATERWAYS.)

WORLD SHIP CONSTRUCTION

(Vessels of 1,000 gross tons or more under contract for construction as of July 1, 1959, excluding the USSR)

Nation	No. of ships	Gross tons	Nation	No. of ships	Gross tons
World total	1,919	24,855,731[1]	United States	68	1,213,200
Great Britain	369	4,686,736	Italy	73	1,156,650
Germany	312	3,779,880	Denmark	73	859,900
Japan	164	3,266,700	Spain	83	664,565
Sweden	179	2,843,320	Yugoslavia	65	536,600
Netherlands	131	1,654,985	Belgium	35	429,850
France	90	1,439,800	Poland	50	305,600
Norway	97	1,309,000	Others[2]	130	708,945

[1] Comprising 39 passenger vessels (534,819 gross tons), 729 tankers (16,124,651 gross tons), and 1,151 cargo ships (8,196,261 gross tons). [2] Comprising Finland, East Germany, Canada, Australia, India, Taiwan, Portugal, Hong Kong, Greece, Argentina, Bulgaria, Turkey, Philippines, and Ireland, each with less than 1% of the world's tonnage.

Shipbuilding in Other Countries.—Gross world tonnage of construction under way or on order on July 1, 1959 (excluding the USSR) decreased noticeably to 24,855,731 from the 31,240,368 gross tons of the previous July, with Great Britain, Germany, and Japan registering declines. Vessels under construction also dropped sharply to 1,919 from 2,415 in July 1958.

Great Britain maintained her lead in world construction with 18.9% of all shipping, despite a drop from 1958 in both tonnage and vessels. Germany, retaining second place with 15.2%, sent its largest liner, the *Bremen,* on its maiden voyage in 1959. Japan, in third place with 13.1%, had the world's largest seagoing vessel, the 104,520-ton *Universe Apollo.* Sweden held firm in fourth place with 11.4%. The United States, in eighth place with 4.9%, gave way to the Netherlands (fifth place, with 6.6%), France (sixth, with 5.8%), and Norway (seventh, with 5.3%).

(See also MERCHANT MARINE.)

CLIFFORD C. KNERR,
Secretary-Treasurer,
Shipbuilders Council of America.

SHIPPING. See Index entry.

SHOE INDUSTRY. United States Output.—In 1959 the American shoe industry produced an estimated 728.6 million pairs of shoes, an increase of 146 million over the 1958 output.

One of the reasons for increased shoe production was the introduction of the oval toe, a modified point, and a wider range of both color and style for men. Output of colored footwear for children also increased because of the introduction of new pastels and a wider variety of styles.

A dramatic new development of 1959 was the introduction of "Evershine," a chemically treated leather for men's and children's shoes. Produced by Genesco, the shoes thus treated need only be wiped with a cloth to restore the original luster.

Over 900 manufacturers employing some 261,000 workers (excluding rubber workers) comprise the American shoe industry. In 1959, women's footwear accounted for 47.5% of total production, or 344,185,000 pairs, and men's shoes for 19%, or 137,674,000 pairs. Misses', children's, boys', youths', and infants' footwear accounted for 139,684,000 pairs, and other categories for 107,097,000 pairs.

Retail prices of shoes increased slightly from a $6.10 average in 1958 to $6.33 in 1959, due to higher leather and production costs. Factory prices were expected to average about $3.76 per pair, as compared with $3.66 in 1958. Totals for shoe sales in all retail stores were $2,221 million in 1958, compared with $2,090 million in 1957.

The American shoe industry continued to produce slightly over 40% of the world's footwear. Thus the United States was the best-shod nation, with shoe consumption averaging slightly more than 3.66 pairs per capita.

World Output.—The estimated world production of leather footwear for 1959 was 1,821,600,000 pairs. Those countries with per capita production of one or more pairs in 1958 are listed in the accompanying table.

Country	Per capita shoe output (pairs)	Country	Per capita shoe output (pairs)
United States	3.66	Denmark	1.34
United Kingdom	2.80	Germany	1.36
Canada	2.76	Cuba	1.30
Australia	2.56	Norway	1.24
New Zealand	2.55	South Africa	1.22
Switzerland	1.84	Argentina	1.21
Israel	1.78	Austria	1.17
Ireland	1.64	France	1.17
Netherlands	1.62	Chile	1.04
Sweden	1.45	Brazil	1.00

GARDNER LANE,
Director, Shoe News Bureau.

SHOOTING. See SPORTS, GAMES, AND SHOWS.

SHOWS. See CIRCUSES AND RODEOS and SPORTS, GAMES, AND SHOWS. For musical and theatrical shows, see DANCE; MOTION PICTURES; MUSIC; THEATER; and for art shows, see PAINTING AND SCULPTURE.

SIAM. See THAILAND.

SICILY. An island of the Mediterranean Sea off the southwest tip of the Italian Peninsula, forming, with nearby islands, an autonomous region of Italy. Area (of the region), 9,923 square miles; pop. (est. 1954), 4,462,220. Chief cities are Palermo, the capital, 501,005; Catania, 300,298; and Messina, 220,790. The regional government is headed by a ministry responsible to an elected 90-member parliament. Sicily's chief exports are citrus fruits, wine, olives, wheat, and sulfur. Formerly one of Italy's most backward areas, Sicily has recently benefited from the Italian government's program for the economic development of the south.

In the Sicilian regional elections of June 8, 1959, the Christian Democrats obtained 34 seats (37 in 1955); the Communists, 21 (20); and the left-wing Socialists, 11 (10). The Sicilian Christian Social Union, founded by Silvio Milazzo, who split with the Christian Democrats in 1958, won 9 seats. On July 28, Milazzo was re-elected as head of the regional government, and his Communist-supported coalition government, formed on August 12, again included leftists and rightists. Milazzo resigned on December 7, when his budget was rejected in parliament, but was re-elected on December 18. (See also ITALY.)

SIERRA LEONE. See BRITISH WEST AFRICA.

SIGHT. See OPHTHALMOLOGY.

SIKKIM. See Index entry.

SILK. United States.—During the first ten months of 1959, according to the American Silk

Council, United States consumption of raw silk was 39,425 standard bales of 132.275 pounds, approximately 25% higher than for the same period in 1958 (31,426 bales). Imports of 39,813 bales were about 56% higher than for the same ten-month period in 1958 (25,392 bales). Consumption for the full year 1958 was 40,070 bales, and imports totaled 35,020 bales.

World Production.—World raw silk output totaled 33,150 metric tons in 1958 (an increase of about 3% over 1957), as shown in the accompanying table.

RAW SILK PRODUCTION, BY MAJOR COUNTRIES, 1958

Country	Metric tons	Country	Metric tons
Belgian Congo	50	Japan	20,014[1]
Brazil	180	Korea	337[2]
Bulgaria	30	Lebanon	14
China	7,548	Poland	4
France[3]	9	Rumania	15
Greece	30	Spain	40
Hungary	20	Syria	15
India[4]	866	Turkey	267
Indochina[6]	178	USSR	2,500
Iran	145	Yugoslavia	60
Italy[5]	828		

[1] First 9 months of 1959, 14,001. [2] First 6 months of 1959, 95.7. [3] First 8 months of 1959, 8. [4] First 6 months of 1959, 570. [5] First 6 months of 1959, 443.9. [6] South Vietnam, Cambodia, Laos. (Source: International Silk Association.)

World Consumption.—Reported raw silk consumption in 1958 totaled 17,825 metric tons, with Japan and the United States again leading the users, as shown in the accompanying table.

RAW SILK CONSUMPTION, BY MAJOR COUNTRIES
(In metric tons)

	1958 (12 months)	1959 (for period specified)
France	695	367 (9 months)
Germany	216	120 (6 months)
Great Britain	152	117 (6 months)
Italy	1,549	1,002 (6 months)
Korea	275	...
Japan	12,217	11,876 (9 months)
Switzerland	336	302 (9 months)
United States	2,385	2,085 (9 months)

Marketing.—The American market was no exception to the rule of increased consumption of raw silk during 1959. A substantial increase in consumption took place in Japan, where weavers enjoyed an excellent year for the export of their woven goods, thus bringing into balance the supply and demand factors in the raw silk market. The price in New York of 20/22 denier, Grade 2A advanced from a low of $3.20 a pound in January 1959 to $4.20 a pound in November. The year also witnessed the liquidation of about 50% of the Japanese government-held stocks.

(See also TEXTILE INDUSTRY.)

JOHN McN. SULLIVAN,
President, American Silk Council, Inc.

SILVER. The accompanying table shows world silver production, in millions of fine ounces. The Western Hemisphere supplied nearly two thirds of the total.

Year	World	U.S.	% U.S.	Year	World	U.S.	% U.S.
1949	174.0	39.94	22.9	1954	214.2	35.58	16.6
1950	203.3	42.31	20.8	1955	223.4	36.47	16.3
1951	199.7	39.91	20.0	1956	224.4	38.95	17.4
1952	215.5	39.84	18.5	1957	230.1*	38.72	16.9
1953	221.7	37.74	17.0	1958	236.8	36.80	16.0

* Revised. (Source: U.S. Bureau of Mines.)

United States.—Production declined from 38,165,000 ounces in 1957 to 34,111,000 ounces in 1958, or about 11%. In the first 10 months of 1959, output from mines was 26,409,969 ounces (preliminary).

Canada.—In 1958, output of 31,087,681 ounces was an increase over the 28,823,298 ounces produced in 1957. In the first 9 months of 1959, silver output was 23,835,647 ounces, compared with 23,184,722 ounces in 1957.

Mexico.—The world's leading producer of silver reported an output of 47,589,528 ounces in 1958, compared with 47,149,513 ounces in 1957. Output in the first 7 months of 1959 was 25,379,000 ounces, compared with 26,810,000 ounces in the corresponding months of 1958.

(See MINERAL PRODUCTION for table showing output of major silver-producing countries.)

SINGAPORE. Separated from the southern end of the Malay Peninsula by the Straits of Johore, this former British crown colony became a self-governing state within the Commonwealth on June 3, 1959. Singapore Island and adjoining islets have an area of 224.5 square miles. The population of 1,549,000 (est. Dec. 31, 1958) consists of 1,180,000 Chinese, 190,000 Malaysians, 130,000 Indians and Pakistanis, and 49,000 others.

Government.—In accordance with the new constitution (prepared in 1957) and the State of Singapore Bill (Aug. 1, 1958), Singapore was granted home rule at midnight on June 2–3, 1959. The United Kingdom retains responsibility for the new state's defense and foreign affairs. The former governor (Sir William Goode) became ceremonial head of state for a transitional period of six months, after which a native (Yusof Bin Ishak) assumed the office as the first Malayan-born head of state; the ex-governor is United Kingdom high commissioner in Singapore. The new state is governed by a 9-member Council of Ministers responsible to a 51-member Legislative Assembly, which is elected by popular vote to a 5-year term. Following the first state elections of May 30, 1959, party alignment in the assembly was as follows: People's Action Party, 43; Singapore People's Alliance, 4; Malay Alliance, 3; and 1 independent. Prime Minister Lee Kuan Yew heads the first state cabinet, which took office on June 5, 1959 (see below, *Principal Events*).

Finance.—Public revenue for 1958 was estimated (in sterling) at £29,069,637; expenditure, at £32,320,741. The common currency is the Malayan dollar, which equals U.S.$0.33.

Education.—The high illiteracy rate (54% of the population over 15 years of age at the 1947 census) has been reduced in recent years through a large-scale education program. In 1958 there were 702 schools with a total enrollment of 295,023 pupils; they include 263 government and grant-aided English schools (with 131,613 pupils), 244 government and grant-aided Chinese schools (127,515), and 66 government Malay schools (14,493). The University of Malaya had 1,812 students in 1958; Nanyang University, 1,340 students; and Singapore Polytechnic, 1,300.

Transportation.—The second major Commonwealth port after London, Singapore is served by 40 major shipping lines and handles about 60 million tons of freight annually. Singapore Airport provides facilities for the Malayan Airlines and 14 foreign airlines. In 1958 there were 478 miles of roads. The Malayan Railway operates 16 miles of railroad which connects by causeway with Malaya.

Production.—The economy is dependent on Singapore's position as an entrepôt port and processing center for Southeast Asia. Major industries are the milling of rubber and tin smelting. Production of rubber for export in 1958 totaled 206,400 metric tons, and of exported tin metal, 8,000 metric tons. Shipbuilding and repairing, marine engineering, and construction are also important. In recent years the government has encouraged the manufacture of light consumer goods. Principal manufactures include rubber products, building materials, furniture, textiles, paper, metal products, food products, and beverages. Output of coconut oil was 31,200 metric tons in 1958. Production of electricity in 1958 was 564 million kw-hr. (up 14% over 1957).

Although 85% of the state is rural, agriculture is of minor importance. Rubber, tobacco, coconuts, vegetables, and fruits are grown, and poultry and hogs are raised for local consumption. Lumber processing is a minor industry. The fish catch was 10,200 metric tons in 1957.

Foreign Trade.—Singapore handles about 70% of the Federation of Malay's annual exports and imports. In 1958, Singapore's total exports totaled M$3,144 million; imports, M$3,744 million. Crude rubber accounts for over 40% of export value, followed by tin, petroleum products, lumber, coconut oil, and copra. Chief imports include textiles (primarily for re-export), iron and steel products, machinery, fuels, chemicals, and foodstuffs. In 1958 the United Kingdom took 10% of Singapore's total exports, and provided 12% of imports; the United States received 7% of exports, and supplied 4% of imports.

Principal Events, 1959.—In preparation for self-government, compulsory elections were held on May 30, in which over 90% of the electorate of about 600,000 participated. The leftist People's Action Party (PAP) received 54% of the popular vote and won a dominant majority of 43 seats in the Legislative Assembly. The party's announced goal is to achieve an "independent, democratic, non-Communist socialist" state uniting Singapore with the Federation of Malaya. As a condition for forming a government, the PAP obtained the release of eight party leaders who had been imprisoned in 1956–57 for violating the antisubversive law.

The new government, headed by Prime Minister Lee Kuan Yew, the 35-year-old, British-educated secretary general of the PAP, took office on June 5. Its first official action was to ban, on June 8, eight publications which it called "pornographic" and an offense to public morality. On July 19, the government ordered community centers to remove all publications which had been supplied by the United States Information Center.

Singapore and Britain agreed on August 22 to establish a joint committee for consultation on foreign affairs and defense.

W. R. F.

SKATING. See Sports, Games, and Shows.
SKIING. See Sports, Games, and Shows.
SKIN DISEASES. See Dermatology.
SLATE. See Stone.

SMALL BUSINESS ADMINISTRATION. The Small Business Administration (SBA) is a permanent and independent agency of the federal government which provides a wide range of services to small businesses. The administrator, Wendell B. Barnes, resigned as of Nov. 21, 1959, and was succeeded by Philip McCallum, who was appointed by the president on the same date.

In the 6½ years since it began operations, the agency has approved about 18,000 loans totaling $850 million to assist small firms which could not obtain private financing. It has approved more than 9,000 loans valued at about $100 million to help victims of storms, floods, and other disasters rebuild or replace their businesses and homes, or to help small businesses which had suffered economic injury because of drought or excessive rainfall. In addition, the SBA has helped small business concerns obtain more than 75,000 government contracts totaling about $3 billion; has assisted many thousands of small firms with management and technical problems; and has cosponsored, with leading educational institutions, some 700 administrative management courses attended by about 20,000 small business owners and managers.

In other programs, which got fully under way in 1959, the SBA approves, regulates, and helps finance privately owned small business investment companies which provide equity-type and long-term financing for small business, and finances research into the problems of financing and managing small business concerns. By the end of 1959 the agency had licensed about 50 small business investment companies. Also, it had made 52 grants totaling about $2 million for research studies by educational institutions and state agencies.

Philip McCallum,
Administrator.

SMITH, Sidney Earle (62), Canadian public official and educator: b. Port Hood, Nova Scotia, March 9, 1897; d. Ottawa, Ontario, March 17, 1959. After a distinguished career as a lawyer, teacher of law, and university administrator, Sidney E. Smith served from 1957 until his death in the cabinet of Prime Minister John Diefenbaker as Canada's secretary of state for external affairs.

His education at the University of King's College (B.A., 1915; M.A., 1919) was interrupted by military service in France with the 9th Canadian Siege Battery in 1916–18 and the Royal Flying Corps in 1918–19. On completion of his formal training in law at Dalhousie University (LL.B., 1920) and Harvard University (1920–21), he was admitted to the Nova Scotia bar. He taught on Dalhousie University's Faculty of Law (1921–25) and at Toronto's Osgoode Hill Law School (1925–29), and served as Dalhousie's dean of the Faculty of Law (1929–34). He wrote *Selection of Cases on the Law of Trusts* (1928) and co-authored *Manual of Canadian Business Law* (1930) and *Selection of Cases on Equity* (1931).

In 1934, at the age of 37, Smith became president of the University of Manitoba. His success there and later (1944–45), as principal of University College, Toronto, led to his appointment in 1945 as president of the University of Toronto, where he established a reputation during his 12-year tenure as an "eloquent advocate of liberal education."

After the Conservative Party's victory in the elections of June 10, 1957, he was invited by Prime Minister Diefenbaker to join the cabinet as foreign minister, and he took office on September 13.

SMITHSONIAN INSTITUTION. This institution was created by act of Congress in 1846, under the will of James Smithson, English chemist, as "an establishment for the increase and diffusion of knowledge among men." The purposes of the institution are carried out by research, exploration, publication, and museum and art gallery exhibits. In addition to the original endowment, which has been increased from various sources over the years, the Smithsonian Institution now administers ten "bureaus" supported wholly or in part by Federal appropriation.[1]

Activities and Accessions.—During 1959 the institution continued its scientific investigations, chiefly in the fields of anthropology, astrophysics, biology, and geology, and several field expeditions were in progress in the interests of these researches. Construction work continued on the Smithsonian's new $36 million Museum of History and Technology, at a site between 12th and 14th Streets on the Mall in Washington, D.C.

The National Museum collections were increased by approximately 1,145,000 specimens during 1959, bringing the total catalogue entries to more than 52 million. The exhibits-modernization program was successfully continued, and three

[1] These are the United States National Museum, the Bureau of American Ethnology, the Astrophysical Observatory, the National Collection of Fine Arts, the Freer Gallery of Art, the National Air Museum, the National Zoological Park, the Canal Zone Biological Area, the International Exchange Service, and the National Gallery of Art (with separate board of trustees).

new halls were opened to the public—the Graphic Arts Hall, the Hall of Gems and Minerals, and the Textile Hall. An event of the year of particular public interest was the unveiling of the large Fényövi elephant in the rotunda of the Natural History Building. The Maude Monell Vetleson collection of Chinese jade carvings was also placed on display. Members of the museum staff conducted field work in Central America, South America, the Caribbean area, Europe, and many parts of the United States.

The National Gallery of Art received 370 accessions. It held eight special exhibits. The National Collection of Fine Arts sponsored 17 special exhibits, and its Traveling Exhibition Service circulated 100 exhibitions. The Freer Gallery of Art acquired many choice specimens of Oriental art.

Anthropologists on the staff of the Bureau of American Ethnology continued their researches and publication in archaeology and ethnology. The River Basin Surveys unit continued its archaeological work at sites threatened by dam and reservoir construction, particularly in the Missouri Valley.

The work of the Smithsonian Astrophysical Observatory continued along four principal lines—solar astrophysics, upper atmosphere, meteors, and the satellite-tracking program. The division of radiation and organisms continued its researches on the photomechanisms in plants as controlled by radiant energy.

The National Air Museum accessioned 341 specimens, including an early example of a German one-man helicopter; a DM-1 delta-winged glider of World War II; a replica of the Army's Explorer I, the first United States earth satellite placed in orbit, together with its Jupiter C carrier missile; the recovered nose cone of the Jupiter C; and a recovered instrumented capsule from a long-range ballistic missile. A site for the new building for the Air Museum was approved in 1959.

The National Zoological Park accessioned 1,286 individual animals during the year, noteworthy among which were a herd of 14 reindeer, three Rocky Mountain goats, five pronghorn antelopes, six albatrosses, the first Dall sheep ever exhibited in an American zoo, and a pair of Pallas' cats. A female wisent was born in captivity.

Publications and Library.—Of the 81 new publications appearing under the Smithsonian imprint during 1959, outstanding works included: *Studies in Invertebrate Morphology,* papers by 18 contributors published in honor of Dr. Robert Evans Snodgrass; *Pueblo del Arroyo, Chaco Canyon, New Mexico,* by Neil M. Judd; *The Journals of Daniel Noble Johnson (1822–1863), United States Navy,* edited by Mendel L. Peterson; *First Book of Grasses,* 3d., by Agnes Chase; *Checklist of the Millipeds of North America,* by Ralph V. Chamberlin and Richard L. Hoffman; *Ichneumon-flies of America North of Mexico,* by Henry and Marjorie Townes; *The Native Brotherhoods: Modern Intertribal Organizations on the Northwest Coast,* by Philip Drucker; and *The North Alaska Eskimo: a Study in Ecology and Society,* by Robert F. Spencer. The Smithsonian Library, including its various branches, houses approximately 982,600 volumes.

Visitors.—The year's recorded visitors to the Smithsonian buildings reached an all-time high of more than 11 million, including the main Smithsonian Building, the Natural History Building, the Arts and Industries Building, the Aircraft Building, the Freer Gallery, the National Gallery of Art, and the National Zoological Park. About 400 persons visited the Canal Zone Biological Area, Barro Colorado Island, Panama.

PAUL H. OEHSER,
Chief, Editorial and Publications Division.

SOAP AND SYNTHETIC DETERGENTS. The United States is one of the world's largest producers and consumers of soaps and synthetic detergents. Household consumption accounts for about 85% of production, with the balance used in industrial cleaning and processing. Domestic per capita consumption has been increasing for several years. In 1958 this figure stood at 28.1 pounds, compared with 25.4 pounds only ten years before. Postwar economic development, the very broad range of washable products in everyday use, and the ease of household laundering have favorably affected per capita consumption despite the greater efficiency of soaps and detergents achieved through intensive chemical research.

Since World War II, synthetic detergents have increasingly penetrated markets traditionally dominated by packaged and bar home laundry soaps, until they now represent around 75% of total sales. Although broad-scale presentation of synthetics occurred somewhat later in Europe, they have also gained increased popularity there. In Austria, Belgium, France, the Netherlands, and Switzerland, synthetics presently claim approximately 50% of total sales, and in Germany they have reached 66% of the total.

According to the Association of American Soap & Glycerine Producers, Inc., estimated annual sales of soap and synthetic detergents in the United States in recent years are as follows:

Year	Soap*	Synthetic Detergents	Total
	(Amount in millions of pounds)		
1948	3,088	636	3,724
1956	1,506	3,068	4,574
1957	1,367	3,507	4,874
1958	1,299	3,594	4,893

* Excludes liquid soaps and scouring cleansers.

About 85% of synthetic detergents sold in 1958 were solid, and some 15% were liquid. Solid synthetic detergents were the first to win wide consumer acclaim, but liquid synthetic detergents have shown a strong upward trend since 1954.

Glycerine.—Glycerine is a co-product of soap manufacture. With the ascendancy of synthetic detergents, the supply of glycerine from soap production has declined. In recent years this decline has been largely offset by sizable production of glycerine from propylene. In 1958, production of glycerine in the United States totaled 213 million pounds, of which an estimated 100 million pounds were made from propylene.

ROY W. PEET,
Manager, Association of American Soap and Glycerine Producers, Inc.

SOCCER. See SPORTS, GAMES, AND SHOWS.

SOCIAL SECURITY. Most gainfully employed persons have protection under a public program (federal or state-federal) against the major risks to the economic security of the family and the individual: old age, prolonged disability, unemployment, or death of the family breadwinner. The Social Security Act covers all these risks.

The Social Security Administration, a unit of the Department of Health, Education, and Welfare, has the responsibility for three major programs under the Social Security Act: federal old-age, survivors, and disability insurance. (Another Social Security Act program—federal-state unemployment insurance—is the responsibility of the Department of Labor.) The Social Security Administration is also responsible for the federal aspects of the public assistance, maternal and child health, and child welfare programs, and administers operations under the Federal Credit Union Act.

During 1959 most states held their regular biennial legislative sessions and made some changes in their public assistance and unemployment insurance laws. Federal legislation of 1959 included amendments to the railroad retirement and railroad unemployment insurance programs; a three-month extension of the temporary unemployment com-

pensation program enacted in 1958; changes in nonservice-connected pensions for veterans and their dependents (see VETERANS ADMINISTRATION); broadening of the scope of federal employee benefits by providing for government sharing in the cost of health insurance; and minor coverage amendments in old-age, survivors, and disability insurance.

Old-Age, Survivors, and Disability Insurance.—A law signed Sept. 16, 1959, made coverage available for policemen and firemen in four additional states and gave certain states more time to arrange for coverage of a small group of state and local government employees.

At the beginning of 1959, about 55,600,000 of the gainfully employed were in covered jobs, and another million were covered jointly by the railroad retirement and old-age, survivors, and disability insurance programs. During the year, employers and employees paid contributions at the rate of 2½% each and the self-employed at 3¾%. In 1960, 1961, and 1962, employers and employees will each pay 3% and the self-employed will pay 4½%. Beginning Jan. 1, 1959, the maximum taxable amount of earnings became $4,800 a year.

The higher benefit amounts provided by the 1958 amendments were effective in January. For the fiscal year ended June 30, 1959, monthly benefit payments totaled $9.2 billion. In September 1959 about 13,486,000 persons were receiving benefits at a monthly rate of $828.5 million. The average benefit to a retired worker was $81.18. Benefits for the dependents of disabled-worker beneficiaries, first payable for September 1958, numbered 109,000 by September 1959.

Public Assistance.—The federal government makes grants to help the states finance their assistance programs for four groups of needy persons: dependent children, the aged, the blind, and the permanently and totally disabled. These programs are administered by the states; the federal government shares in the costs within certain maximums. The 1958 amendments to the Social Security Act changed the basis for federal financial participation, making additional funds available to the states, simplifying administrative procedures with respect to the federal matching formula, and achieving a greater degree of equity in financing the programs by relating the federal share in the payments to the state's fiscal capacity as measured by its per capita income.

During 1959, federal funds were being used for old-age assistance, aid to the blind, and aid to dependent children in all states. Programs of aid to the permanently and totally disabled were in operation in 49 states at the end of the year. In September, 2,917,000 persons were receiving aid to dependent children. Old-age assistance payments were going to 2,404,000 persons; about 109,000 persons were receiving aid to the blind; and 344,000 persons were receiving aid to the permanently and totally disabled. Average payments were $64.79 per aged recipient, $69.18 per blind recipient, $28.58 per person getting aid to dependent children, and $63.66 for aid to the disabled. By July 1959, Guam—included under the public assistance and child health and welfare provisions of the Social Security Act by the 1958 amendments—was making payments under approved plans for all four of the special types of assistance, as well as for general assistance.

State and local governments administer a program of general assistance without federal aid. In September 1959 an estimated 393,000 cases were getting general assistance; the average payment per case was $69.62.

The total spent for assistance during the fiscal year 1958–59 was about $3,574 million, comprising $3,148 million for the federal-state programs and $426 million for general assistance.

Maternal and Child Health and Child Welfare.—The Social Security Act authorizes federal grants to the states to extend and improve health and welfare services for mothers and children.

Federal payments made to the states for maternal and child health services totaled $16,494,000 in the fiscal year 1958–59. Typical services were prenatal clinics, child-health conferences, immunizations, public health nursing services, and services of physicians and dentists for children of school age.

Federal grants amounting to $15,216,000 were made to the states for services for crippled children in 1958–59. Locating these children, diagnosing their condition, providing or locating skilled care for them, and working with private and public groups concerned with their care and training are among the services provided.

During the year ended June 30, 1959, the federal government paid $11,833,000 for child welfare services to help the states protect and care for homeless, dependent, and neglected children, and children in danger of becoming delinquent.

Federal Credit Unions.—The Social Security Administration is responsible for the chartering and supervision of credit unions organized under the Federal Credit Union Act. These are cooperative organizations designed to promote thrift among their members and to create a source of loans for provident and productive purposes. Membership is limited to groups having a common bond of association, occupation, or residence. On June 30, 1959, about 9,300 of these credit unions were in operation with a total membership of about 5,500,000.

(See also BUREAU OF EMPLOYMENT SECURITY; OLD AGE; SOCIAL WELFARE; articles on individual countries and states; and the Index entry, *Social Welfare.*)

W. L. MITCHELL,
Commissioner, Social Security Administration.

SOCIAL WELFARE. Public and voluntary social welfare programs in the United States continued in 1959 to cover a widening range of social services to individuals and families from all economic, social, and educational levels. There continued to be a steady increase in appropriations by federal, state, and local governments for the support of public welfare programs. Also, the total amounts raised through voluntary contributions increased as part of expanded fund-raising drives in a growing economy. (See UNITED FUNDS AND COMMUNITY CHESTS; PHILANTHROPY.)

During 1959 the great majority of state legislatures were in session, and as a result a number of laws directed toward strengthening various aspects of the public welfare programs were enacted. Since the legislation was developed primarily in terms of individual state situations, no major nationwide trends were observable. It is important to note, however, that there was substantial legislative activity in the areas of: administration, services to the aged, the blind, children and youth, corrections, medical care, and mental health.

No major federal legislation was enacted in 1959 with respect to public welfare, as customarily defined. Rather, there was continued emphasis by states on putting into effect the extensive amendments to the Social Security Act enacted in 1956 and in 1958. Since the latter amendments did not go into effect until October 1958, much of the impact of this substantial legislation was of major significance for 1959. Generally there was a con-

tinuation of special emphasis on casework services to individuals and families, as well as providing somewhat more adequate assistance in cases of financial need. States made further progress in the development of programs to implement the 1956 amendments, which placed stress upon services in public assistance directed toward self-care, self-support, and the strengthening of family life.

Public Assistance.—The year 1959 was marked by a substantial increase in caseloads in aid to dependent children and aid to the permanently and totally disabled, as an aftermath of the recession of the winter of 1958–59. While other factors contributed to this increase—the caseloads in both programs had been moving upward over the years—the upward trend was accentuated by the economic situation. On the other hand the slow recent downward trend in old-age assistance, a result primarily of the extension of old-age and survivors insurance to more beneficiaries, continued in 1959.

The net changes resulted in a small decrease in old-age assistance from a total caseload of 2,460,000 in June 1958 to 2,420,000 in June 1959. The average payment to these recipients, including vendor payments for medical care, increased from $61.39 to $64.76 in the same period. For aid to dependent children the caseload increased from 2,733,000 recipients to 2,929,000 recipients, with the average payment per individual recipient, including vendor payments for medical care, rising from $27.29 to $28.39. The increase in caseload in aid to dependent children was 7.2%, as compared with an increase of 11.5% in the amount of total payments. For aid to the blind the caseload rose only from 108,000 to 109,000, but average payments increased from $66.72 to $69.04. The program of aid to the permanently and totally disabled, not yet in effect in all states, increased from a caseload of 313,000 in June 1958 to 339,000 in June 1959, with average grants rising from $60.71 to $63.37. In this rapidly expanding program the number of recipients increased by 8.5% and the total amount of payments to recipients by 13.3%.

The general assistance program strongly reflected the change in the nation's economic situation. The already expanded load of 418,000 cases in June 1958 rose to a peak of 480,000 in February and March 1959, and then declined to 388,000 in June. This program always involves seasonal changes, but these changes are more acute when there are significant fluctuations in the economy.

During 1959 several policy areas in the public assistance program received special attention, although no changes in law resulted. One of these was the growing emphasis upon the need for abolition of all residence requirements for public assistance, a proposal actively supported by the secretary of health, education, and welfare. Also, in August 1959 at the annual Governor's Conference, resolutions were adopted which called for a uniform one-year ceiling in the public assistance categories and for enactment of interstate compacts directed toward better provisions through general assistance for needy people who move across state lines.

The general concern about "stateless" persons and about the fact that federal funds should be available to help take care of needy people irrespective of where they live is expected to lead toward some change in existing residence requirements for public assistance under the Social Security Act.

Another major area of attention during 1959 was the program of aid to dependent children. The changing characteristics of this mounting caseload, growing out of basic changes in American society, have led to special concern over parents who desert their children or over parents who are not married. Such concern was reflected in a special study of the aid to dependent children program of the federal Bureau of Public Assistance, made in the last quarter of 1958. (See also SOCIAL SECURITY.)

Child Welfare.—Latest available data show that in June 1958 about 417,000 children in the United States were receiving child welfare services. Of this total, 292,000 received services through public agencies and 125,000 from voluntary agencies. Public child welfare agencies provided services to 43 out of every 100,000 children in the country and voluntary agencies to 19 children per 100,000.

Special attention was given during the year to homemaker service as an effective means of strengthening a child's family situation. Much attention was also directed toward the development of day-care services under a licensing authority, particularly for children of working mothers. (See also CHILD WELFARE.)

Substantial increases in the volume of child welfare services, more effectively to meet current demands and to strengthen protective and preventive services, will be dependent upon increased appropriations at all levels of government. Steady gains were noted in state and local appropriations in 1959 for child welfare programs. (A very small proportion of the total cost of such services is carried by the federal government.)

Services to the Aged.—Concern for and programs to meet the needs of the increasing numbers of older people who must have specialized services, with or without financial assistance, were widely stressed in 1959. As a growing number of agencies and groups enter the field, there is a gradually developing clarification of services and a growing recognition of the fact that a broad program of services is essential to meet the varying needs of older people. Staff members are being added to federal and state social welfare agencies in order to give increasing leadership in this field. Voluntary agencies are likewise strengthening their programs for the aged. (See also OLD AGE.)

Medical Care.—The 1958 changes in the Social Security Act encouraged the development of more effective vendor payment programs for medical care of public assistance recipients. While the scope of such programs varies widely from state to state, some type of program was in effect for one or all of the four categories of public assistance by June 1959 in 45 of the 53 state and territorial jurisdictions.

Advisory Councils.—The 1958 amendments to the Social Security Act provided for an Advisory Council on Public Assistance and for an Advisory Council on Child Welfare Services. Each council has 12 members appointed by the secretary of health, education, and welfare, and each is to report its findings and recommendations by Jan. 1, 1960. Both councils were quite active in 1959, and comprehensive reports, with major recommendations, were expected to be filed by the end of 1959. It was expected that the reports would be of substantial importance in relation to any proposals for immediate and long-range changes in federal legislation affecting both public assistance and child welfare services.

Voluntary Social Welfare Programs.—With increased financing, voluntary social welfare agencies have continued to strengthen their programs. In those agencies with higher standards the focus is generally on skilled services in carefully defined areas. Such agencies are in a position to set high standards, to experiment with newer types of services, and to provide demonstrations which may lead to broader use of specialized services in the

public as well as the voluntary agencies. In a number of instances special research projects are pointing the way toward more understanding of problem areas and more effective ways of dealing with them.

White House Conferences.—During 1959 the National Committee for the White House Conference on Children and Youth, to be held in March 1960, was actively engaged in the compilation of basic materials and the development of the conference program. Planning at the national level was supported by widespread activity on the part of the states, with many active state committees and often with substantial local activity. By the end of 1959 each state was to have submitted a comprehensive report on its progress in the broad field of child welfare over the past decade and on its goals for the future.

The National Advisory Committee for the White House Conference on Aging, to be held in January 1961, was appointed by the president. It also was active, with 20 basic subcommittees set up to develop position papers on a wide range of subject matter. State committees and commissions in the field of the aging faced much activity during 1960 in preparing for the 1961 conference.

(For discussion of social welfare developments in other countries see articles on those countries and consult the Index entry, *Social Welfare.*)

ELLEN WINSTON,
Commissioner, North Carolina State Board of Public Welfare.

SOCIALISM. Socialism in 1959 showed its greatest strength, as in former years, in western Europe, while becoming increasingly influential in Asia and Africa. Socialists urged the strengthening of social welfare services, greater democratic public planning for increased production, full employment, and a more equitable distribution of income. On the international front, they opposed colonialism and national aggression and supported controlled disarmament and greater economic and cultural aid to underdeveloped countries.

International Activities.—Socialist international bureaus such as the Socialist International, the Asian Socialist Conference, and the Socialist Union of Central-Eastern Europe continued to represent Socialist viewpoints on international issues. Numerous conferences were held by affiliated groups representing Socialist women, youth, teachers, members of the press, and legislators.

The Sixth Annual Congress of the Socialist International, meeting in Hamburg, Germany, July 14–17, and attended by representatives from affiliated groups in 38 countries, with a membership of 10,702,475, voted in favor of a summit conference, declared their solidarity with the people of West Berlin in their right to liberty, and affirmed that the solution of the Berlin problem could be found only in the context of a united democratic German republic. Favoring negotiated disarmament, they maintained that any disarmament agreement should not alter the balance of military power; they also urged the continuance of the truce in nuclear tests. The recommendation was made that industrialized nations should devote at least 1% of their national income for aid to underdeveloped countries.

Europe. *Great Britain.*—In Great Britain the Labour Party lost strength in the parliamentary elections of October 8, electing only 258 members of Parliament, as compared with 277 in the 1955 election. Labour's percentage of the popular vote was 43.8%, as compared with 46.4% in 1955. After the elections, Aneurin Bevan was voted deputy leader of the Parliamentary Labour Party, with Hugh Gaitskell remaining as leader of the national party. During the year the party supported a plan for military disengagement in central Europe, urged a more liberal colonial policy, and advocated Britain's giving up her nuclear bombs if all countries except the United States and the Soviet Union agreed not to manufacture and stockpile them. In domestic affairs the party campaigned for such goals as strengthened social services, the renationalization of steel and road transport, and public investment in private industries.

France.—The Socialist Party in France remained outside of the Gaullist government of Premier Michel Debré, maintaining its role of "constructive opposition." In March it obtained about one eighth of the popular vote, as it had in previous elections. It recommended controlled suspension of nuclear tests for two years, the liberation of the peoples of the African community, an Algeria with its own institutions but linked to France, and progress toward economic and political unity among the democratic countries of Europe. Guy Mollet continued as the party's secretary. A dissident Socialist group, known as the Autonomous Socialist Party, gained increasing prominence; among its new recruits was a former premier, Pierre Mendès-France.

West Germany.—The Social Democratic Party continued to be the chief opposition party. On July 1, its candidate for president, Dr. Carlo Schmid, received 386 votes in a special electoral college, as compared with 526 votes for the successful candidate, Dr. Heinrich Luebke, of the Christian Democratic Union Party. In Lower Saxony, the Social Democrats increased their proportion of total votes cast in the state elections from 35.2% (1955) to 39.5%; in Schleswig-Holstein, from 35.9% to 36.8%; and in the city state of Bremen, from 47.8% to 54.9%. In the Rhineland-Palatinate, the party's parliamentary representation advanced from 31.7% to 34.9%. In Bremen the Social Democrats, having elected 61 out of 100 deputies, again formed a coalition government headed by Socialist Minister-President Wilhelm Kaisen.

In November the party chairman, Erich Ollenhauer, submitted to the delegates to the party congress a new party program which declared that "the greatest and most urgent task is to preserve peace and promote freedom," and which allocated to the private sector of the economy a larger field of effort than had former German Socialist platforms. The majority of delegates to the party congress agreed that national defense was the duty of every citizen, called for international condemnation of weapons of mass destruction, and urged reunification of Germany in a "militarily relaxed European zone."

Italy.—The end of 1959 found the Italian Socialist movement divided into three parts. The largest group, the Socialist Party, which for years had closely cooperated with the Communist Party, re-elected Pietro Nenni as party secretary in January and called for the "autonomy" of the party. It declared that the democratic method must be chosen as the road to socialism and maintained that socialism must guarantee the fundamental civil rights of man. At the same time the convention declared its unwillingness to have the party cease its cooperation with the Communists in certain towns and cities and in trade unions and consumer cooperatives.

Following this convention the Social Democratic Party, supporters of Amintore Fanfani's coalition government and led by Giuseppe Saragat, decided against a merger with Nenni's party until it had completely severed its ties with the Commu-

nists. A minority of the Social Democrats led by Matteo Matteotti disagreed with this policy and resigned from Parliament to form the "Socialist Initiative" Party. The Social Democrats remained outside the government after the fall of Fanfani's coalition cabinet at the end of January.

Other Countries.—Socialists continued in their leadership of the governments of Denmark, Norway, and Sweden. In Sweden the Social Democrats won a victory on May 14 in the final passage of an old-age pension law which provides for a pension of approximately two thirds of a person's average income in the most favorable 15 years of his working life. In the September 28 municipal elections in Norway, the Labor Party received, as in the previous elections, about 43% of the votes cast, though suffering a slight drop in the number of seats won. In Finland the Social Democrats, who formed the chief opposition party, continued to advocate neutrality between the Western and Eastern military groupings. In Iceland, Premier Emil Jonsson, Social Democrat, headed a minority government most of the year. In the October elections, Social Democrats elected 9 members of Parliament, polling 15.2% of the votes.

In the parliamentary elections in Austria in May, the Social Democratic Party elected 78 representatives, an increase of 4, while the People's Party won 79, a decrease of 3. Following the elections, leaders of the two parties formed another coalition government, the Socialists obtaining the posts of vice chancellor, interior, foreign affairs, and three others. The Social Democrats worked for a public medical service system for Austria similar to Britain's.

In the Netherlands the Labor Party in the general elections of March 12 returned to the States-General 48 members, compared with 50 in 1956. The Catholic People's Party returned 49. Under the leadership of the former prime minister, Willem Drees, the party served as the government's opposition during the remainder of the year.

The year in Belgium witnessed a reversal of a historic position of the Socialist Party when it supported, with the Christian Social and Liberal parties, government subsidies for the operation (though not for capital improvements) of Catholic schools on the same scale as those granted to public schools. Socialists agitated for measures looking toward the independence of the Belgian Congo.

The Swiss Socialists proposed that a referendum be held prior to any decision to equip the Swiss Army with atomic weapons. In the October 25 elections for the National Council, the Social Democratic Party won 51 seats (a drop of two from 1955) out of a total of 196 seats, the Radicals increasing their representation from 50 to 51.

Socialists throughout Europe joined with the Spanish Socialists in exile in denouncing the persecution of Socialists, trade unionists, and others in Franco Spain, and in opposing the admission of Spain to the North Atlantic Treaty Organization as long as such persecutions continued.

The Americas. *United States.*—The Socialist Party–Social Democratic Federation (SP–SDF) continued as the United States affiliate of the Socialist International. It proposed through its executive committee, under the chairmanship of Mayor Frank P. Zeidler of Milwaukee, that every effort should be made to obtain controlled and supervised disarmament, including balanced withdrawal of military forces to each nation's own borders. It also condemned agreements with West Germany and other nations by which the United States would supply them with parts of nuclear weapons. It continued the party's demand for equal civil rights for Negroes and urged drastic expansion of public housing and educational, health, and social security services.

Canada.—The Co-operative Commonwealth Federation (CCF) and the Canadian Labour Congress (CLC) laid the foundation for a new Labour-Socialist Party to include organized labor, Socialists, and farm and progressive groups. The CCF remained in control of the government of Saskatchewan. In the Manitoba elections of May 14 the CCF won 10 seats (a decrease of one), while increasing its popular vote by over 20%. In Ontario it polled 17% of the vote and won five seats in the provincial legislature (a decrease of two). In the international field the party supported a summit conference and urged a loose federation of the governments of East and West Germany as a step toward the holding of free elections throughout Germany.

Latin America.—In Jamaica, British West Indies, the People's National Party, a Socialist organization led by Norman W. Manley, chief minister of Jamaica, won 28 seats (an increase of 10) in the House of Representatives, out of a total of 45. In the West Indies Federation the Federal Labour Party proposed the complete independence of the island in 1960. Socialist groups were active in Venezuela, Costa Rica, Argentina, Brazil, Chile, Uruguay, Cuba, and other countries in Latin America.

Middle East and Asia. *Israel.*—The Mapai (Socialist) Party, under the leadership of Premier David Ben-Gurion, increased its representation in the 120-member Knesset (Assembly) from 40 to 47 and received 38.5% of the popular vote. One of the chief issues of the campaign was the government's sale of Israeli-made arms to West Germany. In December, following the elections, Ben-Gurion formed a new Socialist-dominated government—a coalition of five parties. On April 1 the government began the operation of the labor exchanges (the official employment bureaus), formerly operated by Histadrut, Israel's labor organization. In the Histadrut elections, the Mapai Party retained its absolute majority.

India.—The Indian Socialist Party denounced Communist China's attack on the people of Tibet, criticized the Communist Party of Kerala for its suppression of civil rights, and urged the colonial powers to respect the African struggle for freedom. It continued its negotiations for unity with the Lohia Socialists.

Japan.—The Socialist Party in the prefectural (state) and local elections in April gained a majority of the prefectural assembly seats in Fukuoka and also its governorship. They won 38 seats and the Liberal Democrats, 71 in the June elections to the upper house of the Diet. One third of the seats in the lower house were held by Socialists. In the fall, a group of right-wing Socialists who had merged with the left wing in 1955 left the party because of its alleged domination by pro-Communist labor groups, and formed a Democratic Socialist Party.

Other Countries.—In the first general elections in Nepal, the Nepali Congress Party, a Socialist party, won 74 seats in Parliament out of a total of 109, and on May 27 B. P. Koirala, Socialist leader, was inaugurated prime minister. In the May 30 elections in Singapore, the People's Action Party, pledged to "the creation of an independent, democratic, non-Communist Socialist Malaya," won 43 out of the 51 seats in the Legislative Assembly of the new state of Singapore. Lee Kuan Yew, secretary-general of the party, became the country's first prime minister. In Burma the Socialist Party continued to be the most influential force in the Anti-Fascist People's Freedom League, which controlled the Burmese government. Friction persisted between the supporters of Prime Minister Ne Win and the former prime minister, U Nu.

In Ceylon, Socialists lost a vigorous leader of the Asian Socialist movement in the death by assassination of Ceylon's prime minister, S. W. R. Bandaranaike. In Indonesia the Socialist Party gave its approval to President Sukarno's recommendation to revive the 1945 constitution which gave representation in Parliament to "functional" as well as political groups.

Africa.—In Ghana, Kwame Nkrumah, Labour prime minister, declared in his Freedom Day address that it was Ghana's "moral obligation to help the rest of Africa to gain her freedom." In Madagascar the Legislative Assembly and Senate elected Philibert Tsiranana, founder of the Malgache Democratic Socialist Party, to become president of the Malgache Republic. Socialists were active in many other African countries.

Australia and New Zealand.—In March the Labour Party emerged as the winner in the elections in New South Wales. The party remained the chief opposition party in Australian political activities. In New Zealand the Labour Party, under the leadership of Prime Minister Walter Nash, continued in control of the government, supporting programs for full employment, improved social services, greater import and export controls, and increased aid to underdeveloped countries.

(See also articles on the countries mentioned in this article.)

HARRY W. LAIDLER,
Executive Director Emeritus,
League for Industrial Democracy;

NORMAN THOMAS,
Chairman, Post-War World Council;
Author of "A Socialist's Faith."

SOCIETIES AND ORGANIZATIONS. The following pages contain a selected list of some of the principal associations, societies, foundations, and trusts of the United States and Canada. In each case, the information has been supplied by the organization concerned. Additional related material may be found in the articles on the principal government agencies, religious bodies, etc.

Academy of Motion Picture Arts and Sciences.—Established to advance the arts and sciences of motion pictures and to foster cooperation among the creative leadership of the motion picture industry for cultural, educational, and technological progress. Membership: 2,299. Publications: *Academy Players Directory; Screen Achievement Bulletins.* The 31st annual presentation of the Academy awards took place on April 6, 1959. (See the article PRIZES AND AWARDS.) President, B. B. Kahane; exec. director, Margaret Herrick. Headquarters: 9038 Melrose Ave., Los Angeles 46, Calif.

Academy of Natural Sciences of Philadelphia.—Founded in 1812, the Academy is the oldest center for the study of natural sciences in the Western Hemisphere, maintaining active research departments and a large modern natural history museum. Its study collections include many minerals and fossils, 1 million plants, 15 million shells, 3 million insects, 1 million fish, 150,000 bird skins, 22,000 mammals. It has sponsored over 500 field collecting expeditions to all parts of the world. Membership: 2,500. Publications: *Frontiers* (natural history bimonthly); *Proceedings* (scientific annual); *Notalae Naturae;* monographs. President, M. Albert Linton; director, H. Radclyffe Roberts; managing dir., Kenneth W. Prescott. Address: 19th and the Parkway, Philadelphia 3, Pa.

Academy of Political Science.—Devoted to impartial study in the fields of economics, politics and public law. Membership: 8,000 individuals; 1,800 organizations. Publications: *Political Science Quarterly; Proceedings* of meetings held in New York City. President, Lewis W. Douglas; exec. director, Mary M. Anger. Headquarters: 413 Fayerweather Hall, Columbia University, New York 27, N.Y.

Adult Education Association of the United States of America.—Founded in 1951 to further the idea of education as a process continuing throughout life. Membership: 5400. Publications: *Adult Education* (quarterly); *Adult Leadership* (monthly). President, Phillip Klein; exec. director, Glenn Jensen. Headquarters: 743 N. Wabash Ave., Chicago 11, Ill.

Alcoholics Anonymous (The General Service Board of AA, Inc.)—A self-supporting nonsectarian society of recovered alcoholics, banded together for the purpose of helping others to recover from alcoholism. Membership: approx. 250,000 in over 7,000 affiliated international groups. Publications: *Alcoholics Anonymous; AA Comes of Age; Twelve Steps and Twelve Traditions; AA Grapevine* (monthly). Address: P.O. Box 459, Grand Central Station, New York 17, N.Y.

American Academy of Arts and Letters.—Founded in 1904 by the National Institute of Arts and Letters for the furtherance of literature and the fine arts in the U.S. Membership limited to 50. Publications: Catalogues of art and manuscript exhibitions; *Proceedings,* 2nd Series No. 9; *Yearbook* 1959. On May 20, 1959, a public ceremonial was given jointly with the National Institute of Arts and Letters. (For details, see *National Institute of Arts and Letters* entry below.) The annual meeting is held in December. President, Mark Van Doren; secretary, Allan Nevins. Headquarters: 633 West 155th St., New York 32, N.Y.

American Academy of Arts and Sciences.—Founded in 1780 for the encouragement and diffusion of every art and science. Membership: 1,400. Endowment: $1,000,000. Publications: *Proceedings; Daedalus; Memoirs; Bulletin.* President, Kirtley F. Mather; secretary, J. Lawrence Oncley. Annual meeting is held the 2d Wednesday in May, in Boston. Headquarters: 280 Newton St., Brookline 46, Mass.

American Academy of Political and Social Science.—Organized in 1889, to provide a forum for the discussion of national and world questions. Membership (Jan. 1, 1959): 14,850. Publications (1959): *The Annals; Contemporary China and the Chinese; Prevention of Juvenile Delinquency; Partnership for Progress: International Technical Cooperation; Resolving the Russian-American Deadlock; American Civilization and its Leadership Needs; Inflation.* The 63d annual meeting was held in Philadelphia in April 1959. President, James C. Charlesworth; editor, Thorsten Sellin. Headquarters: 3937 Chestnut St., Philadelphia 4, Pa.

American Association for the Advancement of Science.—Founded in 1848 to promote advancement in all fields of the natural, social, and economic sciences. Membership: 58,300. There are 285 affiliated societies with a combined membership of more than 1,000,000. Endowment: $472,600. Periodical: *Science.* President, Chauncey D. Leake; exec. officer, Dael Wolfle. Headquarters: 1515 Massachusetts Ave. NW, Washington 5, D.C.

American Association of Law Libraries.—Organized to promote librarianship; develop and increase the usefulness of law libraries; cultivate the science of law librarianship; and foster a spirit of cooperation among the members of the profession. Membership: 875. Publications: *Law Libraries in the United States and Canada; Law Library Journal; Index to Legal Periodicals.* President, Frances Farmer; secretary, Doris R. Fenneberg. Headquarters: College of Law Library, University of Toledo, Toledo 6, Ohio.

American Association of University Professors.—The professional organization for college and university teachers and investigators in the United States and its territories, Canada, and American-controlled institutions of higher education abroad, the association endeavors to bring about more effective cooperation among the members of the profession, promote discussion of educational problems in institutions of higher learning, create means for authoritative expression of the public opinion of the teachers, make collective action possible, and maintain and advance the ideals and standards of the profession. Membership: (Jan. 1, 1959) 41,264. Publication: *Bulletin* (quarterly). President, Bentley Glass; gen. secretary, William P. Fidler. Headquarters: 1785 Massachusetts Ave. NW, Washington 6, D.C.

American Association of University Women.—Founded in 1882, the association acts as spokesman for educated women, seeking to make their influence felt and to enlarge their opportunities for service. It supports research fellowships for women and gives international grants to bring women of other countries to the U.S. for study. Membership: over 140,000 in 1,413 branches. Fellowship Endowment: $2,043,032. Publication: *Journal* (issued Oct., Jan., March, and May). President, Dr. Anna L. Rose Hawkes; gen. director, Dr. Pauline Tompkins. Headquarters: 1634 I St. NW, Washington 6, D.C.

American Automobile Association.—Established to provide services to car-owning members on the basis of national and international reciprocity, and to work for improvement of motoring conditions generally. Membership: over 6,374,061 in 746 member organizations. Publications include *Sportsmanlike Driving* (3d ed.). The annual meeting was held in Atlantic City, N.J., Sept. 22–23, 1959. President, Frederick T. McGuire, Jr.; secretary, William B. Spencer. Headquarters: 1712 G St. NW, Washington 6, D.C.

American Bankers Association.—The national organization of banking, representing more than 99 per cent of banking resources. As part of its educational program, the Association conducts the American Institute of Banking; Stonier Graduate School of Banking at Rutgers University; and National Trust School at Northwestern University. Membership (1959) 17,690 banks and branches. Publication: *Banking* (monthly). The 85th annual convention was held at Miami Beach, Fla., Oct. 25–28, 1959. President, John W. Remington; vice pres., Carl A. Bimson; treas., I. F. Betts. Headquarters: 12 East 36th St., New York 16, N.Y.

American Bar Association.—Established to uphold and defend the U.S. Constitution and maintain representative government; advance jurisprudence; promote the administration of justice, and the uniformity of legislation and judicial decisions throughout the nation; uphold the honor of the legal profession, and apply its knowledge and experience for the public good. Membership: 95,000. Publications: *American Bar Association Journal* (monthly); *American Bar NEWS* (monthly); *Annual Report; American Citizenship Bulletin* (quarterly); numerous specialized manuals. The 82d annual meeting was held in Bal Harbour–Miami Beach, Fla., Aug. 24–28, 1959. President, John D. Randall; secretary, Joseph D. Calhoun. Headquarters: 1155 East 60th St., Chicago 37, Ill.

American Bible Society.—Founded in 1816 to translate, publish, and distribute the Scriptures, without note or comment. Membership: approx. 375,000. Publication: *Bible Society Record.* President, Daniel Burke; secretary, Robert T. Taylor. Headquarters: 450 Park Ave., New York 22, N.Y.

American Book Publishers Council.—Founded to further the interests of its members in their relationships with other segments of the industry, the government, and the public; to serve as a clearinghouse of information on publishing techniques and practices; to collect and publish statistics concerning book publishing; and to increase the distribution of books. Membership: 160 publishing firms. President, Curtis G. Benjamin; managing director, Dan Lacy. Headquarters: 24 West 40th St., New York 18, N.Y.

American Cancer Society, Inc.—Organized in 1913 to collect, collate, and make available statistical information relative to the incidence, mortality, and curability of cancer; encourage research and training of personnel in the detection, diagnosis, treatment, and prevention of cancer; and foster the establishment of cancer treatment facilities. Membership: 188 persons; 60 chartered divisions. Publications: *Cancer; Cancer News; CA: A Bulletin of Cancer Progress; Annual Report.* The annual meeting was held at New York, N.Y., Oct. 26–30, 1959. President, Warren H. Cole; secretary, Granville Whittlesey, Jr. Headquarters: 521 West 57th St., New York 19, N.Y.

American Catholic Sociological Society.—See the article, *Sociology.*

American Chemical Society.—Founded in 1876 to encourage the advancement of chemistry in all its branches, this organization endeavors to promote "research in chemical science and industry" and to maintain high standards among its members. Membership: 90,000. Publications: *Journal of the American Chemical Society; Chemical Abstracts; Industrial and Engineering Chemistry; Journal of Chemical and Engineering Data; Chemical and Engineer-*

ing News; Analytical Chemistry; Journal of Agricultural and Food Chemistry; Journal of Physical Chemistry; Journal of Organic Chemistry; Chemical Reviews. Meetings for 1960: Cleveland, Ohio—April 5–14; New York, N.Y.—September 11–16. President, Albert L. Elder; exec. secretary, Alden H. Emery. Headquarters: 1155 16th St. NW, Washington 6, D.C.

American Civil Liberties Union.—Founded in 1920 to maintain and extend throughout U.S. jurisdiction the principles of the Bill of Rights, as essential to the functioning of democracy for majorities and minorities alike. Membership: 50,000, including that of 27 affiliates. Publications: *Civil Liberties;* various pamphlets. Chairman, Ernest Angell; director, Patrick Murphy Malin. Headquarters: 170 Fifth Ave., New York 10, N.Y.

American College of Dentists.—Founded in 1920 to promote the ideals of the dental profession and advance its standards and efficiency; to encourage graduate studies and continuing educational effort by dentists; to stimulate research; to improve public understanding of oral health service; and to recognize meritorious achievement by conferring fellowship in the College on qualified persons. Membership: about 3,000 in 32 sections. Publication: *Journal of the American College of Dentists* (quarterly). President, Donald W. Gullett; secretary, Otto W. Brandhorst. Office of Secretary: 4236 Lindell Blvd., St. Louis 8, Mo.

American College of Physicians.—Founded in 1915 to maintain and advance the highest possible standards in medical education, medical practice, and clinical research. Membership: 10,000. Endowment: approx. $575,000. Publication: *Annals of Internal Medicine.* President, Howard P. Lewis, M.D.; exec. secretary, E. R. Loveland. Headquarters: 4200 Pine St., Philadelphia 4, Pa.

American College of Surgeons.—Founded in 1913 to elevate the standards of surgery and to improve hospital care of the patient. Membership (1959): 23,250. Publications: *Surgery, Gynecology & Obstetrics* (monthly); *Bulletin* (bimonthly). Regional surgical meetings are sponsored each year in addition to an annual Clinical Congress. President, Dr. Owen H. Wangensteen; director, Dr. Paul R. Hawley. Headquarters: 40 East Erie St., Chicago 11, Ill.

American Council of Learned Societies.—A privately supported federation of national organizations devoted to the encouragement of humanistic studies and humanistic aspects of the social sciences. Membership: 30 professional societies. Publications (1959): *Annual Report; ACLS Newsletter;* and publications under the Program in Oriental Languages. The annual meeting was held in Rochester, N.Y., Jan. 24–26, 1959. Chairman of Board of Directors, Robert M. Lumiansky; president, Frederick Burkhardt. Headquarters: 345 East 46th St., New York 17, N.Y.

American Council on Education.—Founded in 1918, the Council is a center of cooperation and coordination for the improvement of education at all levels, with emphasis on higher education. Membership: 141 organizations; 1,046 educational institutions, school systems, and departments of education. Publications: *The Educational Record; Higher Education and National Affairs.* President, Arthur S. Adams; secretary, Helen D. Bragdon. Headquarters: 1785 Massachusetts Ave. NW, Washington 6, D.C.

American Dental Association.—Established in 1859 "to encourage the improvement of the health of the public and to promote the art and science of dentistry." Membership (1959): 94,197 in 54 state and 450 local societies. Publications: *The Journal of the American Dental Association* (monthly); *Dental Abstracts* (monthly); *Journal of Oral Surgery, Anesthesia and Hospital Dental Service* (bimonthly); *Index to Dental Literature* (quarterly and annually); *American Dental Directory* (annually); *Accepted Dental Remedies* (annually). In 1959, the Association conducted aptitude tests for approximately 5,500 prospective dental students; sponsored National Children's Dental Health Week, Feb. 8–14, and continued to urge communities to adopt water fluoridation. The 100th annual session was held in New York City, Sept. 14–18, 1959. President, Dr. Paul H. Jeserich; secretary, Dr. Harold Hillenbrand. Headquarters: 222 E. Superior St., Chicago 11, Ill.

American Economic Association.—Organized in 1885 for the encouragement of economic research and freedom of economic discussion, and the issuance of publications on economic subjects. Membership: 9,400, and 3,600 subscribers. Publications: *American Economic Review; Papers and Proceedings* of Annual Meetings; occasional monographs. The 1959 annual meeting was held in Washington, D.C., Dec. 27–30. President, Arthur F. Burns; secretary, James Washington Bell. Headquarters: Northwestern University, Evanston, Ill.

American Farm Bureau Federation.—Organized in 1920 as a free, independent, non-governmental, voluntary organization of farm and ranch families for the purpose of analyzing their problems and formulating action to achieve educational improvement, economic opportunity and social advancement, thereby promoting the national welfare. Membership: 1,576,462 families. Publication: *Nation's Agriculture.* President, Charles B. Shuman; secretary-treas., Roger Fleming. Headquarters: 2300 Merchandise Mart, Chicago 54, Ill.

American Federation of Labor and Congress of Industrial Organizations.—See separate article under its own heading.

American Foundation for the Blind.—Established in 1921 to promote the interests of blind people throughout the United States. Publications: *Directory of Agencies Serving Blind Persons in the United States and Canada; The New Outlook for the Blind; Touch and Go;* books and pamphlets. President, Jansen Noyes, Jr.; secretary, Richard H. Migel. Headquarters: 15 West 16th St., New York 11, N.Y.

American Geographical Society.—A research institution founded in 1852 for the advancement of geography in its scientific, educational, and cultural aspects; its practical applications; and its bearing on fundamental problems of human existence and human relationships. Membership: 4,200. Publications: *Geographical Review* (quarterly); *Focus* and *Current Geographical Publications* (10 issues a year); various books. President, Walter A. Wood; director, Charles B. Hitchcock. Headquarters: Broadway at 156th St., New York 32, N.Y.

American Geophysical Union.—Founded in 1919 to promote the study of problems concerned with the figure and physics of the Earth and its environment in space; to initiate and coordinate researches which depend upon international cooperation and to provide for their scientific discussion and publication; to facilitate special research projects; and to promote and coordinate the study of the various branches of geodesy and geophysics in the U.S. Membership: 5,900 individuals; 36 organizations. Publications: *Journal of Geophysical Research* (monthly); English ed. of *Izvestiya* (Geophysics series of USSR Acad. of Sciences—monthly); *Transactions* (quarterly); *Geophysical Monograph Series.* President, Lloyd V. Berkner; genl. secretary, A. Nelson Sayre; exec. secretary, Waldo E. Smith. Headquarters: 1515 Massachusetts Ave. NW, Washington 5, D.C.

American Historical Association.—Founded in 1884 for the promotion of historical studies, the collection and preservation of historical manuscripts, and for kindred purposes in the interest of American history and of history in America. Membership: approx. 7,000. Publications: *American Historical Review; Annual Report* (including *Writings in American History*); annual prize volumes; and various studies for teachers. The 74th annual meeting was held in Chicago, Ill., Dec. 28–30, 1959. President, Allan Nevins; exec. secretary, Boyd C. Shafer. Headquarters: 400 A St. SE, Washington 3, D.C.

American Hospital Association.—Founded in 1898 to promote the public welfare through the development of better hospital care for all people. Membership (1959): 7,361 institutions; 5,059 persons. Publications: *Hospitals; Trustee* (journal for hospital governing boards). The 1959 annual convention was held Aug. 24–27 in New York City. President, Russell A. Nelson, M.D.; director, Edwin L. Crosby, M.D. Headquarters: 840 N. Lake Shore Dr., Chicago 11, Ill.

American Institute of Architects.—Founded in 1857 to organize and unite the architects of the U.S.; to promote the esthetic, scientific, and practical efficiency of the profession; to advance the standards of architectural training and practice; and to coordinate the building industry and the architectural profession to insure the improvement of living standards. Membership: 13,000 in 130 chapters; 11 state organizations. Publications: *Journal* (monthly); *Memo* (biweekly). President, John Noble Richards; secretary, J. Roy Carroll, Jr.; exec. director, Edmund R. Purves. Headquarters: The Octagon, 1735 New York Ave. NW, Washington 6, D.C.

American Institute of Chemical Engineers.—Its purpose is the advancement of chemical engineering in theory and practice and the maintenance of a high professional standard among its members. Membership: 19,380. Publications: *Chemical Engineering Progress* (monthly); *A.I.Ch.E. Journal* (quarterly); various monographs and symposium series. Four meetings are held each year. President, Donald L. Katz; secretary, F. J. Van Antwerpen. Headquarters: 25 West 45th St., New York 36, N.Y.

American Institute of Electrical Engineers.—Established to advance the theory and practice of electrical engineering and its allied arts and sciences, and to maintain high professional standards among its members. Membership: 53,000. Endowment: $1,250,000. Publications: *Electrical Engineering* (monthly); *Annual Transactions;* various papers and pamphlets. President, J. H. Foote; exec. secretary, N. S. Hibshman. Headquarters: 33 West 39th St., New York 18, N.Y.

American Institute of Graphic Arts.—A national educational, non-profit organization founded in 1914 to raise standards of design and manufacture of printing and allied graphic arts in the U.S. Membership: 1,800. Publications: *Fifty Books of the Year* (annual); *Design and Printing for Commerce—50 Advertisements of the Year* (annual); *Textbook Exhibit* (annual); *Graphics in Packaging* (annual); *Children's Books* (biennial); *Paperback Book Cover Show; Newsletter* (quarterly). An evening printing workshop course is given in cooperation with the New York School of Printing. Three clinics—Design, Trade Book, and Textbook—meet monthly Oct.–June to consider design and production problems. A medal is presented annually to a distinguished practitioner. The annual meeting was held June 4, 1959. President, Edna Beilenson; secretary, Robert Cato; exec. admin., Joyce Morrow. Headquarters: 5 East 40th St., New York 16, N.Y.

American Institute of Mining, Metallurgical, and Petroleum Engineers.—Established to promote the arts and sci-

ences connected with the economic production of the useful minerals and metals. Membership: 35,000. Publications: *Journal of Metals; Journal of Petroleum Technology; Mining Engineering.* The 1959 annual meeting was held in San Francisco, Calif., Feb. 16–19. President, Howard C. Pyle; secretary, Ernest Kirkendall. Headquarters: 29 West 39th St., New York 18, N.Y.

American Iron and Steel Institute.—Founded to promote the interest of the iron and steel industry. Membership: 2,700 individuals; 101 companies. Publications: *Steelways; Steel Facts; Annual Statistical Report; Yearbook; Directory of Iron and Steel Works of the U.S. and Canada;* various technical and engineering booklets. The general meeting is held in May in New York City. President, B. F. Fairless; exec. vice pres., Max D. Howell; secretary, George S. Rose. Headquarters: 150 East 42d St., New York 17, N.Y.

American Law Institute.—Founded in 1923 to do constructive work for the law. Its present projects include the drafting of a federal income tax statute, a model penal code, and a federal estate and gift tax statute, a study of the foreign relations law of the U.S., revision of the Restatements, and a program of continuing legal education. Membership: 1,500. President, Harrison Tweed; director, Herbert F. Goodrich. Headquarters: 133 South 36th St., Philadelphia 4, Pa.

American Legion, The.—A patriotic, non-political organization founded in 1919 by veterans of World War I. Veterans of World War II and the Korean War were made eligible for membership in 1942 and 1950. Membership: 2,694,431 in 58 departments and 16,863 posts. Publication: *The American Legion Magazine* (monthly). Activities include child welfare work, a junior baseball program, a national high school oratorical contest, boy scout work, and citizenship training. The 41st national convention was held in Minneapolis–St. Paul, Minn., Aug. 22–27, 1959. Headquarters: 700 N. Pennsylvania St. (P.O. Box 1055), Indianapolis 6, Ind.

American Library Association.—See separate article under its own heading.

American Mathematical Society.—Founded in 1888 to serve the interests of advanced mathematical research. Membership: approx. 6,500 individuals; 152 institutions; 14 corporations. Publications: *Bulletin; Proceedings; Transactions; Mathematical Reviews; Notices; Colloquium* Publications; *Mathematical Surveys; Memoirs.* President, E. J. McShane; secretary, J. W. Green. Headquarters: 190 Hope St., Providence 6, R.I.

American Medical Association.—Founded in 1847 to promote the science and art of medicine and the betterment of public health. Membership: 176,000 in 53 state and territorial associations. Publications include the *Journal; Today's Health;* ten monthly journals devoted to special fields of medicine; books, pamphlets, and reprints. The 1959 annual meeting was held in Atlantic City, N.J., June 8–12. President, Louis M. Orr, M.D.; exec. vice pres., F. J. L. Blasingame, M.D. Headquarters: 535 N. Dearborn St., Chicago 10, Ill.

American Meteorological Society.—Founded in 1919 for the development and dissemination of knowledge of meteorology and the advancement of its professional ideals. Membership: 7,000. Endowment: $30,000. Publications: *Bulletin; Journal of Meteorology; Meteorological Abstracts and Bibliography; Compendium of Meteorology; Weatherwise; Meteorological Monographs; Dynamic Meteorology and Weather Forecasting; Glossary of Meteorology;* Conference Proceedings. President, Sverre Petterssen; exec. secretary, Kenneth C. Spengler. Headquarters: 45 Beacon St., Boston 8, Mass.

American Museum of Natural History.—An institution founded and incorporated in 1869 to encourage and develop the study of the natural sciences. Fifty-eight exhibition areas interpret every aspect of the natural world, and the Guide-A-Phone system transmits individual lectures to visitors. The Museum sponsors extensive research in its laboratories and field stations, and its Department of Public Instruction employs the largest staff of teachers of any museum in the world. Membership: 88,907. Publications: (Technical) *The Bulletin, Novitiates, Anthropological Papers;* (Popular) *Natural History* (10 issues yearly), *Junior Natural History, Man and Nature* series; (Professional Journal) *Curator.* Attendance (year ended June 30, 1959): Museum, 1,845,506; Hayden Planetarium, 615,520. President, Alexander M. White; director, James A. Oliver. Address: Central Park West at 79th St., New York 24, N.Y.

American Newspaper Publishers Association.—Established to gather and disseminate to members information on problems of the newspaper publishing business. Membership: 848 daily newspapers. The 1959 Convention was held April 20–23 in New York City. President, D. Tennant Bryan; gen. mgr., Cranston Williams. Headquarters: 750 Third Ave., New York 17, N.Y.

American Nurses' Association.—The professional organization for registered nurses founded in 1896 to foster high standards of nursing practice, promote professional and educational advancement of nurses, and encourage better nursing care for all. The American Nurses' Foundation, Inc. serves as a center for nursing research. Membership: nearly 200,000. Publications: *American Journal of Nursing; Facts About Nursing.* President, Mathilda Scheuer, R.N.; exec. secretary, Mrs. Judith G. Whitaker, R.N. Headquarters: 10 Columbus Circle, New York 19, N.Y.

American Petroleum Institute.—Founded in 1919 to further cooperation with the government; foster trade in American petroleum products; and promote the interests of the industry and the improvement of its members through scientific studies. Publications: *Statistical Bulletin* (weekly); *Advance News* (weekly); *Tax Economics Bulletin* (bimonthly); *Quarterly; Annual Statistical Bulletin.* President, Frank M. Porter; secretary, Willard M. Wilson. Headquarters: 111 West 50th St., New York 20, N.Y.

American Philatelic Society.—Founded in 1886 to disseminate knowledge of philately and to assist its members in acquiring and disposing of stamps. Membership: 13,000; chapters, 275. Endowment: $100,000. Publication: *The American Philatelist.* President, C. C. Cratsenberg; exec. secretary, H. Clay Musser. Central Office: P.O. Box 800, State College, Pa.

American Philosophical Association.—Founded in 1901 to promote the study and the teaching of philosophy. Membership: 1,697. Endowment: $10,000. Chairman, Cornelius Krusé; secretary-treas., Lucius Garvin. Address: University of Maryland, College Park, Md.

American Philosophical Society.—Founded in 1743 for the promotion of useful knowledge. Membership: 500 American and 75 foreign members. Publications: *Proceedings; Transactions; Memoirs; Year Book.* During 1958, the Society awarded 172 grants from the Penrose Fund totaling $165,651; 50 grants totaling $53,937 from the Johnson Fund; and 3 fellowships and 1 grant totaling $14,550 from the Daland Fund. Two meetings are held annually, in April and November, in the historic Hall on Independence Square. President, Henry Allen Moe; exec. officer, William J. Robbins. Headquarters: 104 S. Fifth St., Philadelphia 6, Pa.

American Physical Society.—Founded in 1899 for the advancement and diffusion of the knowledge of physics. Membership: 14,000. Publications: *Physical Review; Reviews of Modern Physics; Bulletin.* President, V. F. Weisskopf; secretary, K. K. Darrow. Headquarters: 538–552 West 120th St., New York 27, N.Y.

American Political Science Association.—Founded in 1903 to encourage the study of government and contemporary public affairs. Membership: 6,700. Publication: *The American Political Science Review.* President, Carl B. Swisher; exec. director, Evron M. Kirkpatrick. Headquarters: 1726 Massachusetts Ave. NW, Washington 6, D.C.

American Psychiatric Association.—Promoting further study of all phases of mental disorder; better maintenance of high standards in all agencies concerned with mental health; further psychiatric education and research. Membership: 11,175. Publications: *American Journal of Psychiatry; Newsletter* (monthlies). The 1960 annual meeting was held in Atlantic City, N.J., May 9–13. President, William Malamud; secretary, C. H. Hardin Branch. Addresses: 1270 Avenue of the Americas, New York 20, N.Y.; 1700 18th St., NW, Washington 9, D.C.

American Psychological Association.—Founded in 1892 to advance psychology as a science, as a profession, and as a means of promoting human welfare. Membership: 17,500. President, D. O. Hebb; exec. secretary, John G. Darley. Headquarters: 1333 16th St. NW, Washington 6, D.C.

American Rocket Society, Inc.—Organized in 1930 for the advancement of astronautics and the sciences and engineering techniques relating thereto. Membership (1959): 14,000 individuals; 150 organizations. Publications: *ARS Journal* (monthly); *Astronautics* (monthly); Russian Supplement to *ARS Journal* (quarterly); *ARS Roster* (annual). Activities in 1959 included the awarding of 21 fellowships, and the inauguration of the Russian Supplement of the ARS Journal on a grant from the National Science Foundation. The 14th annual meeting was held in Washington, D.C., Nov. 16–20, 1959. President, Dr. Howard S. Seifert; exec. secretary, James J. Harford. Headquarters: 500 Fifth Ave., New York 36, N.Y.

American Society for Psychical Research.—Incorporated in 1904 for the systematic investigation of phenomena that are prima facie inexplicable on any generally recognized hypothesis, especially those phenomena suggesting the survival of human personality after death and the occurrence of extrasensory perception. Membership: 850. Endowment: $275,000. Publication: *The Journal of the American Society for Psychical Research* (quarterly). President, George H. Hyslop, M.D.; chairman, research committee, Prof. Gardner Murphy; research assoc., Laura Abbott Dale. Headquarters: 880 Fifth Ave., New York 21, N.Y.

American Society of Civil Engineers.—Established in 1852 to promote the advancement of the science and profession of engineering. Membership: 43,100; 140 local sections and sub-units; 143 Student chapters and sub-units. Publications: *Civil Engineering* and *Proceedings* (monthlies); *Transactions* (annual); special manuals of engineering practice. The annual convention was held Oct. 19–24, 1959, in Washington, D.C. President, Frank A. Marston; secretary, William H. Wisely. Headquarters: 33 West 39th St., New York 18, N.Y.

American Society of Composers, Authors, and Publishers.—Founded in 1914 to protect its members against unauthorized public performance (for profit) of their copyright musical works, and to arrange for the payment of royalties for authorized performances. Membership: 5,062 composers and authors; 1,312 publishers. President, Stanley Adams; secretary, Deems Taylor. Headquarters: 575 Madison Ave., New York 22, N.Y.

American Society of International Law.—Organized in

1906 to foster the study of international law and to promote the establishment and maintenance of international relations on the basis of law and justice. Membership: 2,700. Publications: *American Journal of International Law* (quarterly); *Proceedings* (annual). The 53d annual meeting was held April 30–May 2, 1959, in Washington, D.C. President, Herbert W. Briggs; secretary, Edward Dumbauld. Headquarters: 1826 Jefferson Pl. NW, Washington 6, D.C.

American Society of Mechanical Engineers, The.—Established in 1880 to promote the art and science of mechanical engineering and the allied arts and sciences. Membership (1959): 48,000. Publications: *Mechanical Engineering* (monthly); *Applied Mechanics Reviews* (monthly); *Transactions* (issued as 5 quarterly journals, covering Applied Mechanics, Heat Transfer, Basic Engineering, Engineering for Power, and Engineering for Industry); *Mechanical Catalog* (annual). President, G. B. Warren; secretary, O. B. Schier, II. Headquarters: 29 West 39th St., New York 18, N.Y.

American Sociological Association.—A nationwide organization seeking to stimulate and improve sociological research, instruction, and discussion; and to encourage cooperation among sociologists. Membership: 6,300; 9 regional and affiliated societies. Publications: *American Sociological Review; Sociometry; Employment Bulletin;* special bulletins. President, Howard Becker; secretary, Donald Young; exec. officer, Matilda White Riley. Headquarters: 100 Washington Sq. E., New York 3, N.Y. (See article, SOCIOLOGY.)

American Standards Association, Inc.—A national coordinating agency founded in 1918 to provide systematic means for the development of voluntary standards in the U.S. Membership: 2,073 companies: 121 trade associations and technical societies. Publication: *The Magazine of Standards* (monthly). The 10th National Conference on Standards was held Oct. 20–22, 1959, in Detroit, Mich. President, J. R. Townsend; managing dir. and secretary, George F. Hussey, Jr. Headquarters: 10 East 40th St., New York 16, N.Y.

American Youth Hostels, Inc.—To help all, but especially young Americans, to acquire a greater appreciation of the out-of-doors, and of the culture and history of peoples at home and abroad, by providing simple accommodations for their use while traveling primarily by foot or bicycle, thus promoting their health, welfare and education and furthering mutual understanding among peoples of differing backgrounds and points of view. Membership: 13,500. Publications: *AYH Handbook–Hostelers Manual; National Sponsored Trips Travel Bulletin.* President, Henry W. Trimble, Jr.; secretary, Mrs. Ernest Neumann; exec. director, Justin J. Cline. Headquarters: 14 West 8th St., New York 11, N.Y.

Archaeological Institute of America.—Founded in 1879 to foster archaeological research and to disseminate the resulting knowledge. Membership: approx. 3,200. Publications: *American Journal of Archaeology,* for scholars, and *Archaeology,* for laymen (quarterlies); *Bulletin* (annual). President, Prof. George E. Mylonas. Headquarters: 5 Washington Square, N., New York 3, N.Y.

Art Institute of Chicago.—Established to maintain schools of art and design; to form and exhibit art collections; and to cultivate the arts of design. Membership: 22,222. Publications: *Art Institute of Chicago Quarterly;* various catalogues. Principal exhibitions, 1959: Gauguin; Lithographs by Max Kahn; Contemporary Swedish Fabrics; Claude Bentley Drawings; Rare Dutch Drawings; 62nd Annual Exhibition by Artists of Chicago and Vicinity; United States Collects Pan American Art; 80th Annual Exhibition by Students of the School of the Art Institute. President, William McCormick Blair; dir. of fine arts, John Maxon; dir. of Administration, Allan McNab. Address: Adams St. and Michigan Ave., Chicago 3, Ill.

Arthritis and Rheumatism Foundation.—Established in 1948, its purposes are: to formulate and carry out a national program of research and education in the rheumatic diseases to discover their causes and develop methods of prevention; to promote on the local level more effective methods of diagnosis, more facilities for treatment and training in rheumatic disease; to provide systematic rehabilitation for the disabled. Membership: 60 local chapters. Publications: *Manual for Nurses—Arthritis and Related Disorders; Manual for Arthritis Clinics; Primer on Rheumatic Diseases; Bulletin on Rheumatic Diseases.* For laymen: *It's Women Three to One; The Farmer Suffers Most; Questions on Arthritis; Action on Arthritis.* President, Gen. George C. Kenney; exec. dir., Thomas E. Freeman; medical dir., Dr. Ronald W. Lamont-Havers. Headquarters: 10 Columbus Circle, New York 19, N.Y.

Association of American Colleges.—Organized in 1915 for the promotion of higher education in the colleges of liberal arts and sciences. Membership: 778 colleges and universities. Publication: *Liberal Education* (quarterly). President G. D. Humphrey; exec. dir., T. A. Distler; assoc. dir., F. L. Wormald. Headquarters: 1818 R St. NW, Washington 9, D.C.

Association of American Railroads.—Founded in 1934 as the organization of the principal railroads of the United States, Canada, and Mexico, for dealing with matters of common concern in the whole field of railroading. Membership: 125 railroad systems. President, D. P. Loomis; secretary-treas., R. E. Keefer. Headquarters: Transportation Bldg., Washington 6, D.C.

Association of Better Business Bureaus, Inc.—Organization which coordinates the Better Business Bureau movement, whose purpose is: to promote honesty and dependability in advertising and merchandising, and fair conditions in trade; to help the public buy wisely and gain the maximum of satisfaction in its dealings with business through the handling of customer inquiries and complaints; to establish trade practice conferences and standards for advertising and selling; and to foster information-education activities with business firms, groups and the public. Membership: 110 bureaus in the U.S., Canada and Mexico, supported by more than 90,000 business firms. President, Victor H. Nyborg. Headquarters: 405 Lexington Ave., New York 17, N.Y.

Association of Research Libraries.—Founded for the purpose of developing and increasing the resources and usefulness of research collections in American libraries. Membership: 49 libraries. Exec. secretary, William S. Dix. Headquarters: Princeton University Library, Princeton, N.J.

Association of the Junior Leagues of America, Inc.—Founded in 1921 to unite all Junior Leagues of America and to foster interest in the social, economic, educational, cultural, and civic conditions of their own communities and to make efficient their volunteer service. Membership: 74,000 in 192 member Leagues. President, Mrs. George W. Vaughan; admin., Mrs. Alexander S. Parr. Headquarters: The Waldorf-Astoria, New York 22, N.Y.

Benevolent and Protective Order of Elks.—Founded in 1868 to inculcate the principles of charity, justice, brotherly love, and fidelity; promote the welfare and happiness of its members; and quicken the spirit of patriotism. Membership (1959): 1,232,000 in 1,866 lodges. Publication: *The Elks Magazine.* The 1959 convention was held July 5–9 in Chicago, Ill. Grand exalted ruler, William S. Hawkins; grand secretary, L. A. Donaldson. Headquarters: 2750 Lake View Ave., Chicago 14, Ill.

B'nai B'rith.—Founded in 1843 to unite and serve the Jewish people and humanity through cultural, educational, philanthropic, and community service activities. Membership: 503,700 in 35 countries; 1,157 men's lodges, 805 women's chapters, and 1,307 youth affiliates in U.S. Publications: *The National Jewish Monthly; The Shofar* (youth monthly); *B'nai B'rith Women's World* (monthly). The 1959 international convention was held in Jerusalem, Israel, in May; the next such convention is scheduled for 1962. President, Label A. Katz; exec. vice pres., Maurice Bisgyer. Headquarters: 17th St. and Rhode Island Ave. NW, Washington 6, D.C.

Boston Museum of Fine Arts.—Major Exhibitions (1959): Dutch Drawings from Rijksmuseum, Amsterdam; Alvan T. Fuller Memorial Exhibition; Four Boston Masters; Ancient Phrygian Art; Form Givers at Midcentury; 75 Works from Guggenheim Museum; Paul Klee. Outstanding Accessions (1959): *Dead Christ with Angels,* Il Rosso; *Egyptian Royal Head,* Dynasty II; *Samuel Sewall,* John Smibert; *Reclining Nude,* Gustave Courbet; *Singing Boy,* Hendrick Terbrugghen; *The Voice,* Edvard Munch; *Standing Figure,* Pablo Picasso; *Gold Bull's Head Pendant,* Greek, early Hellenistic period; *Tapestry Panel,* Eastern Mediterranean, c. 5th century; *Madonna,* oak, French early Gothic. Publications: *Bulletin* (quarterly); *Calendar of Events* (monthly); *Annual Report.* Attendance (1958): 426,269. President, Ralph Lowell; director, Perry T. Rathbone. Address: 465–479 Huntington Ave., Boston 15, Mass.

Boy Scouts of America.—Founded in 1910 to promote the ability of boys to do things for themselves and others; to train them in scoutcraft; and to teach them patriotism, courage, self-reliance, and kindred virtues. Membership: 4,485,249 in 538 scout councils. Publications: *Handbook for Boys, 3 Cub Scout Books; Explorer Manual;* magazines, *Boys' Life* (for boys), *Scouting* (for leaders); various manuals and pamphlets. President, Ellsworth H. Augustus; chief scout exec., Arthur A. Schuck. Headquarters: New Brunswick, N.J.

Boys' Clubs of America.—Founded to promote the health, social, educational, vocational, and character development of boys throughout the U.S. Publications include *Program Service, The Boys' Club Bulletin, The Boys' Club Newsletter.* Membership: 500,000 in 531 clubs. Chairman, Herbert Hoover; president, Albert L. Cole; secretary, Grant G. Simmons; natl. dir., John M. Gleason; assoc. natl. dir., A. Boyd Hinds. Headquarters: 381 Fourth Ave., New York 16, N.Y.

Brookings Institution.—A nonprofit organization incorporated in 1927 and dedicated to public service through research and education in economics and government, the Institution is supported by income from its endowment, grants from foundations, and the sale of publications. Publications (1959): *Federal Budget and Fiscal Policy, 1789–1958,* L. H. Kimmel; *The National Debt Ceiling: An Experiment in Fiscal Policy,* M. A. Robinson; *Railroad Transportation and Public Policy,* J. C. Nelson; *Economics and the Policy Maker—Brookings Lectures 1958–59,* S. S. Alexander, G. Colm, N. H. Jacoby, L. Shere, R. V. Roosa, S. H. Slichter, M. S. Massel, and E. E. Hagen; *The Price Discrimination Law: A Review of Experience,* C. D. Edwards; *An Introduction to Economic Reasoning,* rev. ed., M. A. Robinson, H. C. Morton, and J. D. Calderwood. The Institution also conducted a program of conferences

on public affairs, and awarded research fellowships in economics and political science, and research professorships in economics. Chairman of the board, William R. Biggs; president, Robert D. Calkins; treasurer, Mildred Maroney; secretary, Edna M. Birkel. Headquarters: 722 Jackson Place, NW, Washington 6, D.C.

Buhl Foundation.—Established for the advancement of human welfare by support of experimental, demonstration, and research projects in natural and social sciences, education and community planning in the Pittsburgh (Pa.) district. Assets (book value 1959): $13,343,241. Director, Charles B. Nutting; assoc. director, C. V. Starrett; secretary, J. G. Verwer, Jr. Headquarters: One Gateway Center, Pittsburgh 22, Pa.

Camp Fire Girls.—Founded in 1910 to provide a leisure-time program of health and character-building activities for girls between the ages of 7 and 18, or in the second grade through senior high school, with emphasis on homemaking skills. Membership: 500,000. Publications: *The Camp Fire Girl* (monthly, September through June); *Horizon Club Program Book; Outdoor Book; Handbook for Guardians of Camp Fire Girls; The Blue Bird Book; Book of the Camp Fire Girls.* President, Elsbeth Melville; natl. dir., Martha F. Allen. Headquarters: 16 East 48th St., New York 17, N.Y.

Canadian Association for Adult Education.—Founded in 1935 to serve as a national co-ordinating body and general clearing-house of information for agencies and individuals working in the field of adult education in Canada. The Association publishes a journal, *Food for Thought* (8 issues a year), conducts a study and research program, undertakes demonstrations, experiments, training projects and institutes, and carries on an extensive publications program. President, Sen. Donald Cameron; director, J. R. Kidd. Headquarters: 113 St. George St., Toronto 5, Ont.

Canadian Corps Association.—Incorporated to make Canada a working partner in the Commonwealth of Nations, and to further democracy at home. Membership: 25,000. Publication: *Torch* magazine. President, Stanley Harpham; treasurer, E. V. Heesaker; secretary, Mrs. S. Wood Heesaker. Headquarters: 201 Niagara St., Toronto 3, Ont.

Canadian Institute of International Affairs.—Established to promote an understanding of world affairs through publications, discussion meetings with authorities, conferences, and the use of the national library. Membership: 2,382. Publications (1959): *International Journal* (quarterly); *Behind the Headlines* (series of pamphlets); *Canada in World Affairs,* Vol. V and VIII; *The Atlantic Triangle and the Cold War.* President, Edgar McInnis. Headquarters: 230 Bloor St. W., Toronto 5, Ont.

Canadian Library Association (Association Canadienne des Bibliothèques).—Formed in 1946 to stimulate and aid Canadian library service, promote high standards of librarianship, advance the welfare of librarians and library patrons, and cooperate with other organizations in furthering education, literature, science, and culture. Membership: 1,441 persons and 482 organizations. Publications: *Canadian Index to Periodicals and Documentary Films* (annual bound cumulation and monthly service); *C.L.A. Bulletin* (bimonthly); *Canadian Library Directory; The Library Trustee; Conference Proceedings.* President, Bertha Bassam; exec. secretary, Elizabeth Homer Morton. Headquarters: 63 Sparks St., Ottawa 4, Ont.

Canadian Medical Association.—Founded for the promotion of medicine and allied sciences, and the maintenance of the honor and the interests of the medical profession. Membership: approx. 13,000. Publication: *The Canadian Medical Association Journal.* President, H.R.H. The Duke of Edinburgh; deputy to the pres., Dr. E. Kirk Lyon; gen. secretary, Dr. A. D. Kelly. Headquarters: 150 St. George St., Toronto 5, Ont.

CARE (Cooperative for American Relief Everywhere, Inc.).—A cooperative, nonprofit overseas relief and rehabilitation agency, established in 1945 to channel aid of American individual citizens and civic groups to needy and underdeveloped areas of the free world, in form of standard food, clothing and tool packages, "self-help" implements and equipment, books, medical supplies, etc. Consists of 25 member agencies and works with other groups in overseas aid programs. By the end of 1959 CARE had delivered 27 million packages, valued at more than $325,000,000 in some 50 countries. President, Harold S. Miner; exec. director, Richard W. Reuter. Headquarters: 660 First Ave., New York 16, N.Y.

Carnegie Corporation of New York.—Established in 1911 for the advancement and diffusion of knowledge and understanding among the people of the U.S. and the British dominions and colonies. Assets: approx. $197,000,000. President, John W. Gardner; secretary, Florence Anderson. Headquarters: 589 Fifth Ave., New York 17, N.Y.

Carnegie Endowment for International Peace.—Established in 1910 by Andrew Carnegie to promote international peace. Objectives: to increase knowledge and understanding among the peoples of the world, and to further the development of organizations and measures likely to lead to orderly international cooperation based on peace and justice. Current programs include: conferences, lectures, exhibits; a study of national policies and attitudes toward the United Nations in over 25 countries; encouragement of the role of universities in world affairs; publications dealing primarily with problems of international organization; and a series of scholarly case studies on conflicts. Current assets: $19,404,695.03. Periodical: *International Conciliation* (5 issues yearly). Chairman of the board, Whitney North Seymour; president, Joseph E. Johnson; treasurer, James M. Nicely; secretary, Arthur K. Watson. Headquarters: United Nations Plaza at 46th St., New York 17, N.Y. European Center: 172 Route de Ferney, Grand Saconnex, Geneva, Switzerland.

Carnegie Hero Fund Commission.—Established in 1904 by Andrew Carnegie for the purpose of rewarding acts of heroism in civil life through medal and pecuniary grants. Original Endowment: $5,000,000. Members of the Commission, never exceeding 21 in number, hold their annual meeting the 4th Wednesday in January. In the 12 months ended Jan. 31, 1959, 64 Awards were made. President, Charles A. McClintock; mgr. and secretary, David B. Oliver. Address: Oliver Bldg., Pittsburgh 22, Pa.

Carnegie Institute.—Founded and endowed by Andrew Carnegie in 1896, it houses under one roof the Department of Fine Arts, the Carnegie Museum, the Carnegie Library, and the Carnegie Music Hall. Endowment: $8,000,000. Publications: *Carnegie Magazine;* various bulletins. President, James M. Bovard; vice pres., Roy A. Hunt; treasurer, Sidney A. Swensrud; secretary, William P. Witherow. Address: 4400 Forbes Ave., Pittsburgh 13, Pa.

Carnegie Institution of Washington.—Founded to encourage investigation, research, discovery, and the application of knowledge to the improvement of mankind. Endowment: $32,000,000. Integrated programs of fundamental research in the physical and biological sciences are carried on in the institution's 6 departments. President, Caryl P. Haskins; exec. officer, Paul A. Scherer. Address: 1530 P St. NW, Washington 5, D.C.

Catholic Community Service, National.—See under *National.*

Catholic Library Association.—A national association fostering Catholic librarianship, education, and literature; sponsor of National Catholic Book Week and the Regina Medal (for continued distinguished contribution to children's literature—estab. 1959). Membership: 2,730. Publications: *Catholic Library World; Catholic Periodical Index; Guide to Catholic Literature; CLA Handbook and Membership Directory; Catholic Book List; Basic Reference Books for Catholic High School Libraries; Parish Library Manual; Suggestions for an Elementary School Library.* President, Br. Arthur L. Goerdt, S.M.; exec. secretary, Alphonse F. Trezza. Headquarters: Villanova University, Villanova, Pa.

Catholic Rural Life Conference, National.—See under *National.*

Catholic Welfare Conference, National.—See under *National.*

Chamber of Commerce of the United States.—Established to provide the organizational means by which the businessmen of America can make their views count in national affairs; make known to Congress and to the American public the views of business on national issues; and maintain an atmosphere favorable to business. Membership: 3,500 organizations representing 2,700,000 businessmen; 22,500 business firms and individuals. Publications: *Nation's Business* (monthly); *Washington Report* (weekly); *Economic Intelligence* (monthly); *Labor Relations Letter* (monthly); *Newsletters.* The 47th annual meeting was held in Washington, D.C., April 26–29, 1959. President, Erwin D. Canham; exec. vice pres., Arch N. Booth. Headquarters: 1615 H St. NW, Washington 6, D.C.

Chicago Natural History Museum.—The outstanding event of 1959 for the Museum was participation in the Festival of the Americas (held in conjunction with the Pan American Games). The Museum's contribution was a special exhibit, *Indian Art of the Americas,* with examples of creative work covering a period of 2,500 years, and embracing the cultures of peoples from Alaska to the southern tip of South America—the first exhibit of such comprehensive dimensions ever held in the United States. Excavations of prehistoric Indian sites in east-central Arizona were continued for the 25th season by the Archaeological Expedition to the Southwest, under Dr. Paul S. Martin, chief curator of anthropology. Emmet R. Blake, curator of birds, returned in midyear from his expedition to Peru, begun in 1958, with large collections of birds from remote areas. Melvin A. Traylor, Jr., associate curator of birds, collected in Egypt and contiguous regions; Dr. Robert F. Inger, curator of amphibians and reptiles, collected in the Belgian Congo, and Loren P. Woods, curator of fishes, collected in the waters of the West Indies. Dr. Alan Solem, curator of lower invertebrates, and Henry S. Dybas, associate curator of insects, collected in Panama and made a survey of faunal distribution. Attendance (1958): 1,049,401. Director, Dr. Clifford C. Gregg. Address: Roosevelt Rd. and Lake Shore Dr., Chicago 5, Ill.

Christian Endeavor, International Society of.—See under *International.*

Civitan International.—A service organization devoted to the promotion of good citizenship. Each individual club selects activities best suited to the needs of its respective community. Membership: Approx. 30,000 persons in 850 clubs in the U.S. and Canada. Publications: *The Civitan* (monthly); various booklets and pamphlets. President, Joe Starnes; exec. secretary, Rudolph T. Hubbard. Headquarters: 115 North 21st St., Birmingham 3, Ala.

Cloisters, The.—See below, *Metropolitan Museum of Art.*

Commonwealth Fund, The.—Established in 1918 by Mrs. Stephen V. Harkness "to do something for the welfare of mankind," and increased by bequests from Mr. and Mrs. Edward S. Harkness, the Fund's present concern is helping medical schools to reorient medical education to the student, and medical care to the patient, by better integration and increased attention to the relation between the patient and his environment. Assets: $82,739,237. Appropriations for 1958–59: $3,803,325. Grants for medical education and community health activities amounted to $1,353,993, for medical research, $990,959, and for fellowships and awards in the health field, $848,923. During the academic year 1959–60, 58 Fund Fellows were in residence in the U.S. An annual report is published in November. President, Malcolm P. Aldrich. Headquarters: 1 East 75th St., New York 21, N.Y.

Community Chests and Councils of America.—See under *United Community Funds.*

Daughters of Isabella.—An organization to unite all Catholic women for mutual assistance in times of need and to promote their religious, social, and intellectual growth. Membership: Approx. 119,000. President, Julia F. Maguire; secretary, Mary F. Riley. Headquarters: 375 Whitney Ave., New Haven 11, Conn.

Daughters of the American Revolution (National Society).—Founded in 1890 for historical, patriotic, and educational purposes; chartered by Congress in 1896. Functioning through 24 national committees, the society: owns and operates two schools in the Southern mountains; materially aids 11 approved schools; sponsors scholarships for American Indians; administers student loan funds; forms and operates Junior American Citizens Clubs; maintains a genealogical library and a museum of Americana. Membership: 186,079 in 2,848 chapters. Publications: *D.A.R. Magazine; D.A.R. Manual for Citizenship.* Annual conventions are held in Washington in April. President general, Mrs. Ashmead White. Headquarters: 1776 D St. NW, Washington 6, D.C.

Duke Endowment, The.—Established in 1924 by James B. Duke "to make provision in some measure for the needs of mankind along physical, mental and spiritual lines." Beneficiaries include Duke University and other educational institutions, hospitals, orphanages, rural churches, and superannuated Methodist preachers. Through Dec. 31, 1957, a total of $146,449,537 was distributed and allocated. Chairman, George G. Allen; secretary, Philip B. Heartt, Admin. Office: 30 Rockefeller Plaza, New York 20, N.Y.

Elks, Benevolent and Protective Order of.—See under *Benevolent.*

English-Speaking Union of the United States.—Organized to draw together in the bond of comradeship the English-speaking peoples of the world. Membership: 28,500 in 82 branches. Publication: *E.-S.U. News.* Acting pres., J. W. F. Treadwell. Headquarters: 16 East 69th St., New York 21, N.Y.

Falk Foundation, The Maurice and Laura.—Established in 1929, it devotes its activities principally to financing research studies of economic problems affecting the operation and development of the national economy of the United States, and to furthering the efforts of American colleges and universities to prepare their students for avocational participation in party politics as a responsibility of American citizenship. A few out-of-program grants are made to Pittsburgh health and social welfare activities. Endowment (market value, Dec. 31, 1958): $16,848,193.62. Grants voted in 1959 included allotments in support of programs of political education to Yale University, University of Chicago, Grinnell College, University of California, University of Oregon, and the Citizenship Clearing House of New York City. Grants also were made to the United Jewish Federation of Pittsburgh and to the Allegheny Council of the Boy Scouts of America, Pittsburgh. Publications (1959): *Wages, Prices, Profits and Productivity,* issued by The American Assembly, Columbia University; *The Supply of Professional Manpower from Israel's Educational System,* H. V. Muhsam. Exec. director, J. Steele Gow; secretary of the Board, E. B. Strassburger. Headquarters: Farmers Bank Building, Pittsburgh 22, Pa.

Ford Foundation.—Established in 1936 to advance human welfare by identifying problems of American society and underwriting efforts toward their solution. Its primary interest is the advancement of education. Other activities currently supported concern wider understanding of and participation in public affairs; economics and business administration; urban and regional problems; humanities and the arts; youth development; problems of the aging; science and engineering; international understanding, training, and research; and overseas development. New grants and appropriations in the fiscal year 1958 totaled $77,954,152. Assets (Sept. 30, 1958): $767,472,893. Chairman, board of trustees, John J. McCloy; president, Henry T. Heald; secretary, Joseph M. McDaniel, Jr.; treasurer, Richard W. Lambourne. Office: 477 Madison Ave., New York 22, N.Y.

Foreign Policy Association.—Founded in 1918 to provide nonpartisan educational materials, services, and counseling to stimulate constructive and effective citizen participation in world affairs. Publications: *Foreign Policy Bulletin* (biweekly); *Headline Series; Speakers Advisory Series.* Originator of the annual "Great Decisions" program—a nationwide 8-week discussion program of critical U.S. foreign policy issues—available to community groups under local sponsorship. President, John W. Nason. National office: 345 East 46th St., New York 17, N.Y.

Four-H Clubs.—A part of the system of cooperative extension work in agriculture and home economics, established on a national basis in 1914, and carried on jointly by the U.S. Department of Agriculture, state colleges of agriculture, and local county governments. 4-H Club work, emphasizing head, heart, hands, and health, is a specialized educational enterprise for young people, 10 to 21 years of age, organized under the supervision of county extension agents and local volunteer leaders. Enrollment: 2,253,999. The National 4-H Conference is held annually in April in Washington, D.C.; the National Congress, in November in Chicago, Ill. Administrator, C. M. Ferguson; director, E. W. Aiton. Address: Federal Extension Service, U.S. Dept. of Agriculture, Washington 25, D.C.

Franklin Institute.—Dedicated to the promotion of the mechanic arts and the dissemination of scientific knowledge, the nonprofit, private institute is designed to be a permanent memorial to Benjamin Franklin. Membership: 7,800. Publication: *Journal; Institute News.* The institute is presently concerned with the Benjamin Franklin Memorial; a science museum; Fels Planetarium; and four research laboratories engaged in work for private industry and the government. President, Wynn Laurence LePage; exec. vice pres., John S. Burlew. Headquarters: 20th St. and Benjamin Franklin Pkwy., Philadelphia 3, Pa.

Freemasonry, Northern Masonic Jurisdiction, Supreme Council, 33°, Ancient Accepted Scottish Rite.—Organized in 1813 for fraternal, benevolent, religious, scientific, and educational purposes. Membership: 483,473 in 15 states. Publications: *News-Letter* (ten issues a year); special reports; annual proceedings. Activities include subsidizing research in schizophrenia and financing scholarships at Boston University and American University. Sovereign grand commander, George E. Bushnell; grand secretary gen., Frank S. Merrill. Headquarters: 1117 Statler Bldg., Boston 16, Mass.

Freemasonry, Southern Jurisdiction, Supreme Council, 33°, Ancient and Accepted Scottish Rite of.—Organized in 1801 for fraternal and benevolent purposes. Membership: 473,000. Publications: *The New Age* (monthly); various books and pamphlets. The Supreme Council meets biennially in October, the last meeting was in 1959. Sovereign grand commander, Judge Luther A. Smith; grand secretary-general, Dr. Claud F. Young. Headquarters: House of the Temple, 1733 16th St. NW, Washington 9, D.C.

Future Farmers of America.—An organization for boys founded in 1928 for the development of rural and agricultural leadership, cooperation, and citizenship. Membership: 381,621 in 50 state and territorial associations. Publications: *Proceedings* of national conventions; *The National Future Farmer* (bimonthly). Conventions are held annually at Kansas City, Mo., at the time of the American Royal Livestock Show—1959 meeting, October 12–15. President, Adin Hester; exec. secretary, Wm. Paul Gray. Headquarters: Office of Education, Dept. of Health, Education, and Welfare, Washington 25, D.C.

Garden Club of America.—Established to stimulate the knowledge and love of gardening among amateurs; to aid in the conservation of natural resources and in the protection of native plants and birds; and to encourage civic planting. Membership: approx. 11,000. Publication: *Bulletin* (bimonthly). The 1960 annual meeting will take place on April 4–8 at Palm Beach, Fla. President, Mrs. Charles D. Webster; corresp. secretary, Mrs. W. Lawrence McLane. Headquarters: 598 Madison Ave., New York 22, N.Y.

General Federation of Women's Clubs.—Organized to unite women's clubs and like organizations throughout the world for the promotion of education, philanthropy, public welfare, moral values, civics, and fine arts. Membership: approx. 11,000,000 in 15,600 state, national, and international clubs and affiliated groups. Publication: *General Federation Clubwomen.* The 1959 convention was held in Los Angeles, Calif., June 1–5. President, Miss Chloe Gifford; admin. ass't to pres., Mrs. Stephen J. Nicholas. Headquarters: 1734 N St. NW, Washington 6, D.C.

Geological Society of America.—Founded in 1888 for the advancement in North America of the science of geology. Membership: 5,200. Endowment: $4,500,000. Publications: *Bulletin* (monthly); *Proceedings* (annual); *Bibliography of Geology Exclusive of North America* (annual); *Treatises on Invertebrate Paleontology; memoirs,* special papers. President, Marland P. Billings; secretary, H. R. Aldrich. Headquarters: 419 W. 117th St., New York 27, N.Y.

Girl Scouts of the U.S.A.—Founded in 1912 by Juliette Gordon Low to help girls "develop as happy, resourceful individuals willing to share their abilities as citizens in their homes, their communities, their country and the world." One of 44 national associations comprising the World Association of Girl Guides and Girl Scouts. Program is scaled to three age groups: Brownie Scouts, 7–9; Intermediate Girl Scouts, 10–13; Senior Girl Scouts, 14–17. Interests center on the home, the community, the arts, the out-of-doors. Membership (1959): 3,295,000. Publications include handbooks and leaders' guides for the three age levels, and two periodicals: *The American Girl* (monthly) and *The Girl Scout Leader* (9 issues a year) for adults in the organization. Honorary president, Mrs. Dwight D. Eisenhower; nat. president, Mrs. Charles U. Culmer; nat. exec. dir., Dorothy C. Stratton. Headquarters: 830 Third Ave., New York 22, N.Y.

Good Templars, International Order of.—See under *International.*

Grange, National.—See under *National.*

Guggenheim Memorial Foundation, John Simon.—Established to promote the advancement and diffusion of knowledge and the appreciation of beauty, by offering fellowships to further the development of scholars and artists by assisting them to engage in research in any field of knowledge and artistic creation in any of the fine arts, including music. Fellowships are available to citizens of the United States, Canada, the Latin American republics, the Philippines, and the British Caribbean. Membership: 10. Endowment: $45,000,000. The foundation awarded 358 fellowships in 1959. President, Mrs. Simon Guggenheim; secretary general, Henry Allen Moe. Headquarters: 551 Fifth Ave., New York 17, N.Y.

Holy Name Society.—A Catholic religious organization founded for the purpose of fostering personal sanctification and public honoring of the name of God; and to suppress all unnecessary oaths, blasphemy, perjury, and indecent speech. Membership: approx. 5,000,000. Publications: *Holy Name Journal* (monthly); various pamphlets. Director, Rev. Dennis B. McCarthy, O.P. Headquarters: 141 East 65th St., New York 21, N.Y.

Industrial Hygiene Foundation of America, Inc.—A nonprofit research and service organization for the advancement of healthful working conditions in industry, the preservation of human resources, and the solution of specific problems relating to these areas. Membership: 406 companies. Publications: *Industrial Hygiene Digest* (monthly); transactions of annual meeting and technical conferences; special bulletins; technical papers. Board chairman, William P. Yant; managing director, H. H. Schrenk, Ph.D. Headquarters: Mellon Institute, 4400 Fifth Ave., Pittsburgh 13, Pa.

Institute of Radio Engineers, Inc., The.—Founded in 1912 for the advancement of the theory and practice of radio engineering and related arts and sciences, study of their application to human needs, and maintenance of high professional standards among its members. Membership: 73,990. Publications: *Proceedings; IRE Directory; IRE Student Quarterly;* Professional Group *Transactions.* The national convention was held March 21–24, 1960, in New York City. President, Ernst Weber; exec. secretary, George W. Bailey. Headquarters: 1 East 79th St., New York 21, N.Y.

Institute of the Aeronautical Sciences, Inc.—Founded in 1932, the Institute is the representative society in America for engineers, designers, and technical specialists in the sciences related to the design and development of air and space craft. Its basic mission is to facilitate the interchange of technical ideas among aero/space engineers throughout the world. Membership: 15,500 graded members in 34 IAS sections; 3,900 student members in 80 student branches. Publications: *Aero/Space Engineering* (monthly); *Journal of the Aero/Space Sciences* (monthly); *Aero/Space Engineering Catalog* (annual); *Aero/Space Engineering Index* (annual); *Roster of Members* (annual). The 28th annual meeting was held in New York City, Jan. 25–28, 1960. President, William Littlewood; secretary, Robert R. Dexter. Headquarters: 2 East 64th St., New York 21, N.Y.

International College of Surgeons.—A world federation of general surgeons and surgical specialists founded in 1935 for the advancement and teaching of the art and science of surgery. Membership: approx. 12,000. Publication: *Journal of the International College of Surgeons* (monthly). President, Dr. Henry W. Meyerding; secretary, Dr. Max Thorek. Headquarters: 1516 Lake Shore Dr., Chicago 10, Ill.

International Confederation of Free Trade Unions.—See separate article under its own heading.

International Council of Scientific Unions (Conseil International des Unions Scientifiques).—Founded in 1919 to coordinate and facilitate the activities of the International Scientific Unions in the field of the natural sciences and to act as coordinating center for the national organizations adhering to the Council. Membership: 47 national members; 13 scientific organizations. Endowment: $250,000. Publications: *ICSU Review; ICSU Year Book.* Activities in 1959 included termination of the IGY 1957–58, and creation of a new Inter-Union Committee for International Cooperation between Geophysics and Related Sciences (CIG); decision to hold an International Indian Ocean Year (IOY 1962–63) in collaboration with UNESCO and FAO; decision to sponsor the First World Symposium on Space Research, held at Nice, France, January 1960. President, Sir Rudolph Peters (Cambridge); secretary, Dr. N. Herlofson (Stockholm). Headquarters: Paleis Noordeinde, The Hague, Netherlands.

International Federation of Catholic Alumnae.—Founded to bring into communication the alumnae of Catholic high schools, colleges, and universities for the purpose of upholding the ideals of Catholic womanhood and of extending Catholic education, literature, and social service; to improve the moral quality of motion pictures; and to provide scholarships for teaching sisterhoods. Membership: approx. 1,000,000 in more than 550 associations in the U.S. and Mexico. Publication: *The Catholic Alumnae Quarterly.* President, Alice R. May; exec. secretary, Mrs. Marguerite E. Barry. Business Headquarters: 22 East 38th St., New York 16, N.Y. Internatl. Headquarters: The Catholic University of America, Washington 17, D.C.

International Labor Organization.—See separate article under its own heading.

International Mineralogical Association. See the article, MINERALOGY.

International Order of Good Templars.—Dedicated to world peace, the brotherhood of man, and to the liberation and protection of humanity from the destructive influence of intoxicants. Membership: 300,000 in lodges in more than 29 countries. The next meeting will be held in Oslo, Norway, in 1962. International chief templar, Ruben Wagnsson, Stockholm, Sweden; internatl. secretary, C. G. Peet, Farnham, Surrey, England; natl. secretary, U.S.A., Mrs. Martha V. Palmgren. Headquarters: 2832 Zulette Ave., Bronx 61, N.Y.

International Political Science Association.—See the article, POLITICAL SCIENCE.

International Society of Christian Endeavor.—Founded in 1881 as a youth society in Protestant churches to aid in spiritual life and leadership growth. The program is interdenominational, interracial, and international. Membership: 1,000,000 in 20,000 organizations. Publication: *Christian Endeavor World.* President, Dr. Clyde W. Meadows; gen. secretary, Harold E. Westerhoff. Headquarters: 1221 E. Broad St., Columbus 16, Ohio.

Jewish Welfare Board, National.—See under *National.*

Junior Chamber of Commerce, United States.—See under *United.*

Junior Leagues of America, Inc., Association of.—See under *Association.*

Kellogg Foundation, W. K.—Founded in 1930 to receive and administer funds for educational and charitable purposes. The foundation conducts extensive health and education programs by making grants in support of agriculture, medicine, education, dentistry, nursing, public health and hospital administration. President, Emory W. Morris; secretary, Leonard L. White. Headquarters: Battle Creek, Mich.

Kiwanis International.—A community service organization, founded in 1915, for business and professional leaders, and designed to strengthen the free enterprise system; mold sound public opinion; aid and counsel youth; and develop the church, home, and school as bulwarks of democracy. Membership: 258,000 in 4,700 clubs in the U.S. and Canada. Kiwanis also sponsors Key Club International for high school boys (50,000 in 2,000 clubs) and Circle K International for college men (4,000 in 250 clubs). Publications: *The Kiwanis Magazine; Bulletin for Kiwanis Officers; The Keynoter; Bulletin of Circle K International.* Activities in 1959 included coordination of National Farm-City Week; working with the U.S. Air Force and the R.C.A.F. in promoting Kid's Day, and with the two air services and the Civil Air Patrol on the "Living in the Air Age" program; sponsorship of U.S.-Canada Good Will Week; and "The CQ Program," stressing citizenship. President, Albert J. Tully; secretary, O. E. Peterson. General office: 101 E. Erie St., Chicago 11, Ill.

Knights of Columbus.—An international Catholic society formed in 1882 to render pecuniary aid to its members and their beneficiaries; to assist its sick, disabled, and needy; to promote social and educational intercourse among members; and to conduct educational, charitable, religious, social welfare, and war relief activities. Membership (1959): 1,115,417. Publication: *Columbia* (monthly). From 1948 through 1959 a campaign has been conducted to correct misunderstanding of Catholic religion and thus promote better relations between peoples of different religious persuasions. Supreme knight, Luke E. Hart; supreme secretary, Joseph F. Lamb. Headquarters: 71 Meadow St., New Haven 7, Conn.

Knights of Pythias.—A social and fraternal organization founded in 1864, with the basic principles of friendship, charity, and benevolence. Membership: 300,000. Publication: *Pythian International.* Supreme chancellor, William H. Pierce; supreme secretary, Melvin M. Ewen. Headquarters: 420 First Ave. NE, Cedar Rapids, Iowa.

League of Women Voters of the U.S.—A nonpartisan organization to promote the responsible participation of citizens in government. Membership: 127,000 in 1,080 local Leagues in 50 states and the District of Columbia. Publications: *The National Voter* (10 issues yearly); various pamphlets. President, Mrs. Robert J. Phillips; secretary, Mrs. Leon K. Richards. Headquarters: 1026 17th St. NW, Washington 6, D.C.

Lions International.—Founded in 1917 as a nonpolitical, nonsectarian service club organization for business and professional men. Activities are grouped under the headings: agriculture, boys and girls; citizenship; civic improvement; education; health and welfare; safety; sight conservation and the blind; United Nations. Membership: 590,000 in 14,400 clubs in 101 countries. Publications: *The Lion* (monthly); *El Leon* (Spanish edition). The 42d annual convention was held in New York, June 30–July 3, 1959. President, Clarence L. Sturm; vice presidents, Finis E. Davis, Per Stahl, Curtis D. Lovill. Headquarters: 209 N. Michigan Ave., Chicago 1, Ill.

Loyal Order of Moose.—A fraternal organization founded in 1888 and operating in the U.S., Canada, and the British Isles, its membership is restricted to the white race. It operates at Mooseheart, Ill., a school and home for boys and girls, and at Moosehaven, Orange Park, Fla., a home for dependent aged members and their wives or widows. Membership: 1,023,164 in 3,365 units, including

women's auxiliary. Publication: *Moose Magazine.* Director general, Paul P. Schmitz; supreme secretary, George Eubank. Headquarters: Mooseheart, Ill.

Markle Foundation, John and Mary R.—Established in 1927, it now makes grants chiefly to medical schools and other scientific institutions in support of medical science in the U.S. and Canada. Endowment: approx. $19,000,000. Publications: *Annual Report; Purposes and Program of the John and Mary R. Markle Foundations; Charter and Constitution and By-Laws; Grants for Scholars in Medical Science.* President, George Whitney; vice pres. and exec. dir., John M. Russell; secretary, Dorothy Rowden. Headquarters: 511 Fifth Ave., New York 17, N.Y.

Masons.—See above, *Freemasonry.*

Mellon Institute.—See separate article under its own heading.

Metropolitan Museum of Art.—Founded in 1870, the Museum houses a collection of more than 350,000 works of art covering 5,000 years and representing the cultures of the ancient world, and the Near and Far East, as well as the arts of Europe and America. Exhibition highlights of 1959: *Ceramic International Exhibition,* 350 works by leading ceramists from Europe, Canada, and the U.S.; *Winslow Homer—A Retrospective Exhibition,* the largest and most inclusive showing of Homer's work ever held in New York; *French Drawings from American Collections,* 200 drawings lent by more than 50 museums and private collections; *Gauguin,* 74 paintings, 44 drawings and watercolors, 74 prints, and 11 sculptures, lent from institutions and private collections in the U.S., France, and Switzerland; *Photography in the Fine Arts,* a circulating exhibition of 85 great contemporary photographs; *Form Givers at Mid-Century,* a comprehensive showing of the work of 13 leading architects of our time; *Paintings from Private Collections,* the Museum's annual display of privately-owned works; *An Aristocracy of Robes . . . Four Hundred Winters . . . Four Hundred Springs of Japan,* a showing of the magnificent outer costumes worn by great ladies of Japan from 1500 until the early 19th century; and *Glass 1959,* more than 280 contemporary pieces from 23 countries, organized by the Corning Museum of Glass. New installations: a gallery for the display of Egyptian jewelry and objets d'art; the 18th century tapestry room from Croome Court, England. Important acquisitions: *Saint John's Vision of the Mysteries of the Apocalypse* by El Greco, purchased through the Rogers Fund.

The Cloisters, in Fort Tryon Park, is a branch of the Museum devoted to medieval art. In a setting composed of four cloisters and various rooms reconstructed with original architectural elements are exhibited fine examples of sculpture, painting, stained glass, metalwork, and furniture.

Attendance at the Museum and The Cloisters (1958): 3,426,588; (Jan.–Sept. 1959) 2,601,247. Publications: *The Metropolitan Museum of Art Bulletin* (10 issues yearly). President, Roland L. Redmond; director, James J. Rorimer; secretary, Dudley T. Easby, Jr.; operating admin., Joseph V. Noble. Address: Fifth Ave. at 82d St., New York 28, N.Y.

Milbank Memorial Fund.—Incorporated in 1905 to "improve the physical, mental and moral condition of humanity and generally to advance charitable and benevolent objects," the Fund is primarily interested in projects in public and mental health and population studies. Endowment (Dec. 31, 1958): $17,377,839. Publications (1959): *Quarterly; Thirty Years of Research in Human Fertility: Retrospect and Prospect; Social and Psychological Factors Affecting Fertility,* Vol. 5; *Progress and Problems of Community Mental Health Services.* In 1958, $304,667.34 was expended for 40 grants; $34,981.15 for 15 fellowships; and $130,270.78 for the Fund's own research projects. Chairman, Samuel R. Milbank; president, Frank G. Boudreau, M.D.; secretary, Mrs. Helen Slane McGuire. Address: 40 Wall St., New York 5, N.Y.

Mineralogical Society of America. See the article, MINERALOGY.

Moose, Loyal Order of.—See under *Loyal.*

Museum of Modern Art.—Principal exhibitions (1959): *20th Century Design,* the Museum's entire Design Collection; *Ten European Artists,* 60 prints recently acquired; *Joan Miró,* a comprehensive retrospective of paintings from 1912 to the present; *Architecture & Imagery—Four New Buildings,* 2 churches, an airport, and an opera house shown in models and photographs; *The New American Painting,* advanced trends in contemporary painting which successfully toured eight European countries; *Recent Sculpture—U.S.A.; New Talent,* David Hayes and Ronni Solbert; *American Acquisitions* (prints); *Drawings & Watercolors: New Acquisitions,* including work by Grosz, Redon, Picasso, and Pollock; *New Images of Man,* recent paintings and sculpture by 23 American and European artists; *International Packaging,* an appraisal of package design qualities; *Structures by Buckminster Fuller,* a geodesic dome, an octet truss, and a tension mast; *Children's Outdoor Carnival; The Artist in His Studio,* photographs by Liberman; *Reinstalled Permanent Collection,* to celebrate the Museum's 30th Anniversary (Nov.); *Americans 1959.* Publications: *Bulletin* (quarterly); four major catalogues annually. Chairman of the board, Mrs. John D. Rockefeller 3d; director, René d'Harnoncourt. Address: 11 West 53d St., New York 19, N.Y.

National Academy of Design.—Founded in 1825 for the cultivation and extension of the arts of design. Operates the National Academy School of Fine Arts, with classes in life drawing, oil and watercolor painting, mural work, and sculpture. Membership: 225 Academicians; 178 Associates —Painters, Sculptors, Aquarellists, Graphic Artists and Architects. Publication: *Catalog*—135th Annual Exhibition in March 1960. Chairman of the School Committee, John Koch; president of the Academy, John F. Harbeson; secretary, Louis Bouché. Address: 1083 Fifth Ave., New York 28, N.Y.

National Academy of Sciences—National Research Council.—The National Academy of Sciences is a private, self-perpetuating, nonprofit corporation chartered by U.S. Congress in 1863 to further science and to advise the government on scientific and technical matters. Membership: 599 leading U.S. scientists, 12 members emeriti, and 62 foreign associates. The National Research Council was organized by the Academy in 1916 and permanently established in 1918 to stimulate and promote the integration of government and private research through operating committees, conferences, publications, management of supporting funds and fellowships, etc. Participation in the activities of the National Research Council is not limited to members of the Academy. Membership: 225, representing approximately 100 scientific societies and certain federal agencies. Publications: *Proceedings; News Report;* various technical reviews and reports. President of the Academy, Detlev W. Bronk; exec. officer of the Academy-Research Council, S. D. Cornell. Headquarters: 2101 Constitution Ave. NW, Washington 25, D.C.

National Aeronautic Association.—Organized for the advancement of the art and science of aviation and related subjects and the diffusion of knowledge thereof. Membership: 5,000 regular; 25,000 affiliated. Activities include sanction and supervision of air racing and record attempts, and promotion of model aviation activities. NAA is the U.S. representative of the Federation Aeronautique Internationale, official governing body of sporting aviation throughout the world. Publication: *National Aeronautics* (monthly). The annual national convention was held Nov. 16–17, 1959, in New York City. President, Thomas G. Lamphier, Jr. Headquarters: 1025 Connecticut Ave. NW, Washington 6, D.C.

National Association for Mental Health, Inc.—A voluntary agency made up of state and local mental health associations working to promote adequate care and treatment of the mentally ill and mentally deficient; the prevention of mental and emotional illnesses; and public education, training, and research. Affiliated organizations: 750. Publications: *Mental Hygiene* (quarterly); *Annual Report;* directory of psychiatric clinics and other resources in the U.S.; materials on mental health and related subjects. Exec. director, Lawrence J. Linck; national and internl. consultant, George S. Stevenson, M.D. Headquarters: 10 Columbus Circle, New York 19, N.Y.

National Association for the Advancement of Colored People.—Founded in 1909 to safeguard the full political, civil, and legal rights of colored citizens and secure for them equality of opportunity. Membership: 335,000 in 1,300 branches, youth councils, and college chapters. Publication: *Crisis.* President, Arthur B. Spingarn; exec. secretary, Roy Wilkins. Headquarters: 20 West 40th St., New York 18, N.Y.

National Association of Manufacturers.—Established in 1895 to preserve the free competitive enterprise system in the U.S. by stressing the need for protection of individual rights of both employer and employee. Membership: 20,000, mostly manufacturing firms. Publications: *NAM News* (weekly); *Industrial Press Service* (biweekly); *Service for Company Publications* (monthly); *Program Notes for Women's Clubs* (bimonthly); pamphlets and economic studies. Its annual Congress of American Industry is held in December. President, Rudolph F. Bannow; exec. vice pres., Charles R. Sligh, Jr.; gen. mgr., Kenneth R. Miller; secretary, David M. Reeves; treasurer, John C. Bosted. Headquarters: 2 East 48th St., New York 17, N.Y.

National Association of Social Workers.—A professional membership association founded in 1955 through the merger of seven social work organizations in order to advance the quality of social work practice. Membership: 25,000 in 153 chapters. Publication: *Social Work* (quarterly). President, John Kidneigh; exec. director, Joseph P. Anderson. Headquarters: 95 Madison Ave., New York 16, N.Y.

National Audubon Society.—Founded in 1905 to arouse public understanding of the need for conservation of soil, water, plants, and wildlife. Membership: 30,000 adults; 250,000 juniors. Endowment: $3,000,000. Publications: *Audubon Magazine; Audubon Field Notes.* The Audubon Society of Canada (Toronto) publishes *Canadian Audubon.* The annual meeting was held in New York City, Nov. 7–10, 1959. President, Carl W. Buchheister; secretary, Olin S. Pettingill. Headquarters: 1130 Fifth Ave., New York 28, N.Y.

National Catholic Community Service.—Founded in 1940 as the agency designated by the Catholic bishops of the United States to assist in serving spiritual, educational, recreational, and welfare needs of the men and women in the armed forces and defense industries, their families, and patients in veterans hospitals. Publications: *NCCS News; NCCS-VA Hospital News; Focus on Faith; Greetings!; Fall In!; Letters to Servicewomen;* etc. Exec

director, Thomas D. Hinton. Headquarters: 1312 Massachusetts Ave. NW, Washington 5, D.C.

National Catholic Rural Life Conference.—Founded to strengthen and develop Catholicity in the rural districts, and to promote the general welfare of the rural population. Diocesan directors, 112. Publication: *Catholic Rural Life.* President, Most Rev. Joseph M. Marling; Episcopal Adviser, Most Rev. Leo A. Pursley; act. exec. secretary and dir., Rev. James L. Vizzard, S. J., Headquarters: 3801 Grand Ave., Des Moines 12, Iowa

National Catholic Welfare Conference.—Founded in 1919 to coordinate and organize Catholic activities in the fields of education, social welfare, immigrant aid, youth guidance, etc. Membership: all Catholic archbishops and bishops of the U.S. Publications: *NCWC News Service* for Catholic weeklies; *Noticias Catholicas.* Chairman of the admin. board, Most Rev. Karl J. Alter, Archbishop of Cincinnati; gen, secretary, Rt. Rev. Msgr. Paul F. Tanner. Headquarters: 1312 Massachusetts Ave. NW, Washington 5, D.C.

National Congress of Parents and Teachers.—An educational organization that unites the forces of home, school, and community for the education, welfare, and protection of children and youth. Membership: 11,516,905 individuals, in 45,336 local units (P.T.A.'s). Publications: *National Parent-Teacher: The P.T.A. Magazine; National Congress Bulletin; Proceedings;* various pamphlets and booklets. President, Mrs. James C. Parker; secretary, Mrs. A. Kenneth Spencer. Headquarters: 700 N. Rush St., Chicago 11, Ill.

National Council of the Churches of Christ in the U.S.A.—Constituted in 1950 by 29 Protestant and Eastern Orthodox national churches in the United States to carry on an extensive program in 75 areas of Christian activity at home and abroad. The Council consolidates the work of 13 separate interdenominational agencies and is the nation's largest religious organization. Its 33 constituent denominations have total memberships of 39,256,922. The triennial meeting will be held at San Francisco, Calif., in December, 1960. President: Rev. Dr. Edwin T. Dahlberg; gen. secretary, Rev. Dr. Roy G. Ross; treasurer, Charles E. Wilson, Headquarters: 475 Riverside Dr., New York 27, N.Y.

National Council of the Young Men's Christian Associations.—An international Christian organization with the aim of improving the spiritual, intellectual, social, and physical welfare of young men. U.S. Membership: 3,591,565 in 1,848 organizations. Endowment: $72,464,000. Publications: *National Council Bulletin; YMCA Year Book; The Intercollegian.* President, J. Clinton Hawkins; gen. secretary, Herbert P. Lansdale, Jr. Corporate body: National Board of YMCAs, 291 Broadway, New York 7, N.Y.

National Education Association of the U.S.—Dedicated to the upbuilding of democratic civilization and supported by cooperation of teachers of the U.S. to advance the interests of the teaching profession, promote child welfare, and foster education of all people. Membership: 667,120 persons; 30 departments; 64 state and 6,740 local affiliates. Publications: *NEA Journal;* 27 professional magazines; nearly 200 other publications annually. President, Ruth A. Stout; exec. secretary, William G. Carr. Headquarters: 1201 Sixteenth St. NW, Washington 6, D.C. (See article, EDUCATION.)

National Federation of Business and Professional Women's Clubs, Inc.—Organized with the purpose of improving conditions in all professions and businesses; extending opportunities for women and improving their professional status; and preparing members for leadership in their communities, states, and the nation. Membership: approx. 174,000; 3,426 clubs. Publication: *National Business Woman* (monthly). President, Grace B. Daniels; exec. director, Freda Dixon. Headquarters: 2012 Massachusetts Ave. NW, Washington 6, D.C.

National Federation of Music Clubs.—Founded in 1898, to encourage high standards and equalization of opportunity in musical education; make music an integral part of the life of the nation; encourage and advance American creative musical art; and promote American artists. Membership: more than 650,000 in approx. 6,500 clubs. Major Publications: *Music Clubs Magazine; Junior Keynotes.* President, Mrs. C. Arthur Bullock; exec. director, Helen Havener. Headquarters: 445 West 23d St., New York 11, N.Y.

National Foundation, The (originally NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC.)—The expanded program of the Foundation covers a three-way attack in research, patient aid, and the training of professional workers, on three disease areas: birth defects (congenital malformations), arthritis and polio. The organization, which financed the research and testing of the Salk vaccine, provides financial aid to polio patients and assists persons under 19 with rheumatoid arthritis and certain birth defects of the spine and skull. The fund-raising arm of the organization is the New March of Dimes which makes its appeal annually in January. Membership: 3,100 chapters. Publications: *National Foundation News; Annual Report.* In 1959, more than 50,000 patients were aided with $16,500,000. A scholarship program for training in the health professions has been extended to include aid for four years of undergraduate study, as well as for graduate work. President, Basil O'Connor; vice pres. & secretary, William F. Snyder; exec. vice pres., Melvin A. Glasser. Headquarters: 800 Second Ave., New York 17, N.Y.

National Gallery of Art.—Major Exhibit (1959): *Masterpieces of Impressionist and Post-Impressionist Painting,* a loan exhibition of French 19th century paintings from private collections. Gifts to the Gallery in 1959 included: *Morning Haze* by Monet; *San Marco* by Guardi; *Epes Sargent* by Copley; *The Tragedian* by Manet; *Madonna and Child with Saints in the Enclosed Garden* by Master of Flémalle and Assistants; *The Holy Family* by El Greco; *Portrait of a Man* and *Portrait of a Woman* by Cranach; *The Ascension* by Koerbecke; *The Annunciation* by Veronese; two portraits by Whistler, two pieces of sculpture by Daumier, and 14 American primitive paintings. In addition, the Gallery received 204 prints and drawings. The 8th annual series of the A. W. Mellon Lectures in the Fine Arts was delivered by Naum Gabo on *A Sculptor's View of the Fine Arts.* The regular Sunday evening series of Mellon concerts was held throughout the fall and winter, and in the spring the Gallery held its 16th American Music Festival. LecTour, an electronic guide system, was extended to additional galleries, bringing to 20 the total number of rooms with this service. Attendance for fiscal year ending June 30, 1959: 951,608. Director: John Walker. Address: Constitution Avenue at 6th St., Washington 25, D.C.

National Geographic Society.—See separate article under its own heading.

National Grange, Patrons of Husbandry, The.—A rural fraternity founded to improve and strengthen the farm home; advance the welfare of agriculture; support good government at local, state, and national levels; advance the cause of education; work for equity among all groups; and advance the cause of good citizenship. Membership: 850,000 in approx. 7,000 Grange units. Publication: *The National Grange Monthly.* Master, Herschel D. Newsom; secretary, Harry A. Caton. Headquarters: 744 Jackson Pl., Washington 6, D.C.

National Health Council.—Founded in 1921, the Council enables its members, more than 65 national organizations concerned with health, to work together, and with others, to promote better health throughout the nation, improve their own services, and encourage formation and effective operation of state and local health councils and services. President Ruth B. Freeman, Ed.D.; exec. director, Philip E. Ryan. Headquarters: 1790 Broadway, New York 19, N.Y.

National Industrial Conference Board, Inc.—An independent, nonprofit organization, established in 1916, conducting scientific research in the fields of economics, business management, and human relations. Membership: more than 3,700 subscribing associates. Publications: *Desk Sheet* (weekly); *Previews; Road Maps of Industry* (economic charts); *Economic Almanac* (biennial); research reports, chart books, basic industrial data. The 44th annual meeting will be held May 19–20, 1960, at New York City. President, John S. Sinclair; secretary, Herbert S. Briggs. Headquarters: 460 Park Ave., New York 22, N.Y.

National Institute of Arts and Letters.—Founded in 1898 for the furtherance of literature and the fine arts in the U.S. Membership 250. Publications: *Proceedings,* 2d Series, No. 9; *Yearbook,* 1959; Catalogues of art and manuscript exhibitions: *The Impressionist Mood in American Painting; Works by Candidates for Grants in Art;* and others. On May 20, 1959 a public ceremonial was given jointly with the American Academy of Arts and Letters. New members were inducted, medals and honors awarded, and 18 arts and letters grants of $1,500 each were given. Exhibition was made of the works of newly-elected art members, grantees in art and the recipients of the Award of Merit Medal for the Novel, Aldous Huxley, and the Brunner Award for Architecture, Edward Larrabee Barnes; as well as manuscripts by newly-elected literature members, grantees in literature, recipients of Fellowships of the Academy, Harold Brodky and Edmund Keeley; the Gold Medal for Graphic Art, George Grosz; the Gold Medal for Drama, Arthur Miller; the Marjorie Peabody Waite Award to an artist, Leon Hartl; the Richard and Hinda Rosenthal Foundation Award, Frederick Buechner; Award for Distinguished Service to the Arts, Elizabeth Ames, and the Medal for Good Speech on the Stage, Katharine Cornell. The annual meeting was held on Jan. 28, 1959. President, Glenway Wescott; secretary, Léonie Adams. Headquarters: 633 West 155th St., New York 32, N.Y.

National Jewish Welfare Board.—The national association of 357 Jewish Community Centers and YM-YWHAs with a combined membership of 610,000 member of the World Federation of YM-YWHAs and Jewish Community Centers. As the government-authorized agency for serving the religious, welfare, and morale needs of Jewish personnel in the U.S. Armed Forces, JWB serves 374 full and part-time Jewish chaplains at home and abroad and 269 local Armed Services Committees. Aggregate annual budgets of Centers affiliated with JWB exceed $21,000,000. In 1959, JWB continued to sponsor the Jewish Book Council, Jewish Music Council, and Jewish Center Lecture Bureau. President, Solomon Litt; exec. vice pres., Samuel D. Gershovitz; secretary, Alan J. Altheimer. Headquarters: 145 East 32d St., New York 16, N.Y.

National Recreation Association.—A national, nonprofit service organization established in 1906 to help young and old make the best use of their leisure by providing field service, leadership training, information, and public education, plus International Recreation Service outside the U.S. Membership: 1,786 public and private agen-

cies; 4,136 individual workers; 17,250 contributing members. Publication: *Recreation.* Chairman of the board, Grant Titsworth; exec. dir., Joseph Prendergast. Headquarters: 8 West 8th St., New York 11, N.Y.

National Research Council.—See above, *National Academy of Sciences.*

National Research Council of Canada.—Occupied principally with industrial and scientific research affecting the expansion of Canadian industries or the utilization of Canadian natural resources. Annual budget: approx. $30 million. Publications: Canadian Journal of Biochemistry and Physiology, of Botany, of Chemistry, of Microbiology, of Physics, of Zoology; *Annual Report; NRC Review; NRC Research News* (monthly); *List of Publications,* 1918–1952 (3d. ed. and supplements). In 1959–60, grants of $5.9 million were made for research in natural sciences in universities; and scholarships and fellowships awarded in excess of $1.5 million. President, E. W. R. Steacie. Headquarters: National Research Bldg., Ottawa 2, Ont.

National Safety Council.—A nonprofit, nonpolitical organization founded in 1913 to reduce the number and severity of all kinds of accidents. It serves as a clearinghouse for information on causes and prevention of accidents. Membership: over 12,500 organizations. Publications: *National Safety News; Traffic Safety; The Industrial Supervisor; Safety Education; Safe Worker; Safe Driver; Safe Railroader; Safe Builder; Home Safety Review; Farm Safety Review.* President, Howard Pyle; exec. vice pres., G. C. Stewart; secretary, R. L. Forney. 425 N. Michigan Ave., Chicago 11, Ill.

National Society for Crippled Children and Adults, Inc.—Organized in 1921 to help the crippled through programs of care and treatment; rehabilitation; research into causes, prevention, and improved treatment; and education of the public, professional persons, parents, and employers. Membership: 52 state and territorial societies; 1,600 local societies. Publications: *Rehabilitation Literature, Easter Seal Bulletin* (monthlies); *Parent Pamphlet Series;* various pamphlets and reports. The 1959 convention was held in Chicago, Ill., Nov. 29–Dec. 2. President, John J. Lee; exec. director, Dean W. Roberts, M.D. Headquarters: 2023 W. Ogden Ave., Chicago 12, Ill.

National Society of Professional Engineers.—Organized in 1934 to advance the public welfare and to promote the professional, social, and economic interest of the professional engineer. Membership: 50,000 registered engineers; 50 state societies; 400 local chapters. Publications: *American Engineer, Legislative Bulletin,* and *Engineering Employment Practices Newsletter* (monthlies); *Executive Research Survey Reports.* President, Harold A. Mosher; secretary, Paul H. Robbins. Headquarters: 2029 K St. NW, Washington 6, D.C.

National Travelers Aid Association.—Founded in 1917, the Association provides consultant and advisory service to member societies in order to promote cooperation and improve standards; distributes information concerning migration; and conducts regional conferences, institutes, and training courses. Membership: 101 local societies; 944 cooperating organizations and individuals on call where no regular Travelers Aid Society exists. Publication: *Shifting Scenes.* President, Donald S. Stralem; secretary, Mrs. Reynolds Holding; gen. director, Mrs. Savilla Millis Simons. Headquarters: 72 West 45th St., New York 36, N.Y.

National Tuberculosis Association.—Organized to study, and disseminate knowledge of, the causes, treatment, and prevention of tuberculosis and related health problems; and to promote international relations concerning control of the disease. Membership: 5,375; approx. 3,000 affiliated organizations. Publications: *American Review of Respiratory Diseases; Bulletin; Tuberculosis Abstracts* (all monthlies); various books and pamphlets. For the fiscal year 1959–60, the Association made 37 grants for medical research and awarded 25 fellowships for medical education and research. The 1959 annual meeting was held in Chicago, Ill., May 24–29. President, H. McLeod Riggins, M.D.; secretary, Mrs. Wallace B. White. Headquarters: 1790 Broadway, New York 19, N.Y.

National Urban League.—Founded in 1910 for the improvement, through interracial leadership, of the living and working conditions of Negroes, and of cooperation and understanding between the races. Membership: 50,000 in 63 local Leagues in 31 states. President, Theodore W. Kheel; secretary, Mollie Moon; exec. director, Lester B. Granger. Headquarters: 14 East 48th St., New York 17, N.Y.

National Woman's Christian Temperance Union.—Organized in 1874 to promote total abstinence through an education program teaching the effects of beverage alcohol on the mental, moral, social, spiritual, and physical well-being of the individual and the nation. Membership: approx. 400,000 in U.S.; World's WCTU organized in 70 countries. Publications: *The Union Signal* (semimonthly); *The Young Crusader* (monthly for children). President, Mrs. Glenn G. Hays; corresp. secretary, Mrs. Fred J. Tooze. Headquarters: 1730 Chicago Ave., Evanston, Ill.

New-York Historical Society.—Founded in 1804, it comprises a 400,000 volume reference library and a museum of American history, particularly that of the city and state of New York. Membership: 700. Special exhibitions in 1959 include: Miniature Models of Antique Automobiles, 1877–1914; Abraham Lincoln Sesqui-Centennial Exhibition; The Hudson, River of History, from Lake Champlain to the Sea, 1609–1959; Rediscovered Painters of Upstate New York, 1700–1875; Two American Naval Heroes: Matthew G. and Oliver H. Perry. Accessions include 242 volumes from the library of Chancellor Robert R. Livingston (1746–1813); collection of 14 letters written and signed by General John Armstrong (1758–1843) to James Madison, Baron von Steuben and others; portrait of Martin Van Buren (1782–1862) by Henry Inman (1801–46); tilt-top table c. 1825 with inlaid portraits of George and Martha Washington and Gen. Lafayette; 28 miniature models of antique automobiles. Director, Dr. R. W. G. Vail. Address: 170 Central Park West, New York 24, N.Y.

Parents and Teachers, National Congress of.—See under *National.*

Photographic Society of America.—Founded in 1933 for the promotion of the art and science of photography. Membership: over 10,000 members and over 1,200 camera clubs; 350 or more clubs affiliated through 20 camera club councils; about 450 additional miscellaneous members included in a list of firms, libraries, laboratories, and government bodies. Publications: *PSA Journal;* various news bulletins. Exec. secretary, Randolph Wright, Jr. Headquarters: 2005 Walnut St., Philadelphia 3, Pa.

Planned Parenthood Federation of America, Inc.—Devoted to a program of family planning, education for marriage and parenthood, and research in the field of human reproduction, the Federation aims to improve present contraceptive techniques; develop new, simple, safe, and inexpensive methods for use in overpopulated world areas; and to investigate infertility and sterility problems. Membership: 103 state leagues and local committees which operate service clinics in 29 states and the District of Columbia. National director, William Vogt, Sc.D. Headquarters: 501 Madison Ave., New York 22, N.Y.

Red Cross, American National.—See separate article under its own heading.

Rockefeller Foundation.—Founded in 1913 to promote the well-being of mankind through the advancement and effective application of knowledge to human interests in specific fields of medical and natural sciences, agricultural sciences, social sciences, and the humanities. Principal fund (market value Dec. 31, 1958): $578,661,640. Publications: *President's Review; Annual Report; Rockefeller Foundation Grants* (quarterly). President, Dean Rusk; secretary, Flora M. Rhind; treasurer, Edward Robinson. Headquarters: 111 West 50th St., New York 20, N.Y.

Rotary International.—A world fellowship of business and professional executives to further thoughtfulness of and helpfulness to others in business and community life and to promote international understanding. Membership: 10,400 clubs in 114 countries; 481,000 Rotarians. Overseas offices are located in London, England, and Zurich, Switzerland. Publications: *The Rotarian; Revista Rotaria* (in Spanish). Since 1947, Rotary Foundation Fellowships have been awarded to 1,201 college graduates from 67 countries for one year of study in 44 countries. Total grants awarded during the 13-year period amount to more than $3,000,000. The 50th annual convention was held in New York City in June, 1959. President, Harold T. Thomas (Auckland, N.Z.); gen. secretary, George R. Means. Headquarters: 1600 Ridge Ave., Evanston, Ill.

Rural Sociological Society.—See article, SOCIOLOGY.

Russell Sage Foundation.—Established by Mrs. Russell Sage in 1907 for improvement of social and living conditions in the U.S.; now devoted primarily to a research and consultation program designed to increase the utilization of social science principles in various fields of social practice. An 11-member board of trustees handles administration. Assets (market value, Sept. 30, 1959): $25,720,000. Publications (1959): *Experiment in Mental Patient Rehabilitation,* H. J. Meyer and E. F. Borgatta; *Sociology and the Military Establishment,* M. Janowitz; *Education for Child Rearing,* O. G. Brim, Jr.; *Philanthropy in England, 1480–1660,* W. K. Jordan; *Annual Report, 1958–59.* Chairman of the Board, Eli Whitney Debevoise; president, Donald Young; treasurer, Dave H. Morris, Jr.; secretary, Leonard S. Cottrell, Jr. Headquarters: 505 Park Ave., New York 22, N.Y.

Scottish Rite Masonry.—See above, *Freemasonry.*

Seeing Eye, Inc., The.—Founded in 1929 to train dogs as guides for blind persons; to teach instructors how to train the dogs; and to teach blind persons how to use the dog guides. Membership: 15,000. President, James Carey; exec. vice president, George Werntz, Jr. Headquarters: Morristown, N.J.

Sloan Foundation, Alfred P.—Originally established in 1934 to make grants-in-aid for projects in economic education to fully accredited educational institutions, the Foundation more recently has given financial assistance to scientific research and provided for scholarships and fellowships. Fund reserves: $165,378,291. During its entire existence, up to Dec. 31, 1958, the Foundation has made grants totalling $47,114,810. President, Alfred P. Sloan, Jr.; chairman of the board, Albert Bradley; exec. director, Arnold J. Zurcher; vice president, Raymond P. Sloan; secretary-treas., James F. Kenney. Headquarters: 630 Fifth Ave., New York 20, N.Y.

Sloan-Kettering Institute for Cancer Research.—Founded in 1945 as an affiliate of Memorial Center for Cancer and Allied Diseases for the purpose of engaging in cancer research. A gift of $2,400,000 for construction, and originally a $200,000 annual operating gift for 10 years

(now $400,000 pledged for a five-year period) was made by the Alfred P. Sloan Foundation. Research is also supported by contributions from the public, either directly or through governmental and private agencies. Control and management is vested in a board of 21 trustees. Acting Director, A. R. T. Denues, Ph.D.; chairman, Warren Weaver, Ph.D.; president, Frank A. Howard; secretary, Edward C. Delafield. Headquarters: 410 East 68th St., New York 21, N.Y.

Smithsonian Institution.—See separate article under its own heading.

Social Science Research Council.—Its purpose is to advance knowledge concerning human relations through the development of research in the social sciences. Membership: 30 members of the board of directors, of whom 21 are designated by 7 national social science organizations and 9 are elected as directors-at-large. In 1958–59 the Council awarded 4 faculty research fellowships; 65 research training fellowships; 8 political theory and legal philosophy fellowships; 28 grants-in-aid and 33 faculty research grants for research unrestricted as to field; 9 grants for research on American governmental processes; 4 senior awards for research on American governmental affairs; 10 grants for research on the Near and Middle East; and 25 auxiliary research awards; jointly with the American Council of Learned Societies, 14 grants for Slavic and East European Studies, and 25 grants for Asian Studies; and 45 grants for travel to international conferences. President, Pendleton Herring; vice pres., Paul Webbink. Headquarters: 230 Park Ave., New York 17, N.Y.

Society for the Study of Social Problems.—See the article, SOCIOLOGY.

Special Libraries Association.—Formed in 1909 by librarians of business, professional, governmental, and industrial organizations to promote the collection, organization, and dissemination of information in specialized fields and to improve the usefulness of special libraries and information services. Membership: approx. 5,000. Publications: (periodicals) *Special Libraries; Technical Book Review Index;* (books) *Handbook of Commercial, Financial and Information Services; Handbook of Scientific and Technical Awards in the United States and Canada, 1900–1952; National Insurance Organizations in the United States and Canada; Picture Sources: An Introductory List; SLA Loan Collection of Classification Schemes and Subject Heading Lists; Sources of Commodity Prices; Special Libraries Association—Its First Fifty Years, 1909–1959; Technical Libraries; Translators and Translations: Services and Sources.* At the 50th annual convention in June 1959, the first 20 members were selected for the SLA Hall of Fame. President, Dr. Burton W. Adkinson; exec. secretary, Bill M. Woods. Headquarters: 31 East 10th St., New York 3, N.Y.

Synagogue Council of America.—The spokesman agency for religious American Jewry made up of the Rabbinical Council of America, the Rabbinical Assembly of America, the Central Conference of American Rabbis, the Union of Orthodox Jewish Congregations in America, United Synagogue of America, and the Union of American Hebrew Congregations. The Council represents its constituencies before U.S., U.N., and UNESCO agencies, and cooperates with the Protestant and Catholic denominations. President, Rabbi Max D. Davidson; exec. director, Rabbi Marc H. Tanenbaum. Headquarters: 110 West 42 St., New York 36, N.Y.

Travelers Aid Association, National.—See under *National.*

Twentieth Century Fund.—An endowed foundation for research and public education on economic and social issues and problems. Assets (Dec. 31, 1958): $17,552,440. In 1959 the Fund issued *The Economy, Liberty and the State, Honduras: A Problem in Economic Development* and *Pension Funds and Economic Power.* Studies in progress pertaining to the U.S. economy include: distribution costs and methods, urban development, nuclear energy, use of leisure time, and civil-military relations. Projects of international scope include studies of Europe's needs and resources, the European Coal and Steel Community, Southeast Asia, Yugoslavia, and a broad survey of economic, social, and political conditions in tropical Africa. Director, August Heckscher. Headquarters: 41 East 70th St., New York 21, N.Y.

United Community Funds and Councils of America, Inc. (formerly COMMUNITY CHESTS AND COUNCILS OF AMERICA, INC.).—The national association of local United Funds, Community Chests, and Community Welfare Councils, organized in 1918 to advance the cause of united social planning and federated financing in local communities; and to provide advisory service in the fields of health and welfare planning, campaigns, public relations, research, personnel, labor-employer participation, and volunteer leadership. Membership (1959): 2,004 united funds, chests, councils, and state affiliates. Publications: *Community* (monthly); various bulletins, studies, and manuals. For 1959, $427,262,622 was raised for the support of health and welfare services. National conferences are held biennially. President, John A. Greene; secretary, William D. F. Morrisson. Headquarters: 345 East 46th St., New York 17, N.Y.

United Service Organizations, Inc.—Established in 1941, USO is a federation of six voluntary agencies serving the religious, spiritual, social, welfare, recreational, and educational needs of the men and women in the Armed Forces. Member agencies are the Young Men's Christian Associations, National Catholic Community Service, National Jewish Welfare Board, Young Women's Christian Association, The Salvation Army, and National Travelers Aid Association. In 1959 there were 245 USO service units operating in the U.S. and abroad. Chairman, Harvey S. Firestone, Jr.; vice chairman, Emil Schram; president, Holgar J. Johnson; secretary, Mrs. Francis T. Christy; exec. director, Edwin E. Bond. Headquarters: 237 East 52d St., New York 22, N.Y.

United States Junior Chamber of Commerce.—A nonprofit corporation providing men aged 21 to 35 with an opportunity for personal development and achievement through participation in local and national affairs, and, through Junior Chamber International, in world affairs. Membership: 200,000. Publications: *Future; Action* (monthlies). The 1960 convention will be held in St. Louis, Mo., June 20–23. President, Robert H. Clark; exec. vice pres., Ben L. Swanson. Headquarters: Boulder Park, Box 7, Tulsa 2, Okla.

Veterans of Foreign Wars of the United States—Founded in 1899; chartered by the U.S. Congress in 1936. A fraternal, patriotic, historical, and educational organization active in promoting Americanism and civic improvement and in supporting legislation benefiting disabled veterans and national security. Membership: 1,200,000 active. Publication: *V. F. W. Magazine.* The 1959 national convention was held in Los Angeles, Calif. Commander-in-chief, Louis G. Feldmann; adjutant general, Julian Dickenson. Headquarters: Broadway at 34th St., Kansas City 11, Mo.

Woman's Christian Temperance Union, National.—See under *National.*

Women's Clubs, General Federation of.—See under *General.*

World Council of Churches.—Official instrument of 171 denominations representing all major branches of the Reformation, the Old Catholics, the Eastern Orthodox, and other ancient Eastern churches in some 50 countries. Membership represents over 170,000,000 persons. Work is carried on through three main divisions: Study; Ecumenical Action; and Interchurch Aid and Service to Refugees. Assemblies are held every six years (Evanston, Ill., 1954; next assembly, New Delhi, India, Nov, 1961). In the interim, the Council is governed by a Central Committee of 90 members which meets yearly. Dr. Franklin Clark Fry (USA) is chairman. Publications: *Ecumenical Press Service* (Weekly); *Ecumenical Review* (quarterly); *Ecumenical Courier* (bimonthly). Presiding officers of the Council are six presidents: Bishop Otto Dibelius (Germany); Dr. John Baillie (Scotland); Rt. Rev. Henry Knox Sherrill (USA); Bishop S. U. Barbieri (South America); Metropolitan Juhanon (India); Archbishop Iakovos (Greek Orthodox). General secretary, Dr. W. A. Visser 't Hooft. Headquarters: 17 Route de Malagnou, Geneva, Switzerland. Exec. head, New York Office, Dr. Roswell P. Barnes. Address: 156 Fifth Ave., New York 10, N.Y.

Young Men's Christian Associations, National Council of the.—See under *National.*

Young Women's Christian Association of the U.S.A.—An organization for young women over 12 endeavoring to improve their mental and physical well-being and to encourage their spiritual growth in keeping with Christian traditions. In the U.S. there are more than 1,900 YWCA units; through the World YWCA, the National Board is allied with YWCA work in 69 other countries and territories. Publications: *The YWCA Magazine; National YWCA Bulletin; The Bookshelf.* The 22d National Triennial Convention is scheduled for May 8–13, 1961, in Denver, Colo. President, Miss Lilace Reid Barnes; gen. secretary, Edith M. Lerrigo. Headquarters: 600 Lexington Ave., New York 22, N.Y.

Zionist Organization of America.—Founded in 1897, the present ZOA program seeks to safeguard the integrity and independence of Israel as a free and democratic state; to assist in the economic development of Israel; and to strengthen Jewish sentiment and consciousness as a people and promote its cultural creativity. Membership: 250,000, including its affiliates, Young Judaea and B'nai Zion. Publications: *The American Zionist; The Organization Letter; ZINS; Z.O.A. Reporter.* The annual convention was held at Washington, D.C., Sept. 10–13, 1959. President, Abraham A. Redelheim; national secretary, Dr. Sidney Marks. Headquarters: 145 East 32d St., New York 16, N.Y.

Compiled by R. M. C.

SOCIOLOGY. Deviant Behavior.—Sociologists are conducting a variety of research studies regarding the nature of delinquency and crime under the broad and significant heading of deviant behavior. In a group of articles in the April 1959 issue of the *American Sociological Review* new dimensions are suggested for deviant behavior. For example, 16 different modes of deviant behavior are given, including the four types (previously proposed by Robert K. Merton) of innovation, ritualism, retreatism, and rebellion. The new additions (by

Robert Dubin) include the behavioral and value types of innovation and ritualism. Ritualism, it may be noted, is considered as deviant behavior because it "rejects facets of the social system without seeking substitutes," while at the same time overconforming in certain particulars.

Somewhat complementary to the aforementioned studies is the monumental collection of 186 papers edited by Sheldon Glueck, *The Problem of Delinquency* (Boston 1959). More than 100 authorities have contributed to it "a set of materials that is eclectic and far-ranging" in respect to the causes, treatment, and prevention of delinquency, while at the same time taking cognizance of "the legal problems inherent in society's efforts to cope with its maladjusted youngsters." Two targets are kept in mind, namely, "welfare and justice." The proposed treatment of delinquent behavior depicts "all relevant points of view," and presents "the multiple forces and factors" involved in seeing "the delinquency problem whole." (See also CRIME—*Delinquency and Crime Prevention.*)

Sociology of the Military.—Sociologists are entering the government service in increasing numbers, particularly through research pertaining to the military branches. The roles of the military aspects of life are receiving sociological attention, as indicated in *Sociology and the Military Establishment,* prepared for the American Sociological Society by Morris Janowitz, and published in 1959 by the Russell Sage Foundation. Among the topics discussed under the relatively new term "military sociology" are the nature of cold war welfare, social aspects of small unit efficiency, social structure and cultural aspects of military organizations, group behavior under stress, indoctrination, and the soldier and international relations.

Operational Research.—Operational research methods are receiving increasing attention by sociologists. Among the newer developments are the theory of games, linear and dynamic programing, and queuing. These new methods are based on new trends in mathematics and on the use of symbols. Operational research is defined as "the application of scientific methods, techniques, and tools to problems involving the operation of systems so as to provide those in control of the operations with optimum solutions to the problems" (Churchman, Charles West, and others, *An Introduction to Operations Research,* New York 1957).

Sociological Theory.—In *Symposium on Sociological Theory,* edited by Llewellyn Gross (Evanston, Ill., 1959), 19 papers by 20 contributors deal with the latest frames of sociological orientation, such as images of society and problems of concept formation, the concept of levels in social theory, models in social science, and the problem of objectivity. An underlying implication of these papers is that sociological theory includes processes "of social groups everywhere and in all times." The editor of this volume asserts that "values play a significant role in the process of creating a social science."

The close relation of sociological theory to social problems is indicated in *Sociology Today, Problems and Prospects,* edited by Robert K. Merton and others, and published in 1959 under the auspices of the American Sociological Society. In this work 25 papers review current sociological literature on social problems, analyze some of these problems, and suggest appropriate research methods. Seven of the papers discuss problems in the separate sociological fields of politics, law, education, religion, the family, art, science, and medicine. The study of the sociology of the law specifically received a new emphasis in the summer 1959 issue of *Social Problems,* for the entire issue of eight major papers dealt with the sociological aspects of specific legal problems.

Sociological Societies.—At the 54th Annual Meeting of the American Sociological Society (which has changed its name to American Sociological Association), held in September in Chicago, a special session was assigned to "an analysis of the sociological profession." A broad basis for this discussion was a paper prepared for the occasion by Talcott Parsons and published in the August issue of the *American Sociological Review.* This paper set the tone for the special session by indicating a number of problems for consideration. They included the following:

(1) How far have the canons of scientific adequacy and objectivity been established as a working code by sociology?

(2) How clear is the differentiation between sociology and its "neighboring scientific disciplines"? (It is suggested that sociology has reached the stage where it occupies a favorable middle position with reference to the other behavioral sciences.)

(3) How far is sociology differentiated today from sociological practice, or application to social problems?

(4) How far is sociology as a scientific discipline being distinguished from "the non-scientific aspects of the general culture, such as philosophy, religion, literature, and the arts, as well as the general *Weltanshauung*"?

(5) In what ways is the profession of sociology fitting into the structure of society and being given recognition by the general public? How can the distortions to which sociology is subjected by society in general be corrected? What can be done to improve "the public image of the sociologist"?

(6) Since teachers of sociology are advanced faster by their skills in research than by showing teaching ability, what can be done to keep some of the best teachers from being drawn away from the undergraduate teaching field wherein lies "so much of the discipline's strength"?

Other special topics that aroused interest at the same annual meeting of the society were: age status and social structure, the use of computers in the simulation of social processes, the sociology of psychiatric care, occupational sociology, the sociology of science, the distinguishing features of the sociologist's role and changes occurring in these features; and the ways by which sociology as a profession can reduce its handicaps, improve the methods of recruitment to the profession, raise the standards of training for sociologists, and obtain new sources of financial support for sociology.

The themes to be developed at the next session of the American Sociological Society to be held in New York, Aug. 29–31, 1960, include the history of sociology, sociological methodology, the field of social psychology, and several special topics, including the sociologies of power relations, ideological conflicts, planning for development, popular culture and recreation, and deviation.

Doctoral and Master's Degrees.—In the July and November 1959 issues of the *American Journal of Sociology* it was reported that at 68 departments of sociology in the United States and Canada in the year 1958, a total of 171 doctor of philosophy degrees were recommended, as compared with 113 granted in 1957. In addition, 247 master's degrees were recommended in 1958, compared with 230 for 1957.

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SOFTBALL. See SPORTS, GAMES, AND SHOWS.

SOIL BANK. See AGRICULTURE.

SOIL CONSERVATION. Several factors combined to strengthen the soil and water conservation movement in the United States during 1959. Growing appreciation by state and local governments of the benefits derived from getting farms and ranches under conservation plans had encouraged many thousands of landowners to invest more heavily in ways to speed up their conservation work. Local and state interests, both private and governmental, were contributing at least a fourth of the operating costs of soil conservation districts, not including expenditures by farmers and ranchers in applying conservation plans on their own land. The contributions to soil conservation districts included appropriations, facilities and services, and contributions by private individuals, civic and municipal groups, business firms, and associations and clubs.

In the fiscal year 1959, approximately 29 million acres were added to soil conservation districts by formation of 55 new districts and additions of

land to old districts. This brought the total number of districts to 2,861, comprising 1,622 million acres and 94.7% of all farms and ranches. An additional 113,350 farmers and ranchers, whose land totaled 39 million acres, became cooperators with their districts and started applying conservation plans and practices. This made a total of 1,859,439 farm and ranch operators who either had finished or were working toward complete conservation. Their land totaled nearly 564 million acres, of which 365 million acres had been scientifically planned on the basis of its needs and capabilities.

The Soil Conservation Service continued to provide technical assistance to the districts through its central offices in all 50 states and through more than 3,000 work units and some 300 area offices. Field specialists in many categories were maintained in the states to guide the technical phases of the work on the land.

New conservation plans were prepared for 29 million acres by 92,801 farmers and ranchers assisted by Soil Conservation Service technicians. Also, to meet changed conditions, existing plans were revised for 15,572 farms covering 8,600,000 acres. Technicians serviced more than a million farms during the 1959 fiscal year.

Soil and conservation surveys were made on more than 48 million acres, and range site surveys on 14 million acres of western grazing land. This brought the total land surveyed for conservation purposes to more than 709 million acres, of which 93,500,000 acres were lands of the ranges.

Of major importance in 1959 was completion of the survey work and analysis of data in connection with the National Inventory of Soil and Water Conservation Needs, authorized by Congress and started in 1957. The inventory includes data on present land uses of all the nation's land; expected changes based on land capabilities by 1975; needs for conservation treatments on croplands, pasture and range, forest and woodlands, and lands in urban, industrial, and other uses; and an inventory of watersheds in all states and their needs for flood prevention and water control treatments, in addition to soil and water conservation methods on farms, ranches, and forest lands. The inventory was scheduled for publication in the 1960–62 period.

By September 1959 the people occupying 1,199 small watersheds, including more than 85 million acres, had formed watershed protection organizations and had made application to the Soil Conservation Service for assistance in planning their projects. Of the total number, 498 watersheds had been approved for planning, and 209 watersheds in 45 states had been planned and had started operations on the land.

Some examples of conservation practices applied on the land of watersheds are given below:

For soil conservation on farmland:		
Contour farming	2,461,000	acres
Conservation crop rotations	1,373,200	acres
Crop residue utilization	2,207,000	acres
Terracing	95,800	miles
Strip cropping	158,400	acres
Tree planting	109,600	acres
Pasture planting	1,816,900	acres
Wildlife area improvements	282,800	acres
For water control and conservation:		
Floodwater retarding dams	1,114	units
Structures for stream stabilization and sediment control	2,828	units
Improvement of stream channels	1,664	miles
Water diversions	177	miles
Revegetation for roadside erosion control:		
Planting grasses and legumes	161,644	acres
Planting trees and shrubs	172,480	acres

A 4-cent soil conservation postage stamp, issued Aug. 26, 1959, commemorated the more than a quarter of a century of cooperative work to protect and improve the soil resources of the nation. The stamp was the world's first to honor concerted efforts to eliminate waste from the use of the land.

(See also AGRICULTURAL RESEARCH SERVICE.)

PHOEBE O'N. HARRISON,
Division of Information,
Soil Conservation Service.

SOLAR STUDIES. See ASTRONOMY; INTERNATIONAL GEOPHYSICAL YEAR.

SOLOMON ISLANDS. See WESTERN PACIFIC ISLANDS, BRITISH.

SOMALIA. See SOMALILAND.

SOMALILAND (SOMALIA). A trust territory on the east-central coast of Africa, administered by Italy under a 10-year mandate scheduled to end on July 1, 1960. Area, 178,201 square miles; pop. (est. 1958), 1,320,000, including about 30,000 Arabs and 4,300 Italians. Mogadiscio (83,115) is the capital and chief port. The greater part of the native population consists of nomadic or seminomadic Somali tribesmen. Arabic and numerous tribal dialects are spoken.

Government.—Pending the attainment of independence in 1960, the trusteeship administration has been headed by an Italian administrator advised by a three-nation United Nations council. The government within the territory consists of a 90-member Legislative Assembly (which will also serve as a Constituent Assembly) elected by universal suffrage on March 4–8, 1959. Premier Seyyid Abdullah Issa heads a 10-member ministry approved by the administering authority on June 27, 1959. The leading political party is the Somali Youth League, which holds 83 seats in the assembly.

Education and Religion.—School facilities are for the most part available only in towns and larger villages. Although school attendance has increased many times over since 1950, pupil enrollment comprises only a small part of the school-age population. In 1957–58 there were 308 schools of all types, with a total of 34,297 pupils. Students on the higher levels attend schools in Italy and the United Arab Republic. There is no written Somali language; Italian and Arabic are the languages of instruction in the territory. Most Somalis are Moslems.

Finance.—The budget for 1957 totaled 101,142,807 somalos. Italy has provided about half of the annual revenue, although under the 7-year development plan (begun in 1954), internal income has steadily increased. In 1958 the territory's revenue totaled about 60 million somalos, as compared with 41 million in 1955. In early 1959 the U.S. Development Loan Fund extended a $2 million loan to the Credito Somalo to spur the development of small enterprises in manufacturing.

Transportation and Communications.—Somalia has no railroads. Roads total about 5,863 miles, including 374 miles asphalted and 54 macadamized. International airlines serve Mogadiscio, which is also an Indian Ocean port. Passenger cars numbered 2,217 in 1958; commercial vehicles, 3,202; telephones, 1,400.

Economy.—The principal economic activity is livestock raising, mainly cattle, sheep and goats, and camels. Subsistence crops include durra, millet, maize (corn), beans, and rice. Bananas and sugar cane (10,000 short tons in 1958–59), grown mainly on Italian-owned plantations, are the chief cash crops; cotton and sisal are also produced in small quantities. The Italian administration's program of dam construction, well digging, reclamation, and irrigation has resulted in increased output of cereals, cash crops, and livestock. Manufactures consist mainly of refined sugar, meat products, hides and skins, canned goods, soap, and handicraft items. Exports (largely bananas, live animals, and livestock products) totaled 76,722,900 somalos in 1957; imports, 116,825,800. Trade is mostly with Italy.

Principal Events, 1959.—Pre-election rioting took place in Mogadiscio on Feb. 25, 1959, when opposition parties protested against the electoral law as favoring the ruling Somali Youth League. In the elections to the Legislative Assembly on March 4–8, the Somali Youth League obtained 61 uncontested seats. Of the 29 contested seats, the Somali Youth League won 22; the Somali Inde-

pendent Constitutional Party, 5; and the Liberal Somali Youth Party, 2. The Somali Youth League, a pro-Western party which stands for the peaceful reunion of Somalis now spread over five territories (including Ethiopia), again dominated the government formed by Premier Seyyid Abdullah Issa on June 27.

The Legislative Assembly called in August for the attainment of independence prior to Dec. 2, 1960, the date originally scheduled for the expiration of the 10-year trusteeship agreement. On November 9, Italy informed the U.N. Trusteeship Council that Somalia would be ready for independence before the scheduled time, and on December 5 the U.N. General Assembly voted to move up the date of independence to July 1, 1960.

In accordance with a report by former U.N. Secretary General Trygve Lie, a three-nation arbitration commission was named in 1959 to seek a settlement of the border dispute between Somalia and Ethiopia. The disputed area, which is near Wal Wal and contains wells important to the nomadic tribes, was the scene of clashes between Somalis and Ethiopians in early December 1959, when 26 persons were reported killed.

M. J. G.

SOMALILAND, French. See FRENCH SOMALILAND.

SOMALILAND PROTECTORATE. With a 450-mile coast on the Gulf of Aden, this British protectorate (established in 1887) is bordered on the east by Somaliland (an Italian trust territory under the United Nations), on the south by Ethiopia, and on the west by French Somaliland. It has an area of about 68,000 square miles, and a population of 650,000 (est. mid-1958), consisting almost entirely of Somali tribesmen who are Sunni Moslems of the Shafi'ite sect. They are mostly nomadic herdsmen, tending camels, sheep, and goats. Hargeisa (pop., 40,000) is the seat of government; other leading towns are Berbera, the chief port (about 20,000), Borama, Burao, Erigavo, and Las Anod.

The governor is Sir Douglas Basil Hall, who presides over a Legislative Council of 29 members (14 elected). After elections to be held in 1960 the Legislative Council is to consist of 36 members, 33 of whom will be elected nonofficials. A ministerial system (4 of the ministers being Somalis) is to be introduced. The currency is the East African shilling. Local revenue in 1958–59 was £1,165,247; expenditure, £1,636,982. United Kingdom grants totaled £1,385,583. In 1959, 43 Somali boys' schools were maintained by the government, accommodating 2,795 pupils. There were 120 grant-aided private Koranic elementary schools (2,750 pupils), 4 girls' schools (210 pupils), 1 English elementary school, and 1 Indian elementary school.

In 1958 imports totaled £4,017,261; exports (chiefly of livestock and skins), £1,729,821. Prospecting for oil is being carried out. Communications are by sea to Berbera; air services are provided to Hargeisa and Berbera by Aden Airways. There are 2,500 miles of roads motorable in the dry season.

SORGHUMS. See Index entry.

SOUDAN. The Soudanese Republic, situated in northwest Africa, is an autonomous republic of the French Community (q.v.) and a member of the Mali Federation (q.v.). Estimated area, 464,873 square miles; pop. (est. 1958), 3,700,000, including (in 1956) 7,382 nonindigenous persons, mainly French. French is the official language. Chief cities and populations (est. 1957): Bamako, the capital, 68,600; Kayes, 29,500; and Ségou, 21,000.

Government.—Formerly a French overseas territory (French Sudan) included within the federation of French West Africa (q.v.), Soudan chose the status of a member of the French Community on Nov. 24, 1958. As an autonomous republic, Soudan has the right of self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Soudan adopted its constitution on Jan. 23, 1959. The Legislative Assembly consists of 80 members elected for a five-year term by universal suffrage. The president of the council (premier) is designated by the president of the assembly and invested by a majority in the assembly. Modibo Keita, leader of the African Federalist Party, was named premier on April 17, 1959.

Education and Religion.—In 1958 there were 298 schools with a total of 44,801 pupils (8.2% of the school-age population). Expenditure on education amounted to 1,320 million francs CFA, or about 24.6% of the budget. Slightly more than half the natives are Moslems; animists constitute most of the remainder, with Christians numbering less than 1%.

Finance.—The budget for 1958 amounted to 5,818 million francs CFA (one franc CFA equals 2 metropolitan francs). In the period 1947–57, French financial aid granted under the Economic and Social Investment Development Fund (FIDES) was equal to about $79.4 million.

Transportation.—Landlocked Soudan is connected with the Atlantic coast by the Dakar-Niger Railroad, whose eastern terminus is Koulikoro (32 miles east of Bamako). Roads and trails total 6,976 miles (1956), including 1,651 miles of highways. The airport at Bamako handles international traffic.

Production and Trade.—The chief economic activities are agriculture and livestock raising. The Moslem nomadic peoples of the northern region are breeders of cattle, sheep, and goats. The Negro peoples of the southwest and central regions cultivate millet, rice, maize (corn), peanuts, yams, sweet potatoes, and cassava. Output of peanuts, the chief cash crop, totaled 88,950 metric tons (unshelled) in the 1957–58 season; other cash crops are cotton, kapok, shea butter, and gum arabic. Fishing in the lakes and streams is of some importance. The few industries are mainly rice milling, cotton and kapok ginning, and vegetable-oil processing. Traditional handicraft items include leatherwork, carpets, and rugs. French aid has concentrated on land improvement and irrigation, and development of rice cultivation and stock raising. Exports consist chiefly of peanuts and other cash crops, animals and animal products, and dried fish. Foreign trade passes mainly through the port of Dakar, in Senegal (q.v.), and separate statistics for Soudan are not available.

Principal Events, 1959.—In the elections of March 4, 7, and 8, the Soudanese Union, led by Modibo Keita, won 76% of the 703,032 votes cast, and obtained all 80 seats in the Legislative Assembly. The remainder of the popular vote went to the opposition Soudanese Regroupment Party. Following the elections, the Soudanese Union was absorbed in the African Federalist Party, a new party of the Mali Federation (q.v.). Modibo Keita was named premier of Soudan on April 17.

M. J. G.

SOUTH AFRICA, Union of. A sovereign member of the Commonwealth of Nations since 1909, South Africa is the only independent state in Africa below the Sahara which is the permanent home of white people. Though outnumbered nearly four to one by nonwhites, the whites of the Union possess a monopoly of political and economic power and social prestige.

Area and Population.—The total area of the Union is 472,685 square miles, divided between four provinces as follows: Cape Province (including Walvis Bay), 277,113; Transvaal, 110,450; Orange Free State, 49,838; and Natal, 35,284. By June 30, 1958, the population was 14,418,000 and was still increasing at the rate of 2% a year. There were 3,011,000 whites (divided 60–40% between Afrikaans- and English-speaking persons); 9,606,000 native Africans or Bantu; 441,000 Asians, almost all

Indians; and 1,360,000 Coloreds, of mixed descent. As of June 30, 1959, the population was estimated at 14,673,000.

Of the chief cities, Johannesburg had in 1957 an estimated population of 1,030,200 (393,000 whites); Cape Town, the legislative center, 709,200 (280,800); Durban, a major port, 612,800 (177,000); Pretoria, the administrative capital, 335,300 (176,000); Port Elizabeth, 239,600 (95,200); and Germiston, a mining center, 213,200 (95,000).

South Africa controls two small islands, Prince Edward and Marion, lying 1,200 miles southeast of Cape Town, and administers South West Africa (q.v.).

Education.—Education in the Union is almost entirely segregated, not only as between whites and nonwhites, but also as between English- and Afrikaans-speaking persons. Education for whites is free and compulsory between the ages of 7 and 16, and as of 1955 there were 2,676 government and government-aided schools with 574,136 pupils and 261 private schools with 43,823 pupils. Education for Africans was placed under government control in 1953 and since 1958 has been directed by the Department of Bantu Education. In June 1958, African schools enrolled 1,239,413 pupils, of whom about 910,000 were in lower primary classes, 282,000 in higher primary classes, and 47,000 in postprimary classes. In 1957, 366 Africans received secondary school certificates, and in 1959 just over 300 entered universities as full-time students. As of June 1957, there were 1,637 African university students, including those taking correspondence courses.

Of the nine universities in South Africa, four are English-medium institutions (Cape Town, Natal, Rhodes, and Witwatersrand); four are Afrikaans-medium institutions (Orange Free State, Potchefstroom, Pretoria, and Stellenbosch); and the ninth, the University of South Africa, is chiefly for external students. In 1956 they had a combined enrollment of 22,604 full-time and 9,079 part-time students. (See also below, *Principal Events, 1959.*)

Government.—The constitution of the Union is embodied in the South Africa Act of 1909. South Africa is governed by Parliament, comprising Queen Elizabeth II, who is represented by a South African governor general (on Dec. 6, 1959, Charles R. Swart was appointed to succeed the late Dr. Ernest G. Jansen); a Senate, consisting since 1955 of 89 members, of whom 71 are elected and 18 are nominated; and a House of Assembly of 163 elected members. Only whites may be elected to Parliament. In the general election of April 16, 1958, the National Party, led by Prime Minister Johannes G. Strijdom (d. Aug. 24, 1958; succeeded on September 2 by Dr. Hendrik F. Verwoerd), won 103 seats, and the United Party, under Sir de Villiers Graaff, 53 seats, though they each polled approximately the same percentage of the votes. Four new parliamentary seats created for Colored voters, who had been removed from the common roll in Cape Province in 1956, were won by independents associated with the United Party in a separate election held on April 3, 1958. Under the Promotion of Bantu Self-Government Act of 1959, the seats of the three representatives of Africans in the House of Assembly and the four in the Senate will be abolished in 1960.

Each province is administered by an elected Provincial Council working with an appointed administrator. The chief functions of the provinces are to administer schools (apart from those for Africans) and hospitals and to supervise road building, and they may levy taxes for these purposes. In the provincial elections of Oct. 14, 1959, the National Party maintained its control of the Cape, Transvaal, and Orange Free State councils, though its majorities were lowered in 28 seats in the two former provinces from those achieved in 1958, and the United Party of the Natal Provincial Council.

Finance.—National income amounted to £1,988 million (£1 = $2.80) in the year ending June 30, 1958, an increase of 3% over the preceding year, as compared with 7.7% increases in the two previous years. The chief reason for the lower rate was the decrease in the income from farming, fishing and forestry, and minerals other than gold. The effects of the recession were limited by substantial increases in gold output and in government capital expenditure, and by a net capital inflow of £69 million in the 18 months ending June 30, 1959 (there had been a net outflow of £20 million in the calendar year 1957).

The International Bank for Reconstruction and Development (IBRD) made a 10-year, $11.6 million loan for railway expansion to the South African government on June 10, 1959, bringing IBRD lending in that country to $196.8 million, of which $43 million has been repaid. Gold and foreign exchange reserves stood at $317 million at the end of 1958, as compared with $288 million a year earlier, and this made it possible to relax some restrictions on imports and, on Jan. 5, 1959, to reduce the discount rate of the South African Reserve Bank from 4½ to 4%. As of Aug. 31, 1959, reserves totaled $371 million. The 1959–60 budget decreased subsidies and increased taxes, and revenue was expected to amount to £335.9 million, as compared with £317 million in 1958–59. Expenditure was estimated at £299.2 million. The Union is scheduled to introduce decimal coinage in 1961.

Transportation and Communications.—South Africa has 12,021 miles of railways and 205,917 miles of roads. Scheduled service is provided by 2 domestic and 12 foreign airlines. In 1956 there were 779,000 radios; in 1957, 799,702 telephones.

Mining.—Gold production in 1958 totaled 17,665,739 fine ounces valued at £220 million, as compared with 17,030,737 ounces valued at £212 million in 1957; in the first half of 1959 it amounted to 9,672,395 ounces (£120 million). Employment in the gold mines held steady in 1958 at 548,000, including 480,000 Africans. Earnings from uranium increased from £50 million in 1957 to £53.2 million in 1958, when 6,245 tons of uranium oxide were produced, placing uranium second only to gold as an earner of foreign exchange. In the latter part of 1958 gem diamond stones made a good recovery, and industrial diamonds, though threatened in the United States market by competition from synthetic diamonds, continued to hold their own through their relative cheapness compared with the synthetic product; total exports were valued at £30.7 million in 1958. Output of other minerals in 1958 included 37,080,000 metric tons of coal and 2,208,000 metric tons of iron ore.

Agriculture.—Drought and black spot disease reduced the citrus crop from 7.8 million cases in 1957 to 6.7 million in 1958. Expectations for 1959 were more favorable, however, and in the long run South Africa hopes substantially to increase its overseas markets for fruit. Wheat also had a disappointing harvest of 22,350,000 bushels in 1958, necessitating sizable imports. Output of other agricultural products included 133 million bushels of corn, 1,097 million pounds of meat, and 9,876,711 hides and skins. The price was low for the 312 million pounds of wool produced. The brightest spot was the record production of 1,118,500 short tons of raw sugar.

Industrial Production.—Private enterprise is encouraged, and turnovers in the manufacturing industry were maintained fairly satisfactorily in 1958. With rising costs and keen competition, however, manufacturers have had to review their methods of production and to be content with small margins of profit. The government also participates in industry, and the South African Coal, Oil and Gas Corporation, Ltd. (SASOL), its oil-from-coal enterprise, plans to spend £3 million in the next three years on capital improvements. A new project is planned by the Electricity Supply Commission (ESCOM), the public power company, for northern Natal at a cost of £27 million. In 1958 the Union produced a total of 20,208 million kw.-hr. of electricity. Output of other industrial products included 2,724,000 metric tons of cement, 1,582,800 tons of pig iron and ferroalloys, and 1,836,000 tons of steel, of which two thirds were supplied by the government-owned South African Iron and Steel Industrial Corporation, Ltd. (ISCOR).

External Trade.—The Union normally has a deficit on visible trade, and this worsened from £98.2 million in 1957 to £166.3 million in 1958. This was due largely to a decline in the value of exports (excluding gold) from £451.6 million to £390.4 million, produced mainly by a fall in world prices, and to a moderate increase in imports, from £549.8 million in 1957 to £556.7 million in 1958. The £220.1 million derived from gold production was, however, more than sufficient to cover the 1958 deficit. In the first half of 1959, exports totaled £204.8 million; imports, £243.5 million; and gold production, £117 million.

The most noticeable change in South Africa's foreign trade in 1958 was the growing importance of West Germany, which became the third largest supplier, with the United Kingdom and the United

States in first and second places. Taking into account products indirectly traded, Germany also became the Union's third largest customer, after the United Kingdom and the Federation of Rhodesia and Nyasaland, though in direct trade the United States occupied this position.

Principal Events, 1959.—In the course of a long and contentious parliamentary session that opened on Jan. 23, 1959, the Nationalist government passed far-reaching apartheid measures which complete its pattern of political, economic, and educational racial separation throughout South Africa. The Industrial Conciliation Amendment Act intensifies apartheid in the trade unions and further restricts their powers to manage their own affairs. It also closes all legal loopholes regarding job reservation for whites or nonwhites by permitting the minister through the Industrial Tribunal to make quota reservations, percentage reservations, or reservations in absolute numbers without any necessity of uniformity in any industry or area. Under the Extension of University Education Act and the University College of Fort Hare Transfer Act the minister of Bantu education has forbidden the entry of nonwhites into the two "open" universities, Witwatersrand and Cape Town, after Jan. 1, 1960. Indians and Coloreds may no longer attend Fort Hare, which has been transferred from Rhodes University to government control. The three ethnic African colleges, of which Fort Hare will be one, an Asian college, and a Colored college are to be controlled as to staff, students, and curriculum by the government.

Many questions have been raised by the 1959 Promotion of Bantu Self-Government Act, an extension of the 1951 Bantu Authorities Act, which avowedly seeks to establish eight or nine ethnic territories out of 264 separated Bantu reserve areas and to lead them toward self-government. These territories are to be kept in touch with the minister of Bantu development through secretaries general appointed by the minister; their African authorities, except for an elected one third of those at the lowest level, are nominated by the government and are subject to dismissal. Africans working in "white" areas are to be kept in touch with their tribal areas through native ambassadors to the principal cities. Because of this structure, the government decided that it was no longer useful to retain the native representatives in Parliament. The new law is looked on by the Nationalists as proof that they genuinely support separate development for Africans. Prime Minister Verwoerd maintains that no limit will be put on their development toward self-rule. The government plans to buy land to join native holdings and is trying to develop a group of productive African land users by limiting the number of native farmers and grouping those no longer participating in subsistence agriculture into villages within the reserves. It has established the Bantu Investment Corporation but thus far has endowed it with only £500,000. Since the government is determined to keep private capital out of the reserves, it is difficult to see how, without vastly increased financing, they can be made productive for their own 4 million inhabitants and also attractive to those natives in the "white" areas.

The United Party strongly opposed in Parliament many aspects of the new legislation. It raised questions about the boundaries of the ethnic territories, doubted the advisability of buying more land for the reserves, and fought unsuccessfully against establishing apartheid in higher education and against removing the native representatives from Parliament. It took a stand, in fact, in favor of somewhat increasing nonwhite representation. At its annual conference on Aug. 11–13, 1959, the majority's refusal to support buying more land for African resettlement helped lead to a split which resulted in 12 of its parliamentary members breaking away. This group, which calls itself the Progressives, is pressing for more formal contacts between whites and nonwhites and for greater consideration of the interests of the latter. It is supported by many persons outside Parliament, including Harry Oppenheimer, head of the Anglo-American Corporation, and J. G. N. Strauss, former leader of the United Party.

After several postponements the so-called treason trial was reconvened on August 3, with 30 of the original 156 defendants who had been arrested in December 1956 placed on trial once more. Meanwhile, on May 27, Albert J. Luthuli, president of the African National Congress and a moderate, was banished to his Natal home and prohibited from attending meetings for five years. Ronald Segal, editor of *Africa South*, who is well known for his anti-Communist as well as anti-apartheid writings, also was barred from attending meetings for five years.

Beginning in June, widespread indications of African discontent appeared. Riots in Cato Manor, outside Durban, reflected economic strains and resentment at efforts to move unemployed women back to the reserves. They were followed by meetings in the Natal reserves, protesting unemployment, low wages, and general frustrations and often culminating in violence. The government retaliated with force, arrests, and imprisonments. Meanwhile, the African National Congress, the Indian National Congress, the Congress of Colored Persons, and the left-wing Congress of Democrats, joined in this instance by many members of the Liberal Party, encouraged the boycott of South African goods agreed on at the All-African People's Congress held at Accra in December 1958. On Nov. 17, 1959, the U.N. General Assembly passed (62–3, with 7 abstentions) a resolution regretting the Union's racial policies.

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SOUTH AMERICA. A continent in the Western Hemisphere. Estimated area, 6,870,000 square miles; population (est. 1958), 134 million. (See articles on the South American countries and the Index entry *South America.*)

SOUTH CAROLINA. South Atlantic state, United States; one of the original 13 states. The "Palmetto State" ranks 40th in area and 25th in population among the 50 states.

Dramatic photo of rioting in June—near Durban, South Africa—shows police attacking mob of native women who, angered by government curbs against their home stills, had raided municipal beer halls. Four native men were killed.

WIDE WORLD

Area and Population.—Area: 31,055 square miles (land, 30,305; inland water, 750), divided into 46 counties. Population: (1950) 2,117,027; (est., July 1, 1958) 2,391,000. Urban places with populations above 10,000 in 1958 (as estimated by the State Board of Health) are:

Anderson	24,306	Greenwood	16,119
Brandon-Judson[1]	11,008[2]	Orangeburg	17,389
Charleston	80,097	Rock Hill	29,155
Columbia (*capital*)	112,339	Spartanburg	42,595
Florence	26,242	Sumter	26,002
Greenville	72,051		

[1] Unincorporated. [2] 1950 federal census figure.

Executive.—Chief state officers in 1959:
Governor: Ernest F. Hollings (Democrat)
Lieutenant Governor: Burnet R. Maybank
Secretary of State: O. Frank Thornton
Treasurer: Jeff B. Bates
Attorney General: Daniel R. McLeod
Comptroller General: Elridge C. Rhodes
Supt. of Education: Jesse T. Anderson

Constitution and Judiciary.—The present constitution went into effect in 1895. The Supreme Court comprises five justices; chief justice in 1959 was Taylor H. Stukes.

Legislature.—The South Carolina General Assembly comprises a 46-member Senate and a 124-member House of Representatives which meet annually commencing the second Tuesday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $386,134,272.39 comprised $209,466,233.73 from state tax sources, $94,185,317 from the federal government, and $82,482,721.66 from other sources. Tax revenue consisted of $58,516,992.67 from a 3% general sales tax, $18,355,988 from individual income taxes, $13,744,833 from corporate income taxes, $51,912,224.92 from motor fuel taxes, $41,847,577 from licensing, and $25,088,618.14 from other sources. Expenditures of $399,824,153.71 comprised $97,761,334 for education, $21,541,145 for health, welfare, and safety, $96,589,588.82 for highways, and $183,932,085.89 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $205,768,292.91.

Banking.—As of June 10, 1959, the state's 25 national banks had $653,021,000 in assets, $474,469,000 in demand deposits, and $106,632,000 in time deposits. The 114 state banks and 6 cash depositories had assets of $382,465,426, demand deposits of $215,451,304, and time deposits of $76,031,213.

Education.—Attendance at school is not legally compulsory in South Carolina. Operating expenditures for public elementary and secondary education in the 1958–59 school year totaled $92,725,052 ($177.10 per pupil), comprising $30,302,547 from local school districts, $58,889,681 from the state, and $3,532,824 from the federal government. Outlays for construction and improvements amounted to $15,521,950, and teachers' salaries averaged $3,288 (high school, $3,446; elementary, $3,187).

SOUTH CAROLINA SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–8)	990	12,166	405,720
Public secondary (7–12)	404	7,762	194,789
Private and parochial elementary and secondary	69	673	14,061
Junior colleges	8	...	1,773
Colleges and universities	25	...	28,505

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from state and federal funds (excluding institutional costs) totaled $26,361,395, including $15,685,269 for the aged, $6,292,581 for dependent children, and $3,227,002.59 for the permanently and totally disabled. A monthly average of 66,075 persons received public assistance.

Labor Force.—The number of nonfarm employees was up slightly in July 1959 to 530,400 from 520,900 in the previous July and from an average of 528,600 for the 12 intervening months. Of the 1959 total, 43.1% were employed in manufacturing, 18.2% in trade, and 17% in government. Insured unemployment in July 1959 fell to 10,673 from 16,358 a year earlier.

Manufacturing.—The state's 2,142 manufacturing plants in 1958 employed an average of 188,825 persons who received $535,682,721 in wages. Value of production totaled $2,792,741,670, and outlays for new plant and equipment amounted to $112 million. Production workers averaged $62.32 for an average workweek of 41 hours in August 1959.

MAJOR SOUTH CAROLINA MANUFACTURES, 1958

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value of annual product
Textiles & allied products	145,796	$406,740	$1,923,748
Textiles	122,422	357,915	1,756,762
Clothing	22,978	47,997	162,014
Forest products	13,390	42,370	236,140
Paper and pulp	4,693	20,540	138,398
Food products	7,681	18,587	189,514
Electric power production	2,104	8,515	112,768
Chemical & allied products	2,368	6,142	80,686
Stone, clay, glass products	3,928	10,021	49,633
Foundry and machine shops	2,852	9,595	44,590

(Source: South Carolina State Development Board.)

Among major new industrial developments of 1959, the $38 million pulp mill of Bowaters Carolina Corporation near Rock Hill began continuous operation; ground was broken for a $5 million facility of Springs Cotton Mills at Lancaster; and Chemstrand Corporation began construction of a $15 million unit of a $60 million nylon manufacturing plant at Greenwood.

Mining.—In 1958 South Carolina ranked 42d among the states in the value of its mineral output, with 0.14% of the national total. It was first in output of rare metals, second in china clay (17% of domestic output), kyanite, vermiculite, and zircon, and fourth in mica. Barite was produced and peat was reported for the first time.

SOUTH CAROLINA MINERAL PRODUCTION, 1958

Mineral	Short tons	Value
Clays	929,000	$ 5,157,000
Sand and gravel	2,946,000	2,858,000
Stone	3,637,000	5,229,000
Other minerals	...	9,599,000
Total	...	$22,412,000[1]

[1] Total adjusted to eliminate duplicating the value of clays and stone. (Source: U.S. Bureau of Mines and the South Carolina Geological Survey.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $247,908,000 from $252,751,000 for the corresponding period of 1958. For the full year 1958, income comprised $109,288,000 from livestock and livestock products, $227,004,000 from crops, and $33,062,000 from government payments. Principal income sources in 1958 were tobacco, $78,529,000; cotton lint, $53,503,000; forest products, $33,905,000; and cattle, $25,257,000.

SOUTH CAROLINA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Corn (1,000 bu.)	24,103	28,954	25,731
Cotton lint (1,000 bales)	598	299	415
Cottonseed (1,000 tons)	251	124	173
Cowpeas (1,000 bu.)	289	168	192
Hay (1,000 tons)	534	580	497
Oats (1,000 bu.)	14,038	13,101	13,893
Pecans (1,000 lb.)	3,640	8,000	4,500
Potatoes (1,000 cwt.)	875*	488	540
Soybeans (1,000 bu.)	1,782	5,611	5,920
Sweet potatoes (1,000 cwt.)	1,386*	689	756
Tobacco (1,000 lb.)	159,758	131,100	142,560
Wheat (1,000 bu.)	2,971	3,124	3,936

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 122,000 farms in 1958. Total acreage (1954) of 11,069,000 included 3,393,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 613,000 cattle, 550,000 hogs, and 4,714,000 chickens (excluding commercial broilers). Some 166,000 family and hired

workers were engaged in farming in the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $63,817,639, and 1,367 miles of new construction were completed.

Highways and roads on Aug. 30, 1959, totaled 54,130 miles (27,522 surfaced). Registered *motor vehicles* numbered 849,694 on Aug. 15, 1959, including 674,785 passenger cars. There were (1958) 16 *railroads* operating 3,331.15 line miles; (1959) 6 regularly scheduled *airlines;* and (1959) 75 *airports and airfields* (40 commercial and municipal, 5 military, and 30 private).

Communications media (1958) included 67 AM and 10 FM *radio stations;* 8 *television stations;* 18 daily *newspapers* (1957 circulation, 452,471) and 80 other newspapers; and (Jan. 1, 1959) 136,100 business and 355,600 residential *telephones.*

Principal Events, 1959.—Gov. Ernest F. Hollings was inaugurated on January 20, a week after the General Assembly convened for a session which extended into late May. For the purpsoe of wiping out an existing deficit and to meet increased expenditures, the legislature enacted a tax program designed to yield an additional $28 million annually in General Fund revenue. Major new tax measures introduced a withholding system for payment of state personal income taxes and eliminated as an allowable state income tax deduction any sum of up to $500 paid in federal income taxes. Newly imposed levies included a petroleum products tax; 3% taxes on charges for telephone, telegraph, dry-cleaning, and laundry services and for electricity; a tax of 10% on most entertainment admissions; and a license tax on businesses where coin-operated machines are located. Beer and cigarette taxes were raised.

In an effort to alleviate the problem of crowded court dockets, the chief justice of the state Supreme Court was empowered by statute to supervise the calendars of the trial courts, to call additional terms of court, to transfer circuit judges from one assignment to another, and to assign more than one judge to a circuit.

Three presidents were chosen for state-supported institutions of higher learning and for one private college. They are Robert C. Edwards, Clemson Agricultural College; Robert L. Sumwalt, University of South Carolina; Charles S. Davis, Winthrop College; and Charles F. Marsh, Wofford College (Methodist).

The State Development Board reported that over $177 million was invested in establishing new industries and expanding old ones during the first 11 months of 1959. Twelve companies announced that they would establish new plants in the state at a cost of $83,165,000. Eight others declared their intention to expand existing plants at a cost of $3,800,000. The new industries alone will mean 3,000 additional jobs within the state.

The year 1959 was one of the wettest on record in South Carolina. Hurricane Gracie, which struck the state on September 29, caused heavy damage to unharvested crops, particularly in the storm's path between the Charleston-Beaufort area and Columbia. The crops most affected were cotton, corn, pecans, peanuts, and soybeans. The estimated crop loss exceeded $2,500,000.

South Carolina in 1959 had the longest continuous section of interstate highway under contract in the entire nation. Interstate Route 26, which was under construction, will extend from a point in Dorchester County near Charleston almost to the North Carolina line in Spartanburg County, a distance of 204 miles, including a connection with the city of Columbia.

Principal Events by: GEORGE R. SHERRILL,
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SOUTH DAKOTA. North Central state, United States; admitted to the Union, Nov. 2, 1889. The "Coyote State" ranks 16th in area and 40th in population among the 50 states.

Area and Population.—Area: 77,047 square miles (land, 76,536; inland water, 511), divided into 68 counties. Population: (1950) 652,740; (est., July 1, 1958) 684,000. Urban places with 1950 populations above 7,500 are: Aberdeen, 21,051; Brookings, 7,764; Huron, 12,788; Mitchell, 12,123; Rapid City, 25,310; Sioux Falls, 52,696; Watertown, 12,699; and Yankton, 7,709. Pierre (5,715) is the *capital.*

Executive.—Chief state officers in 1959:
Governor: Ralph Herseth (Democrat)
Lieutenant Governor: John F. Lindley
Secretary of State: Selma Sandness
Treasurer: Albert O. Hamre
Attorney General: Parnell J. Donohue
Auditor: Harriett Horning
Supt. of Public Instruction: M. F. Coddington

Constitution and Judiciary.—The present constitution went into effect in 1889. The Supreme Court comprises five justices; chief justice in 1959 was Charles S. Hanson.

Legislature.—The South Dakota Legislature comprises a 35-member Senate (in 1959, 20 Democrats and 15 Republicans) and a 75-member House of Representatives (43 Republicans and 32 Democrats), which meet in odd-numbered years commencing the first Tuesday after the first Monday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $123,741,476.94 comprised $65,235,573.39 from state tax sources, $35,362,194.95 from the federal government, and $23,143,708.60 from other sources. Tax revenue consisted of $17,623,246 from a 2% general sales tax, $20,797,420.52 from motor fuels, $7,019,428.45 from licensing, and $19,795,478.42 from other sources. Expenditures of $119,473,079.74 comprised $22,702,924.56 for education, $13,219,150.23 for health, welfare, and safety, $45,912,652.77 for highways, and $37,638,352.18 for other purposes.

Banking.—As of June 10, 1959, the state's 34 national banks had $407,163,000 in assets, $248,261,000 in demand deposits, and $125,627,000 in time deposits. The 138 state banks had assets of $374,150,746.60, demand deposits of $238,828,190.90, and time deposits of $103,772,380.92.

Education.—School attendance is compulsory between the ages of 6 and 16, inclusive. National Education Association estimates for the 1959–60 school year showed operating expenditures of $46,200,000 ($345 per pupil). Revenue was estimated at $44,500,000 from local school districts, $4,350,000 from the state, and $2,700,000 from the federal government. Capital outlays amounted to $8,500,000, and teachers' salaries averaged $3,600 (high school, $4,150; elementary, $3,400).

Estimates for 1959–60 indicated 114,000 pupils in public elementary schools taught by 5,740 teachers, and 38,000 students in public secondary schools with 2,357 teachers. There were (1958–59) 14,610 students in colleges and universities.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $10,607,656, including $6,196,149 for the aged, $3,594,283 for dependent children, and $702,316 for the permanently and totally disabled. A monthly average of 21,388 persons received aid.

Labor Force.—Nonagricultural employees numbered 139,050 on July 15, 1959, compared with 135,650 on the previous July 15, and with the 131,000 average for 1958. Of the 1959 total, 27.5% were in trade, 26.9% in government, and 14% in service industries. Unemployment of 4,550 persons in July 1959 was down from 4,750 a year earlier.

Manufacturing.—In 1957, wages of the 11,482 persons employed in manufacturing in the state totaled $48,364,000. Value added by manufacture totaled $94,487,000, and outlays for new plant and equipment amounted to $2,504,000. In August 1959, production workers earned $87.90 for an average workweek of 46.1 hours.

Leading manufactures are those of food and kindred products, which in 1957 employed 7,642

persons, paid $34,041,000 in wages, and added $69,481,000 in value by manufacture; and printing and publishing (1,557; $5,489,000; $10,645,000).

Mining.—In 1958 South Dakota ranked 39th among the states in the value of its mineral output, with 0.25% of the national total. It produced 52% of the nation's beryl, and was first in gold output; second in concentrates of columbium-tantalum; fourth in sheet mica; and seventh in uranium.

SOUTH DAKOTA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Beryl concentrates	240	$ 129,000
Clay[1]	155,000	155,000
Feldspar (long tons)	23,229	145,000
Gold (fine ounces)	570,830	19,979,000
Sand and gravel	14,705,000	9,179,000
Silver (fine ounces)	153,000	138,000
Stone	1,395,000	4,095,000
Uranium ore	35,489	530,000
Other minerals	...	7,800,000
Total	...	$41,534,000[2]

[1] Excludes bentonite, which is included in "Other minerals." [2] Total adjusted to eliminate duplication of value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 dropped sharply to $419,640,000 from $477,050,000 for the corresponding period of 1958. For the full year 1958, income comprised $478,912,000 from livestock and livestock products, $206,011,000 from crops, and $25,027,000 from government payments. Principal income sources in 1958 were: cattle, $275,929,000; hogs, $108,109,000; wheat, $89,531,000; and corn, $44,132,000.

SOUTH DAKOTA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	14,192	15,646	5,265
Corn (1,000 bu.)	108,551	105,192	79,774
Flaxseed (1,000 bu.)	5,547	8,312	3,432
Hay (1,000 tons)	4,364	5,190	3,414
Oats (1,000 bu.)	92,400	121,953	40,385
Potatoes (1,000 cwt.)	918*	757	438
Rye (1,000 bu.)	3,934	5,497	1,588
Soybeans (1,000 bu.)	1,712	2,978	1,576
Wheat (1,000 bu.)	35,044	55,722	18,204

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 61,700 farms in 1958. Total acreage (1954) of 44,949,000 included 17,760,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 3,392,000 cattle, 1,591,000 hogs, 1,329,000 sheep, and 9,008,000 chickens (excluding commercial broilers). Some 78,000 family and hired workers were engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $34,122,518.45, and 915.5 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 92,096 miles (47,916 surfaced). Registered *motor vehicles* numbered 367,796 in 1958, including 244,004 passenger cars. There were (1959) 8 *railroads* operating 3,916.9 line miles; 4 regularly scheduled *airlines;* and 202 *airports and airfields* (59 commercial and municipal, 2 military, and 141 private).

Communications media (1959) included 22 AM *radio stations;* 7 *television stations;* 12 daily *newspapers* (circulation, 163,850) and 165 other newspapers (160,000); and (January 1) 50,100 business and 155,000 residential *telephones.*

Principal Events, 1959.—On January 1 the Democrats assumed political power in the state for the first time since the 1930's. Democrat Ralph Herseth became governor, and members of his party controlled most of the other constitutional offices and the state Senate. Divided political authority influenced the 36th session of the legislature, which ended March 6 after passing approximately 400 bills and authorizing expenditures of $61,400,000. New laws included only one general tax measure, which increased the excise tax on cigarettes from 3¼ to 5 cents. Among other legislation were the authorization for a Citizens Tax Study Commission, a new formula for distributing state aid to schools, the creation of a teachers' retirement system, and an appropriation of $800,000 for relocating the School for the Blind at Aberdeen. A new driver's licensing law, with an "implied consent" provision for the compulsory revocation of the license of a driver refusing to submit to a test for drunkenness, was declared unconstitutional on November 30 by Minnehaha County Circuit Judge Francis Dunn.

Other political events of significance included Fay Wheeldon's victory over Wendell H. Hanson in a run-off election for mayor of Sioux Falls on April 28, the appointment of Yankton attorney Frank Biegelmeier to the state Supreme Court on May 11, and the official announcement on December 30 by Democratic Sen. Hubert H. Humphrey of Minnesota that he was entering the South Dakota preferential primary for president in 1960.

On December 16 the 21-member Citizens Tax Study Commission, under the chairmanship of Everett Creaser of Watertown, began its final meetings. These resulted in recommendations to the governor for a "balanced system of revenue" that would include a strengthened sales tax, an income tax, severance tax, and transaction tax on the sale of real property.

Economic conditions were influenced by the summer drought which helped reduce crops (see above, *Agriculture*) and caused a number of counties to be classified as "disaster areas" by the federal government. Two other developments of economic import were the announcement on February 24 that Sioux Falls Stock Yards, with a sale of 1,522,415 head the previous year, had moved into the top ten of the nation's livestock markets, and the signaling of the beginning of construction on the Big Bend Dam project, as notice was given on July 3 to bidders for construction of a bridge over the Missouri River near Fort Thompson. (See also DAMS.)

With the attainment of statehood by Hawaii, the geographic center of the United States shifted westward to a point in South Dakota near its boundaries with Montana and Wyoming. In 1958, admission of Alaska had shifted the center from Kansas to a point 11 miles west of Castle Rock in South Dakota's Butte County, at latitude 44°59′N. and longitude 103°38′W.

Other events of 1959 included the first annual conference (March 7) for Indian tribal judges at the University of South Dakota; a disastrous fire in Deadwood and nearby forests (September 8); and the appointment (November 30) of Joe Foss, former governor and Marine Corps flier as commissioner of the new professional American Football League.

Principal Events by: CEDRIC C. CUMMINS,
Professor of History,
State University of South Dakota.

SOUTH SEA ISLANDS. See FRENCH POLYNESIA; PACIFIC ISLANDS; WESTERN PACIFIC ISLANDS, BRITISH.

SOUTH WEST AFRICA. Situated on the Atlantic Ocean and bordered by Angola on the north, Bechuanaland Protectorate on the east, and Cape Province on the south and southeast, this former

League of Nations mandate is administered by the Union of South Africa. It contains the Caprivi Zipfel, a strip of land 20 to 60 miles wide and 300 miles long, which is controlled by the Union Ministry of Native Affairs; and encompasses Walvis Bay (374 square miles), which is part of Cape Province but is administered with South West Africa. Total area, 317,725 square miles; population (mid-1959 est.), 554,000, comprising (in 1958) 452,000 Africans of numerous tribes (some 200,000 Ovambos being the largest), 66,000 Europeans, and 21,000 Colored persons. The capital is Windhoek (1959 est. pop., 36,000, including 20,000 whites).

Government.—An administrator (D. T. du P. Viljoen) is assisted by an 18-member Legislative Assembly. The territory is represented in the Union House of Assembly by 6 elected members, and in the Senate by 2 elected and 2 nominated members. Local government is administered by magistrates in 21 districts.

Education.—The educational system is not compulsory for native and Colored children, and is separated according to race. In 1959 there were 279 schools for native and Colored pupils (with a combined enrollment of 35,000), including 12 government schools, 2 schools with secondary classes, and 2 teacher-training schools. For white children, there were 56 government schools (with 11,943 pupils) in 1957.

Finance.—Government revenues for 1957–58 were estimated at £17,117,577; expenditure, £17,077,060, including £1,301,910 for education, £936,290 for public works, and £771,810 for administration.

Transportation.—South Africa's railway system aggregates 1,486 miles, and connects with the South African Railways system at De Aar. The road network comprises 3,392 miles of motor highways and 28,000 miles of dirt and graveled roads. Scheduled air services at Windhoek and Keetmanshoop airports are operated by South African Airways. Principal seaports are Walvis Bay and Lüderitz.

Economy.—Mining, fishing, and stock raising are the chief industries. Mineral production in 1958 was estimated at $65 million (down 25% from 1957). Chief minerals and 1958 exportable values were: gems and industrial diamonds, $42 million; lead, copper, and zinc concentrates, $20 million; and manganese, $3 million. Fish and fish products are valued at about $25 million annually. In 1958, output of processed pilchard was 115,003 tons; rock lobster products totaled 4,089,314 pounds; and the whitefish catch was 6,619,566 pounds. Exported karakul pelts in 1958 totaled 2,708,644, valued at £5,168,996. The Union of South Africa provides about 80% of the territory's annual imports, and receives 25% of total exports.

Principal Events, 1959.—Although the Union of South Africa has refused to report annually to the United Nations on the status of the territory since 1946, Johannes G. Van Der Wath, Union representative to the United Nations, unofficially reported on October 20 to the General Assembly's Trusteeship Committee about economic developments in South West Africa. He said his government had given "first priority" for improving the native water supply, had appropriated in 1959 more than £2 million for road construction, was allocating annually £293,000 for native education, and had reserved large areas of land for native tribes. Nevertheless, on November 17 the General Assembly approved seven resolutions which condemned the Union's alleged violations of its mandate in the territory. The resolutions deplored particularly the removal of natives from their lands in order to settle Europeans there, and specifically demanded that South West Africa be placed under a United Nations trusteeship.

Twelve Africans were killed and about 50 were injured in clashes at Windhoek on December 10 between security forces and demonstrators protesting the planned removal of Africans from their present locations. On December 21 the U.N. Committee on South West Africa adopted a resolution requesting the Union government to "desist from the use of force and from enforcing the removal of residents of the Windhoek location." Nine African states also protested these developments.

W. R. F.

SOUTHEAST ASIA TREATY ORGANIZATION (SEATO). An international organization for the collective defense and the preservation of peace in Southeast Asia and the Southwest Pacific. SEATO was established under the Southeast Asia Collective Defense Treaty, signed at Manila, the Philippines, on Sept. 8, 1954 (came into force, Feb. 19, 1955). Treaty signatories, who form SEATO's membership, are: United States, Great Britain, France, Australia, New Zealand, Philippines, Pakistan, and Thailand. A protocol to the treaty guarantees the defense of Cambodia, Laos, and South Vietnam, although these states are not members of the organization. Chief organs of SEATO are:

(1) The Council, consisting of ministerial representatives of the member nations who meet at least once a year and decide on matters of broad policy.

(2) The Council Representatives, who meet in Bangkok, Thailand, usually every two weeks and carry on the business of the organization.

(3) The Military Advisers, who advise the Council on military matters and carry on the work of military planning in its broadest phases.

Other committees and offices which work under the Council Representatives deal with research on Communist tactics, economic and social problems of SEATO nations, educational and cultural cooperation among member nations, and public relations. In 1957 a permanent executive secretariat was established at Bangkok, and Pote Sarasin of Thailand was appointed SEATO's first secretary general. A Military Planning Office was also established in 1957, with headquarters at Bangkok, and Brigadier L. W. Thornton of New Zealand was later named as chief.

The fifth annual conference of the Council took place at Wellington, New Zealand, April 8–10, 1959. A major theme was the need for improved standards of living and greater economic opportunity for the peoples of Southeast Asia to counter the effects of Communist subversion. C. Douglas Dillon, United States under secretary of state for economic affairs, who attended in the place of the ailing Secretary of State John Foster Dulles, noted an attempt by Communist China to disrupt established trade patterns by slashing prices, and recommended that economic measures be taken to help affected nations. In its concluding communiqué, the Council noted that Communist China's activity in the Taiwan Strait area in 1958 showed that the Communists were ready to use violence up to the point where they encountered firm resistance. Emphasizing the need to improve economic and social conditions, as well as maintain military vigilance, the Council approved projects to develop skilled labor and technicians, including the establishment of the SEATO Graduate School of Engineering in Bangkok, Thailand. A SEATO budget of $896,860 was approved for fiscal 1959–60.

At an informal meeting of the Council in Washington on Sept. 28, 1959, member nations discussed the crisis current in Laos and reiterated their determination to abide by their treaty obligations regarding Laos.

SOUTHERN RHODESIA. See RHODESIA AND NYASALAND, FEDERATION OF.

SOVIET LITERATURE. The third Congress of Soviet Writers, which took place in Moscow on May 18–23, 1959, did not readmit Boris Pasternak, who was expelled from the Soviet Writers Union after he had received the 1958 Nobel Prize in literature. The Soviet press tried to present the congress as a turning point of Russian literary life, but the congress fell short of these expectations.

The exchange of messages between the congress and the Central Committee of the Communist Party reiterated the familiar Communist attitude toward literature: "Soviet writers must inspire people in their struggle for communism, educate them according to Communist principles, and instill in them high moral virtues and a complete rejection of bourgeois ideology and morals."

In a speech to the congress, Premier Khrushchev recommended that writers who had deviated from Communist ideals be re-educated and rehabilitated rather than publicly criticized. This policy, which many thought might later lead to Pasternak's reinstatement in the Soviet Writers Union, was reasserted several months later in the controversy over a short story published by Sergei Voronin, editor of Leningrad's literary magazine, *Neva.* Although the Leningrad party leaders criticized the story, they urged that Voronin be helped by serious comment rather than by attacks such as he had received in September from Sergei Smirnov, editor of *Literaturnaya Gazeta,* the Soviet Writers Union paper. Another sign that there might be a more tolerant literary atmosphere in the USSR was the replacement of Alexei Surkov, the intransigent and bureaucratic secretary general of the Soviet Writers Union, by Konstantin Fedin, a prominent writer.

War Novels.—One of the most significant features of the year's literary production was the revival of the war novel. It ranged from the purely descriptive *Raid to San and Vistula* by Peter Vershigora, to the more complex *The Living and the Dead* by Konstantin Simonov, and *The Span of Earth* by the young George Baklanov. Simonov's novel frankly depicts the Russian reverses of 1941, laying bare the blunders of the army leaders and the disorganization of the services. His hero is a politically suspect officer who arrives at the front from a Siberian concentration camp. *The Span of Earth,* an equally blunt novel, is concerned with the horrors of war. More conventional is *The Last Volleys* by Yuri Bondarev.

The most vivid image of the war appears in Mikhail Sholokhov's realistic novel, *They Fought for the Motherland.* Only a few chapters of this novel have appeared thus far in Soviet periodicals. *The Hard Field* by Anatoly Kalinin occupies a place by itself among war novels. In this widely read and controversial book, the hero is a writer who goes to a kolkhoz in the Don region to work on a war novel. By using this setting, Kalinin is able to examine the process of literary creation, life in the country (Sholokhov's influence is evident in these sections), and the war adventures of a young Cossack.

Other Fiction.—Most of the novels on contemporary life lack artistic quality and have only illustrative or documentary value. Worth mentioning, with these reservations, are *Eagle's Steppe* by Mikhail Bubennov, a long narrative about young men and women who join to work on the virgin lands in the Altai region of Siberia; *Beyond the Moskva River,* by Vartkes Tevekelyan, a description of the life of the Soviet ruling elite; *Stronger Than the Atom* by George Berezko, a tendentious novel which aims at proving that Soviet Army men and commanders are inspired only by lofty Communist ideals; *The Sources* by Grigory Konovalov, a rather pedestrian chronicle of a proletarian family under the Soviet regime; *Honor* by Grigory Medynsky, which deals with the problem of juvenile delinquency; *Tramontana* by Pavel Sazhin, who depicts life on the shores of the Sea of Azov; *The Source at a Birch Tree* by Nicholas Shundik, a colorful picture of the postwar era in the extreme north; and *August Again* by Nina Ivanter, a naïve but pleasant tale devoted to contemporary Russian youth.

Of much greater artistic quality is *The Time of Great Expectations* by Konstantin Paustovsky, one of the leading Soviet writers. This novel forms the fourth part of his autobiography, recreating with humor and vividness the early stages of the revolution in the south of Russia. Certain chapters are dedicated to Isaac Babel, the remarkable storyteller whose works were considered counter-revolutionary after his arrest in the late thirties. It is significant that Paustovsky's warm sketch of Babel and his praise of his art were passed by the censors.

The novels on industrial production include *On the River* by Alexei Yugov (the building of a power station), *Party Commission* by Leo Uvalov (coal industry in the Don Basin), and *The Salamander* by Vassily Ocheretin (the steel industry). None of them possessed ideological or artistic distinction. The only contemporary work on village life of real worth has been the sequel to *Virgin Soil Upturned* by Mikhail Sholokhov, of which only brief and tantalizing sections have appeared in *Pravda* over the last three years.

Drama.—*The Third Pathetic,* another play about Lenin by Nicholas Pogodin, was highly publicized in the press. But the light comedies such as *The Cook* by Anatoly Sofronov, *The Twelfth Hour* by Alexei Arbuzov, and *The Violins of Spring* by Alexander Shtein were the real box office successes.

Translations.—Among recent Russian works released in English translation in 1959 were Andrey Biely's *St. Petersburg* (tr. by John Cournos), Pavel Nilin's *Comrade Venka* (tr. by Joseph Barnes), Alexei Pisemsky's *One Thousand Souls* (tr. by Ivy Litvinov), some of Boris Pasternak's poems (tr. both by Eugene Kayden and George Reavey), his autobiography *I Remember* (tr. by David Magarshack), and his early tale *The Last Summer* (tr. by George Reavey).

Marc Slonim,
Sarah Lawrence College;
Author of "Modern Russian Literature."

SOVIET UNION. See Union of Soviet Socialist Republics.

SOYBEANS. See Index entry.

SPACE FLIGHT. Highlights in space technology, exploration, medicine, and law during the second year of the so-called space age are reviewed in the following article in four sections:

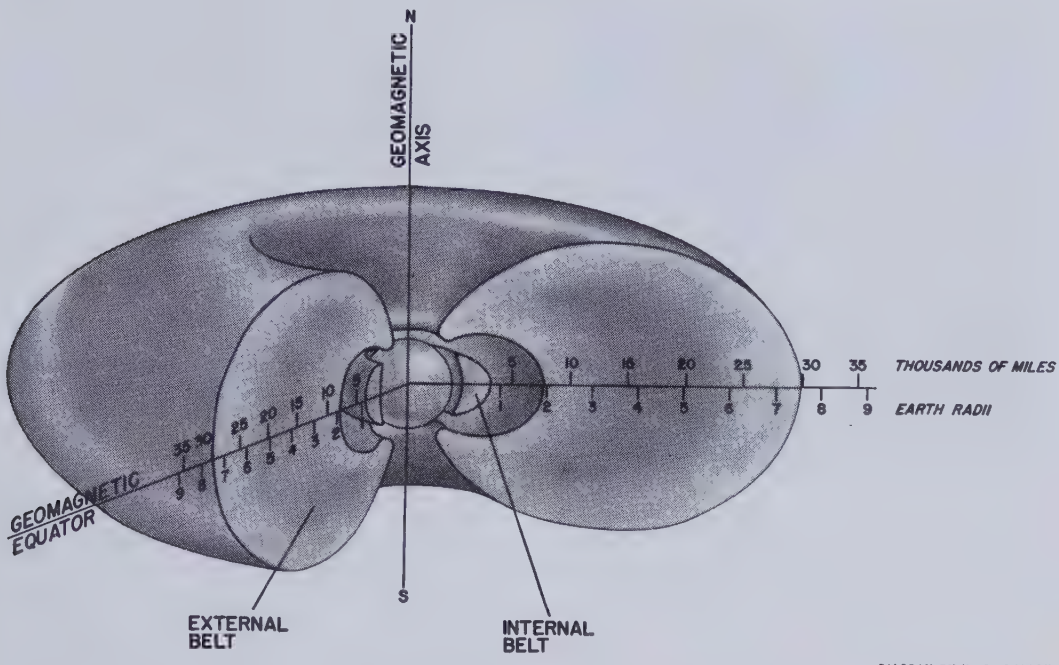
(1) Astronautics—Space Science and Technology
(2) Space Exploration in 1959
(3) Space Medicine
(4) Space Law

For additional information, see Advanced Research Projects Agency; Astronomy; Atmosphere Research; National Aeronautics and Space Administration; and the Index entry, *Space Flight.*

Astronautics—Space Science and Technology

Ever since the first man-made earth satellite was launched on Oct. 4, 1957, space technology and its related sciences have experienced a phenomenally fast evolution. This article gives a brief survey of progress in space science and technology, with emphasis on developments of the past year.

Earth and Its Environment. *The Van Allen Radiation Belts.*—Several important steps have been taken recently in advancing the geophysical sciences. One of the most significant research achievements of the International Geophysical Year (IGY)



Schematic Diagram of Van Allen Radiation Belts

Probable structure of the inner and outer Van Allen radiation belts, surrounding the earth between 600 and 30,000 miles above the geomagnetic equator, is shown in this diagram based on limited data radioed to earth from satellites and space probes. The outer belt is particularly subject to sudden fluctuations because of solar particle streams. The entire Van Allen region may be less sharply defined than is indicated here, and there may be more than two intense radiation zones.

satellite program in 1958 was the revelation of the existence of layers of energetic particles in the outer atmosphere. Dr. James A. Van Allen of Iowa State University recognized the earth-girdling belt of high-intensity radiation detected by the instrument package contained in the early Explorer satellites, and he was given credit for its discovery.

More recent satellite flights, together with the Pioneer moon shots, confirmed the existence of energetic, high-speed, electrically-charged particles, both electrons and protons, in certain regions of space, comprising the great radiation belt of the earth. These particles are in a broad belt—actually a series of belts—surrounding the earth at latitudes of less than 70° and at altitudes of between 600 and 30,000 miles.

The density and composition of this region vary radically with altitude. The inner belt or zone contains electrons ranging from very high energies down to at least 200 kev. (thousand electron volts) as measured by Explorer VI, and down to at least 10 kev. according to Sputnik III. The data provided by Sputnik III also indicated that there are more electrons in the lower than in the higher energy ranges, with the number continuing to increase in each successive lower energy range. The protons of the inner belt appear to arise from the interactions of cosmic rays with the outer fringe of the atmosphere. The outer Van Allen belt is not clearly separated from the inner belt in its electron content, but shows a clear separation in proton content.

The protons of the outer belt, which has its maximum intensity at about 10,000 miles altitude, appear to be of solar origin and therefore of much lower energy than protons of the inner belts. The particles are of lower energy (lower velocity) than cosmic rays, but their intensity (number per unit cross section) is at least 10,000 times as great as that of cosmic rays near the earth's surface.

The Van Allen belts present a hazard to future space ships and their pilots, since the impact of high-energy electrons against the shell of a space vehicle will generate harmful X-rays. There exists also the potential problem of drag or resistance caused by the electrical charge deposited on a vehicle traveling through such a radiation belt; it is believed that the Vanguard I satellite may have acquired a potential of some thousands of volts by this means.

Upper Atmosphere Nuclear Tests.—In a series of tests conducted under the code name of Project Argus, electrons were artificially injected into the upper atmosphere by the detonation of nuclear bombs carried by rockets to high altitudes. These tests, which took place in August and September 1958, confirmed the theory that electrons travel along the lines of the earth's magnetic field, and confirmed the prediction that electrons produced by the explosion would create artificial auroral luminescence at specific regions in the Northern and Southern hemispheres. The data obtained in Project Argus have vastly increased our knowledge of the earth's magnetic field. Valuable information was obtained also from two similar experiments, Teak and Orange, at considerably lower altitudes in August 1958. (See also ATOMIC ENERGY.)

Shape of the Earth.—The shape of the earth has been calculated very accurately from perturbations in the orbit of Vanguard I (launched on March 17, 1958). An analysis of these perturbations indicates that the earth has somewhat the shape of a pear, with the stem at the North Pole. Sea level at the North Pole is about 50 feet above what was previously considered normal, while at the South Pole there is a depression of about 50 feet. The older theory considered the earth to be almost spherical, somewhat flat at the poles, and bulging at the equator by about 12 miles. The importance of this slight difference in the distribution of the earth's mass lies in the implication that

the earth may not be as plastic as originally assumed, and that very large shearing forces exist in its interior. For space flight, the discovery will be of importance in all trajectory computations where highly accurate knowledge of the earth's gravity and radius is required.

The Ionosphere.—Data provided by rocket flights during the IGY and by satellite flights in 1959 have revolutionized our understanding of the ionosphere. The ionosphere, beginning at an altitude of approximately 35 miles, is the region of ionized (electrically charged) gases, chiefly oxygen and nitrogen, which reflects high-frequency radio waves around the earth. It changes in a 24-hour cycle, and in periods of unusual solar activity it is so altered as to disrupt radio communications. It consists of at least four layers: the D layer, at altitudes from 35 to 50 miles; the E layer, at 60 miles; the F_1 layer, at 120 miles; and the F_2 layer, at 180 miles. At night the two F regions merge together, the E layer becomes patchy in nature, and the D layer seems to disappear entirely.

Measurements from earth-based radio soundings had led to the erroneous belief that the layers of the ionosphere were well-defined layers of intense ionization, and that the ionization was caused largely by ultraviolet radiation from the sun. The new data indicate that the ionization is caused largely by solar X-rays (and only in part by ultraviolet radiation), and that the entire ionosphere is a connected region (rather than a series of distinctly separate, intense layers) with only minor variations in the density of the charged particles. The data also show that the bulk of the ionosphere lies above 180 miles, or above the F_2 layer, rather than below that altitude as previously supposed. Thus the ionosphere's disturbing effect on communications will extend to much higher altitudes than expected, and may affect certain satellite-to-satellite communications.

Before the advent of rocket astronomy our understanding of ionization by solar ultraviolet and X-ray emission was based on indirect evidence. The daily cycle of growth and decay in the density of electrons at altitudes between 50 and 200 miles provided only an indication of the ionizing action of these high-energy radiations. In 1959, with the direct records of the sun's emission in this region of the spectrum (obtained from rocket and satellite instruments), Dr. Herbert Friedman suggested the following explanation: Ultraviolet Lyman-alpha radiation induces the formation of the lowest (or D) layer of the ionosphere by ionizing nitric oxide, even though this compound is present only in a concentration of one part per million. The E layer can be attributed principally to X-rays from the sun's corona, which ionize any of the atmospheric gases.

It had been known previously that the electron density of the E layer varies in perfect harmony with the number of sunspots; the rocket observations reveal a similar correlation with solar X-ray emission. When the sun is unusually active, the increased intensity of X-rays arriving in the E layer increases the overall electron density, and the output of harder and more penetrating X-rays in the 5-to-20-angstrom band spreads the E layer to lower altitudes. In the top (or F) layer of the ionosphere, most of the ionization is apparently caused by the far-ultraviolet emission associated with the principal resonance line of singly ionized helium, at 304 angstroms.

Measurements from satellites, together with measurements of the transmission (along the lines of the earth's magnetic field) of radio waves generated by lightning flashes, indicate that electrons can be found at distances up to several earth diameters. The connection between intense solar activity and X-rays from the sun gives rise to the hope that additional knowledge will lead to the ability to forecast disturbances to communications, particularly in polar regions. In these regions radio reflections from auroras are generally attributed to ionization produced by corpuscular streams, but X-rays have in some cases accounted for this. The prediction of disturbances to communications is of significance for the transmission of both military and commercial messages.

Continued studies of the radiation belts contributed to an explanation of one of the paradoxes discovered earlier in the investigation of the upper atmosphere. Rocket experiments over White Sands, N.Mex., and Fort Churchill, Manitoba, had yielded the surprising result that at altitudes between 90 and 140 miles the atmospheric density was greater, and the thermodynamic temperature of the air was much warmer, in the Arctic auroral region than over New Mexico. It appears that heating of the air molecules in the upper atmosphere in the Arctic takes place because of collisions with trapped energetic particles of the outer radiation belt. The radiation belts follow the contours of the earth's magnetic field, and the trapped particles, especially those forming the outer belt, are led into the earth's atmosphere at the auroral regions. The heat of collision of these energetic particles with air molecules is sufficent to yield measured temperatures of 4,000°F. over Fort Churchill, as compared with 2,000°F. readings obtained over New Mexico. (See also ATMOSPHERE RESEARCH; METEOROLOGY AND CLIMATOLOGY.)

The Moon and Beyond.—Measurements of some of the characteristics of the moon were reported for the first time during the approach of the instrumented Soviet rocket Lunik II to the moon on Sept. 13, 1959. The measurements indicated an absence of surrounding radiation, an increase in concentration of ionized particles just above the moon's surface, and a magnetic field of not over 50–100 gamma close to the moon's surface (implying an effective magnetization of not more than 5% of that of the earth). This very low magnetism suggests a lack of magnetic elements such as iron or nickel in the moon's composition, and tends to confirm the theory that the moon did not originally separate itself from the earth, which does contain a large portion of heavy magnetic materials. On the other hand, one explanation attributes the earth's magnetism to the dynamo action of convection currents in its liquid core, so that the slight magnetism on the moon may indicate only the absence of a liquid core. It can be presumed that the moon (because of its small size) cooled faster than the earth, and is completely solidified.

The circumnavigation of the moon early in October 1959 by the Soviet rocket Lunik III has furnished us with photographic records of the other side of the moon. The relatively unbroken surface shown by the pictures tends to back the theory that the gravitational pull exerted by the earth on the moon may have caused disruption of the moon's near-side crust.

High-altitude rockets have disclosed strong sources of ultraviolet radiation in space. Since the earth's atmosphere screens out radiation in the ultraviolet region, only by sending instruments above the atmosphere can we make such observations. Photos of the sun, spectrographic data, and an observation of the sky have been obtained. Strong ultraviolet emissions, more powerful than cosmic radio waves, have been found to emanate from the regions of the stellar configurations Virgo

(Spica) and Orion, probably from gaseous nebulae.

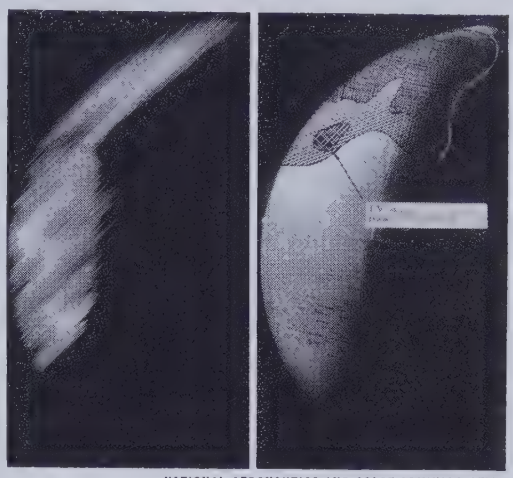
One observation disclosed a peculiar spectral phenomenon in a certain region of the moon; it is believed to be due to the evolution of gas, possibly from a volcanic formation. Observations also have been made to determine pressures, densities, and estimated temperature and composition of the atmospheres of Mars and Venus.

Meteorology.—Crude observations from one of the Vanguards and one of the Explorers indicate that it is possible to observe cloud patterns from satellites and thereby to aid in weather forecasting. The data obtained in 1959 were so crude that they were not suitable for meteorological purposes, but further refinements in resolution, vehicle stabilization, and data transmission techniques were under way by the end of the year. Measurements of the earth's heat balance and thermal phenomena at high altitudes were being studied in the hope they would give clues to the influence of the outer layers of the atmosphere on weather. Photographic observations of cloud formations from high-altitude rockets have given us pictures of a quality suitable for meteorological forecasting. (See also METEOROLOGY AND CLIMATOLOGY.)

Propulsion.—Research leading toward a high-performance, liquid-propellant, nuclear-powered rocket engine progressed in 1959. The engine uses a reactor as a heat source and hydrogen as a working fluid. The technical problems, including the use of high-temperature materials, rapid nucleonic and flow control response, and thermal equilibrium of adjacent parts, are indeed complex and difficult. It will be a number of years before a complete and flyable nuclear engine can be developed.

The first test of a nuclear reactor experimental device for rocket propulsion (called Kiwi A) was made on June 20, 1959, at Las Vegas, Nev. Results of the test, carried on under the general designation of Project Rover, were encouraging. Information published in 1959 indicated some results of studies of the use of a series of nuclear bomb explosions to push vehicles into space. Although vehicles propelled in this manner could have extremely high payload capabilities, they would appear to pose tremendous technical problems.

Work has been started by the National Aeronautics and Space Administration (NASA) on a rocket engine of 15,000-pound thrust using liquid hydrogen and liquid oxygen as propellants. This combination of fuels gives increased engine performance (which in turn permits higher payloads for space vehicles) than can be obtained with standard rocket fuels. Two of these engines will be used to make up the second stage of the Atlas Centaur rocket, designed to put payloads in excess of 5,000 pounds into a 300-mile orbit.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

(*Left*) The first crude picture transmitted from Explorer VI shows a sunlighted area of the central Pacific Ocean and its cloud cover. Picture was transmitted August 14 while satellite was crossing Mexico, 17,000 miles above earth. (*Right*) Lined areas represent a cloud-cover map which has been superimposed on section of globe covered in satellite picture. Crosshatching indicates density of cloud cover.

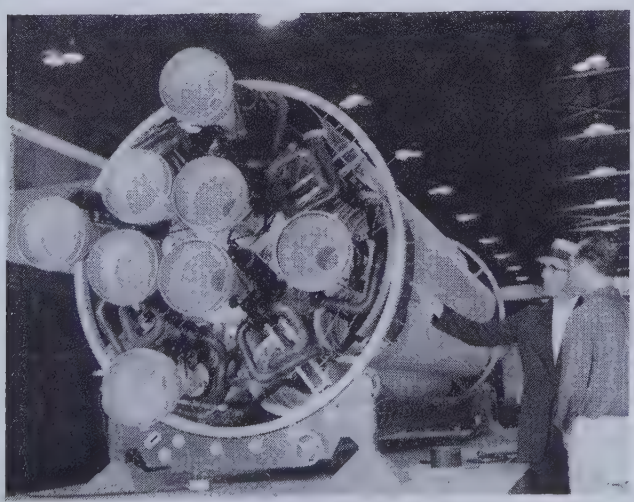
The Saturn rocket, transferred from the Army to NASA by a presidential order signed in October 1959, will be powered by a cluster of eight rocket engines giving a total thrust of 1.5 million pounds. Eventually it will be capable of putting a payload of between 15,000 and 30,000 pounds into orbit; and if high-energy propellants are used in several of the upper stages, it may be possible to increase this payload weight to about 55,000 pounds in a 300-mile orbit.

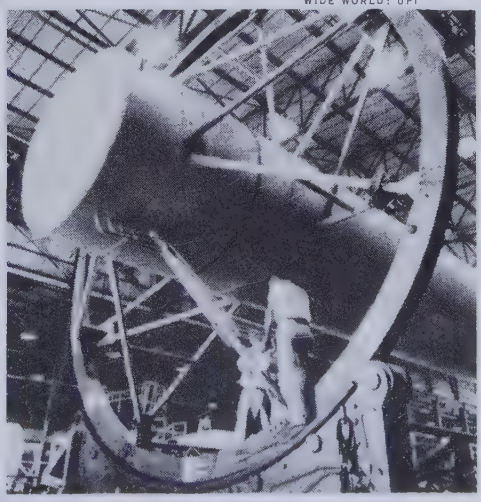
A contract was let by NASA in December 1958 for the development of a liquid-propellant rocket engine of 1.5 million pounds thrust. It is intended to use a cluster of these big rocket engines (probably four or more) to make a huge booster rocket called Nova. The Nova will be needed for manned expeditions to the moon and to other planets. (See also CHEMISTRY; MISSILES.)

Guidance.—Progress has been made in perfect-

(*Left*) Officials of the Redstone Arsenal at Huntsville, Ala., inspect a one-fourth scale model of the Saturn booster. Shown are the exhausts of a cluster of eight engines which will develop 1.5 million pounds of thrust. (*Right*) Workmen continue fabrication of the giant Saturn rocket. Struts leading to outer "wagon wheel" rim will provide support for cluster of fuel tanks and engines. This unit is only the first stage of the Saturn, which when completed will exceed 200 feet in length.

WIDE WORLD; UPI





PROPULSION SYSTEMS USED OR PLANNED FOR LAUNCHING U.S. SPACE VEHICLES

Vehicle	First stage	Second stage	Third stage	Payload (in 300-mile orbit)	Payload (for escape from earth)	Date of first flight	Status
Vanguard	Oxygen fuel	Storable liquid-fuel	Solid fuel	20–50 lbs.	...	March 1958	3 orbited; no more planned
Explorer I, II, III, IV, and V	Modified Redstone	11 clustered Sergeants	3 clustered Sergeants; 4th stage, 1 Sergeant	30 lbs.	...	Jan. 1958	5 orbited; no more planned
Pioneer I, II; Explorer VI	Thor	Able	Solid-fuel Vanguard stage	200 lbs.	75 lbs.	Oct. 1958 (Pioneer I)	Max. altitude 71,300 mi. (Pioneer I)
Pioneer III, IV; Explorer VII	Modified Jupiter	11 clustered Sergeants	3 clustered Sergeants; 4th stage, 1 Sergeant	100 lbs.	20 lbs.	Dec. 1958 (Pioneer III)	Max. altitude 66,654 mi. (Pioneer III)
Discoverer	Thor	Agena A	...	250 lbs.	...	Feb. 1959	6 orbited; flight tests continuing
Scout	Solid fuel	Improved Sergeant	Scaled-up Able; 4th stage, solid fuel	250 lbs.	75 lbs.[1]	Dec. 1959	In development
Thor Agena	Thor	Agena B	...	1,600 lbs.	...	Mid-1960	Improved Agena stage in development
Mercury	Atlas	...	...	2,100 lbs.[2]	...	Unmanned orbital 1960; manned 1961	In development
Atlas Centaur	Atlas	Centaur	...	9,000 lbs.	2,700 lbs.	Mid-to-late 1961	In development
Saturn	8-engine cluster	Modified Titan	Centaur; liquid fuel	30,000 lbs.	8,500 lbs.	March 1961 for booster, dummy stages	In development

[1] Without accurate guidance. [2] 100-mile orbit.

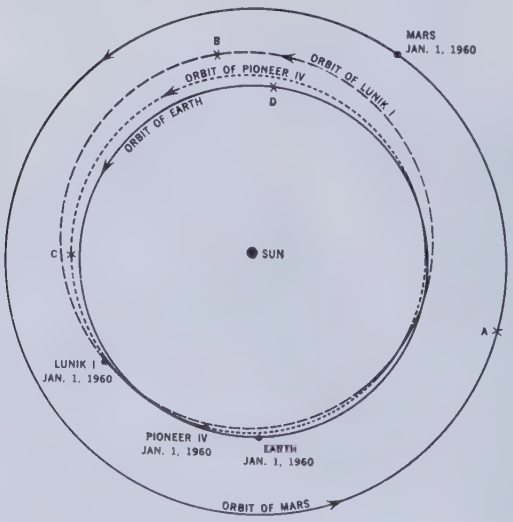
ing guidance devices for achieving accurate satellite orbits. Basically similar to those used in missiles, the devices consist of two categories: those using radio signals from ground computers to guide vehicles into the proper paths; and those using inertial guidance systems in the vehicles themselves, with their own computers and timers. With this progress in electronics and guidance, it has been possible to predetermine satellite trajectories with amazing accuracy. The few probes that have been sent into deep space by the United States have used a fairly crude radio guidance system for determining their mid-course trajectories. Work remains to be done on more accurate mid-course guidance systems, as well as on guidance systems for the terminal phases of deep space probes to accomplish maneuvers near (or landings on) the moon or one of the planets.

It is now known that rocket engines can be ignited after they have been in space for some time. The re-entry rockets of the Discoverers functioned after the vehicles had made many orbits around the earth. It has also been possible to stabilize a vehicle in space with a relatively high degree of accuracy, to reorient and rotate satellites on command from the ground, and to control remotely satellite-borne transmitters. (See also MISSILES.)

Communications.—It has been established that it is possible to communicate with satellites, sending and receiving messages from space. The first such messages were transmitted from Sputnik I in 1957. Project Score (in which President Dwight D. Eisenhower's Christmas message to the world was broadcast from an Atlas satellite launched on Dec. 18, 1958) has shown that it is possible to rebroadcast radio messages from the upper atmosphere. The series of Discoverer satellites has shown that it is possible to send commands to satellites, change their course, and determine their recovery schedule. Certain high-frequency bands are preferred for this type of communication, because they are less subject to ionospheric disturbance. By 1960 enough data on ionospheric refraction had been obtained to enable

Orbits of the Soviet solar satellite Lunik I (long dashes), launched on Jan. 2, 1959, and of United States space probe Pioneer IV (short dashes), launched on March 3, 1959, are shown drawn to approximate scale in relation to orbits of the earth and Mars (solid lines). Points marked *A*, *B*, *C*, and *D*, indicate aphelions of each orbit; dots show positions of planets and artificial satellites on Jan. 1, 1960.

AMERICANA DIAGRAM BY ROBERT S. ANDERSON



Opposite page: **(*Top*) This schematic drawing of the inner solar system shows earth's nearest neighbor planets, Mars, Venus, and Mercury—the goals of intensive space research (including unmanned space probes) in the early 1960's.**

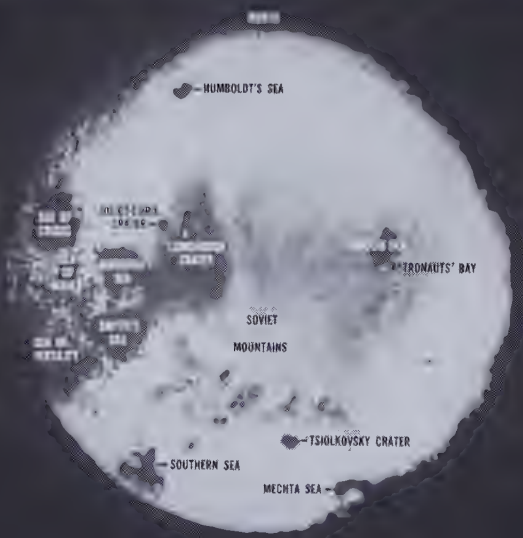
(*Middle*) Historic photo at right, taken by the Soviet space vehicle Lunik III on Oct. 7, 1959 (diagram below), gave man his first glimpse of the far side of the moon. The photo shows about 70 per cent of the moon's hidden side (including many prominent features named by Russian scientists), together with some familiar features visible from earth. Above the center of the moon's near side (shown for comparison at left), a cross marks the approximate region where Lunik II landed on Sept. 13, 1959, thus becoming the first man-made object ever placed on the moon.

(*Bottom*) Launched early on Oct. 4, the Soviet "cosmic laboratory," Lunik III, passed some 4,900 miles under the moon's south pole at 14:16 Greenwich Civil Time on Oct. 6. At about 03:30 GCT on Oct. 7, when approximately 40,000 miles beyond the moon, Lunik III's two 35-mm. cameras began photographing the moon's far side. These pictures, automatically processed in the space vehicle, were radioed back to Soviet stations as the Lunik III made its first return trip toward the earth. The probe reached its closest point to the earth (about 30,000 miles) on Oct. 18. The completion of its first orbit, which was nearly perpendicular to the moon's orbital plane, is shown by the broken line.

(TOP AND BOTTOM) AMERICANA DIAGRAMS BY CHARLES HUNTER; (MIDDLE) BASIC PHOTOS FROM LICK OBSERVATORY AND SOVFOTO

INNER SOLAR SYSTEM: THE EARTH AND NEARBY PLANETS

MOON'S NEAR SIDE



MOON'S FAR SIDE

LUNIK III: LAUNCHING TRAJECTORY AND INITIAL ORBIT

scientists to predict and make allowances for some of these effects.

Because of the large distances involved, a radio signal sent from a ground station via a satellite to another ground station is severely attenuated or diminished in strength. Passive systems, which merely reflect signals transmitted from the ground, permit the use of very simple satellites, but require high-power, large, low-noise ground transmitters and receivers. Active systems, while permitting smaller and simpler ground installations, require small, low-power receivers and transmitters in the satellites. During 1959 progress was made by NASA in developing very light, metal-coated plastic balloons which are intended to serve as passive radio-signal reflectors. It is planned to send radio signals from the large tracking antenna at Goldstone, Calif., to similar large antennas on the east coast by reflection from one of the balloon satellites.

An outstanding achievement announced in 1959 was the establishment of a radar contact with the planet Venus. The contact was accomplished by the Lincoln Laboratory of the Massachusetts Institute of Technology, using very sensitive low-noise amplifiers and an automatic computer for discriminating the received signal from the noise that accompanied it. (See PHYSICS.)

Man in Space.—Project Mercury was officially set up by the United States in October 1958; responsibility for the program lies with NASA. Its purpose is to place a manned space capsule in orbital flight around the earth, investigate man's reactions and capabilities in this environment, and recover the capsule and pilot safely. The manned capsule will re-enter the atmosphere in a fashion similar to a missile warhead, using heat protection and special pilot equipment to permit rapid deceleration and survival in space. The following preliminary investigations have been made: (1) air-drop tests of the capsule; (2) escape-systems studies and tests ("Little Joe" launchings); (3) free-flight and wind-tunnel investigations; (4) impact tests; (5) parachute tests; and (6) tests of the life-support system. Seven military pilots ("astronauts") were selected carefully to commence training for this mission.

On September 9, 1959, a full-scale Project Mercury test ("Big Joe") was run, using an Atlas launching vehicle. The empty capsule was satisfactorily recovered from the Atlantic Ocean after traveling 1,500 miles. On December 4 a rhesus monkey named Sam was sent up 55 miles and recovered in a "Little Joe" test launching of a model capsule. Tests aimed at developing high reliability in the Project Mercury hardware, and leading to placing a man in space in 1961, will continue.

By late 1959, the United States and the USSR had launched instrumented animals (including three monkeys, four mice, three dogs, and one rabbit) to high altitudes. The Soviet satellite Sputnik II contained a dog. Tests simulating some of the conditions to be encountered by men rocketed into space have been made with huge centrifuges, vacuum chambers, airplanes, and artificial solar radiation. These experiments show that man can withstand considerable exposure to high accelerations, extreme temperatures, altered atmospheres, and altered diets, as well as some exposure to weightlessness.

NASA's X-15 research plane is designed as a "near-space vehicle" to reach an altitude of 100 miles and a speed in excess of 3,600 miles per hour. Its purpose is to study flight problems in the upper atmosphere and to determine: (1) skin temperatures of the plane; (2) ability of the pilot to control the plane under the great accelerations of near space flight; (3) effectiveness of the plane's aerodynamic and space attitude controls; and (4) aeromedical information regarding the pilot.

On March 15, 1959, a compatibility test was run on the X-15 and the B-52 mother ship from which it is launched. Tests were also made on some of the X-15's instrumentation. The X-15 was equipped with an interim engine, and on September 17 flew for the first time under its own power, reaching a speed of 1,300 to 1,400 miles per hour and an altitude of over 50,000 feet. The interim engine has approximately one fourth the power of the final engine, which is scheduled to be flight-tested in early 1960. A 485-mile tracking range is ready to transmit electronic data on pilot safety and aircraft conditions to the ground by a combination of radar, telemetering, and radio equipment. (See also AERONAUTICS.)

Future U.S. Space Programs. *NASA Program.*—The National Aeronautics and Space Administration (q.v.) is responsible for those space programs which are primarily scientific in nature and which may have ultimate commercial value. NASA also has been given responsibility for the development of large booster rockets.

One of the highlights of 1959 was the formulation and publication of a coherent, logical space-science program for NASA, giving a statement of objectives and problems, and a long- and short-range program dealing with atmosphere research (for the sun and planets, as well as the earth), ionospheric physics, energetic particles, electric and magnetic fields, gravitation, astronomy, and the biosciences. This program is aimed to provide quantitative answers to such questions as: What gases are in the atmosphere of Mars? What is the crust of the moon made of? What is the sun like? What is the energy balance of the atmosphere? The accomplishment of this extensive program will entail the launching of additional deep-space probes and satellites, including stationary (24-hour-period) and passive communications satellites.

Department of Defense Program.—Launchings of the Discoverer vehicles, which have facilitated the research and development of various space systems, will be continued during 1960 to obtain further scientific data, to perfect payload recovery techniques, and to obtain developmental data for other programs. The first launchings of experimental Midas vehicles, carrying infrared seekers to detect the launching of big rockets, are scheduled to take place in 1960. The Midas vehicles are intended eventually to provide a system for giving the United States very early warning of an impending rocket attack, and thus increase the effectiveness of other active and passive defense systems.

The year 1960 is expected to see also the launching of the first experimental communications satellite aimed at obtaining secure military communications, which cannot be disrupted by sabotage, solar activities, or inclement weather. The first version will be a delayed-repeater system in which signals received from a ground station will be recorded on magnetic tape and rebroadcast when the satellite is in range of the intended ground receiver station. Development of a satellite reconnaissance system will continue during 1960, and several attempts will be made to launch a navigation satellite, which in its ultimate form will enable ships, submarines, and aircraft to fix their locations within a range of error on the order of 0.1 mile. The Department of Defense also will continue development of the Dyna-Soar, a rocket-launched research craft similar to the X-15, but designed to fly at higher altitudes and higher speeds. (See also ADVANCED RESEARCH PROJECTS AGENCY.)

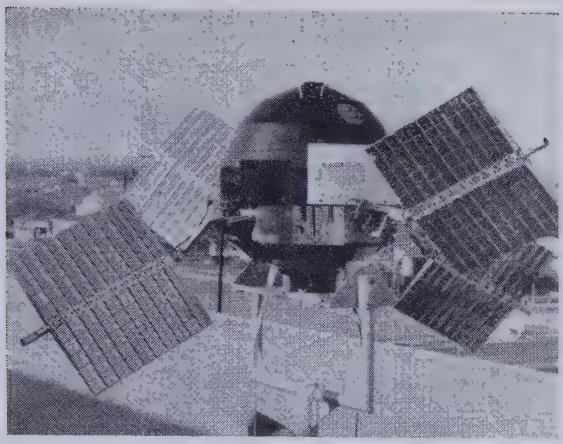
GEORGE P. SUTTON,
Director, Institute for Defense Analyses, Advanced Research Projects Division.

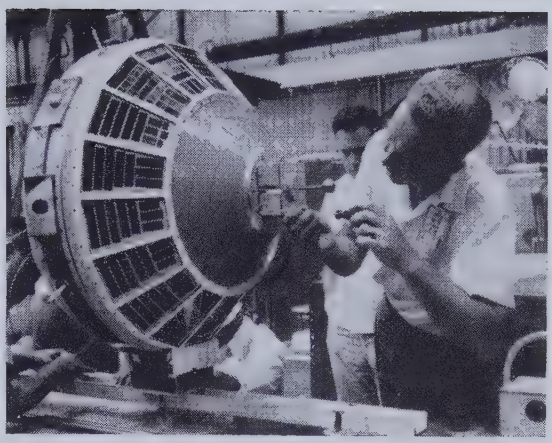
SPACE EXPLORATION IN 1959

Space exploration in 1959 proceeded at a rapidly increasing tempo that was characterized by a series of spectacular achievements by the United States and USSR. Much additional information concerning the radiation belts surrounding the earth has been obtained, as well as more detailed knowledge of the magnetic fields of the earth and space and of solar-terrestrial relationships (see above, *Astronautics—Space Science and Technology*).The United States rocketed two monkeys (Able and Baker) a distance of 1,500 miles, reaching a maximum altitude of 300 miles, and recovered them unharmed on May 28; a third monkey (Sam) was rocketed to a height of 55 miles and was recovered unharmed on December 4. The Russians have sent two dogs and a rabbit to altitudes of at least 280 miles, and have recovered them in good health.

In the United States, most launchings of space flights have occurred at the Atlantic Missile Range in Florida, but several vehicles have been launched from the newer Pacific Missile Range in California. These ranges have been equipped with improved tracking, safety, and telemetering equipment, and additional launching stands are being constructed in both places. Many of the high-altitude rocket shots which have provided upper atmosphere data have been launched by the United States from other sites, including Fort Churchill, Manitoba, and from ships at sea. Great Britain's launching station at Woomera, Australia, also became more active in testing high-altitude missiles during 1959.

Tracking of space vehicles was augmented during 1959, and additional tracking stations had been installed or were being installed at the end of the year in Alaska, Hawaii, Spain, South Africa, Japan, and other areas. A satellite "fence" across the southern part of the United States was put in operation during the year. It is capable of detecting the passage of both active satellites (which send out radio signals) and passive (silent) satellites, and makes possible the detection of foreign satellites over the United States. Data from this fence and from various radio tracking stations all over the world, together with optical tracking information from special IGY cameras operated by the Smithsonian Astrophysical Laboratory, are collected at data centers for evaluation and determination of the exact orbit or space trajectory. One





WIDE WORLD; UPI

(*Left*) Explorer VI, launched on August 7, was named the "Paddle Wheel" satellite because of its four large vanes, which contained solar cells to convert the sun's rays into electrical energy and provide power for instruments and transmitters. (*Right*) Technicians test the composite radiation experiment payload of Explorer VII, launched by a Juno II on October 13.

such center is operated by the National Aeronautics and Space Administration (NASA), and another by the U.S. Defense Department. Automatic techniques for handling the data were being put into effect at the end of 1959.

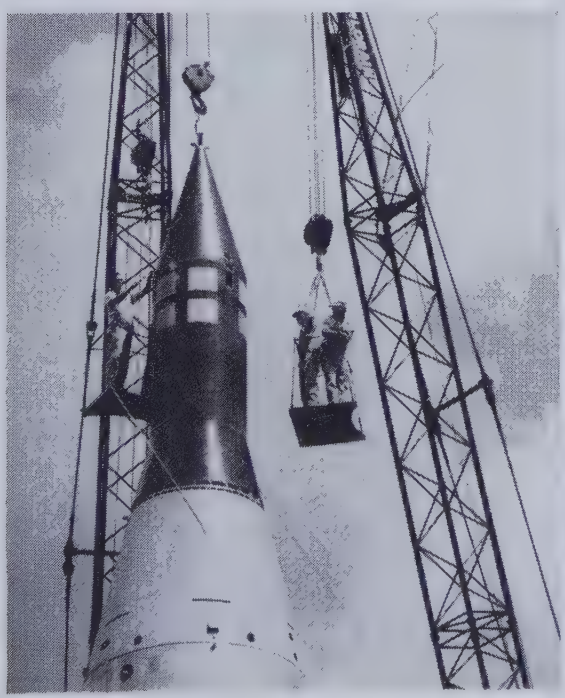
U.S. Satellites.—In 1959 the United States successfully launched four earth satellites under the auspices of NASA, and six satellites under the Air Force Discoverer program. The objective of the NASA launchings was the scientific investigation of the earth's upper atmosphere and of space.

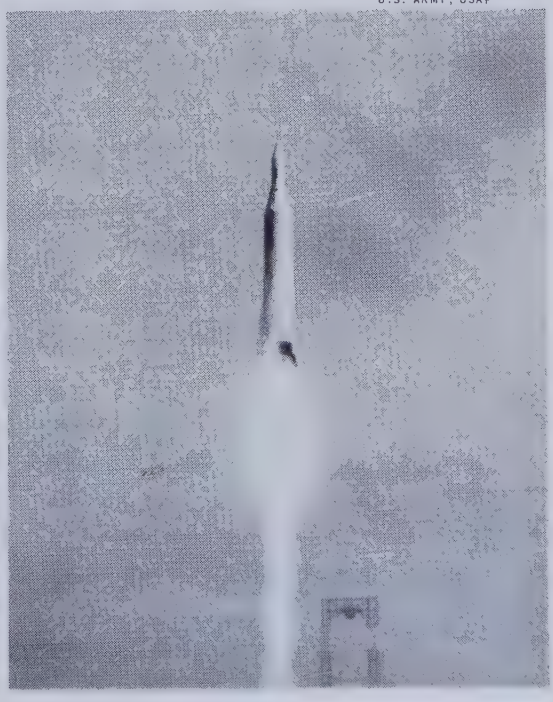
Vanguard II, a satellite intended to obtain pictures of the cloud cover of the earth, was launched on Feb. 17, 1959. The 20-inch spherical satellite contained two photocells diametrically opposite each other on the surface and placed at 45 degrees from the satellite's stable spin axis. As the photocells of the spinning satellite swept in turn over the sunlit portion of the earth, electric signals were generated which corresponded to the different degrees of brightness of light reflected by clouds, sea, and land masses. These electrical signals were stored on magnetic tape and telemetered on command to ground stations. The satellite transmitted information until March 7, when its batteries gave out at the end of their predicted life. However, an unanticipated wobbling motion in the satellite's spin scrambled the picture as seen by the photocells, and made the work of reassembling the electrical signals into a picture very difficult and time consuming, if not impossible. While no useful cloud cover pictures were obtained immediately, the successful operation of the electronics and the loud clear signals did prove the validity of the idea.

Explorer VI, launched on Aug. 7, 1959, was the first satellite to be placed in orbit by a Thor-Able III vehicle. The first stage of this vehicle was an Air Force Thor intermediate-range ballistic missile (IRBM), modified to receive the upper stages. The second and third stages were improvements of the upper stages used in the Vanguard vehicle. The assembled three-stage vehicle was 90 feet high and weighed over 105,000 pounds. The 142-pound satellite (heavier than any previous United States satellite, with the exception

(*Left*) Juno II, U.S. Army space probe vehicle, is assembled in the field. The shroud covering the upper stages is designed to protect them from heat in the atmosphere. (*Right*) Launching of a Juno II, which sent Explorer VII into orbit in October.

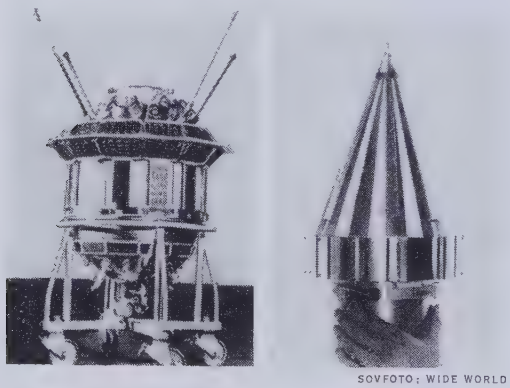
U.S. ARMY; USAF





of the Atlas-Score) contained 15 major experiments. Its orbit was selected to obtain a very broad sampling of the region of space about the earth. The satellite was given the nickname "Paddle Wheel" because of its four large paddle-shaped vanes (containing solar cells) mounted symmetrically around the waist of its spheroid-shaped body. Eight thousand solar cells were used to transform solar energy into electrical energy for replenishing the storage batteries supplying power to the scientific instruments and transmitters.

The experiments aboard fell into six main categories: (1) radiation belt measurements; (2) measurements of the earth's magnetic field; (3) studies of the propagation and behavior of radio waves; (4) determinations of the size and speed of micrometeorites; (5) tests of the performance, efficiency, and operation of the solar cells; and (6) photographs of cloud cover of the earth. The cloud cover photographs were more successful than in the similar Vanguard attempt because the satellite did not develop a wobbling motion. A photograph of the central Pacific Ocean showing heavy and broken cloud areas, as well as clear



SOVFOTO; WIDE WORLD

(*Left*) Lunik III, 614-pound space vehicle launched by the Soviet Union on October 4, transmitted back the first photographs of the far side of the moon. (*Right*) The 13.4-pound payload of Pioneer IV, launched by the United States on March 3, passed 37,300 miles from the moon and went into orbit around the sun. Striped pattern is designed to regulate temperature by reflection and absorption of solar heat.

areas, was the first to be released. Due to the narrow band pass of 1.5 cycles per second imposed by technical limitations of the telemetering equipment, it took 40 minutes of telemetering to transmit one photograph to earth.

Vanguard III's launching on Sept. 18, 1959, was the final launching of the first satellite program to be initiated by the United States.[1] The last of 15 rockets, the launching vehicle carried a more powerful third stage than had the earlier Vanguards. The 50-pound payload placed in orbit was over twice the weight of previous Vanguard satellites. Instruments in the satellite were designed to measure solar X-rays, the earth's magnetic field, and space environmental conditions. A battery of 62 small silver-zinc cells was used to power the satellite for an estimated life of 90 days. The satellite itself was made of magnesium and fiber glass and looked somewhat like an ice cream cone. It was a 26-inch long tapered tube attached to a 20-inch diameter spherical body. A proton precessional magnetometer was located in the tip of the tapered tube to separate it as far as possible from the influence of the other equipment. The X-ray detectors used were developed for the purpose at the Naval Research Laboratory.

The Explorer VII satellite was launched on Oct. 13, 1959, into a relatively low orbit for investigations of cosmic rays, solar-terrestrial relationships, and micrometeorites. The launching vehicle was a Juno II (a modified Army Jupiter IRBM) which stood 76 feet high and weighed about 60 tons when fueled. The satellite instruments were designed for: (1) measurements of the radiation balance of the earth; (2) measurements of Lyman-alpha and X-ray emissions by the sun; (3) determination of heavy primary cosmic rays with a mass number greater than three; (4) micrometeorite detection; (5) cosmic ray measurements; (6) solar cell tests; (7) temperature measurements of the satellite, its power supply, and its instruments. The satellite was designed as part of the United States contribution to the International Geophysical Year (IGY), and was the last of the series of IGY rockets. It was equipped with a clock to turn off its solar-cell-powered transmitter at the end of one year to prevent the satellite from occupying valuable space in the radio communications spectrum after it had outlived its usefulness.

The U.S. Air Force in 1959 launched a series of Discoverer satellites under a program of experimentation with recoverable capsules. With the launching of Discoverer VIII in late November, six of the Discoverers had been successfully launched in 1959 (although doubts were expressed in some quarters as to whether Discoverer I had been placed in orbit): Discoverer I, February 28; Discoverer II, April 13; Discoverer V, August 13; Discoverer VI, August 19; Discoverer VII, November 7; and Discoverer VIII, November 20. The satellites were launched into polar orbits and (with the exception of Discoverer I) were designed to release an instrumented capsule after a number of orbits around the earth. It was hoped to retrieve the capsules with C-119 Flying Boxcars equipped with trapeze-like devices to catch the parachuting capsules. The capsules contained radio devices to emit signals to aid in locating them, but successful recoveries were prevented by a variety of technical failures.

The Discoverer vehicle uses a Thor booster rocket, with a 150,000-pound-thrust rocket engine, and a new upper stage called Agena, with a storable-propellant rocket engine and with separate instrumentation. The Discoverers provided useful data on attitude control of satellites in space, telemetering, recovery techniques, orbit prediction, and space medicine.

Lunar and Deep Space Probes.—The first artificial planet was added to the solar system when the Soviet space rocket popularly called Lunik I (also called Mechta) passed within several thousand miles of the moon and into an orbit about the sun. Lunik I was launched on Jan. 2, 1959, at 10:00 A.M. Greenwich Civil Time by a three-stage vehicle 104.9 feet in length. The entire third stage of the rocket, weighing 3,244 pounds, was launched on the journey into space. The rocket contained scientific instruments, tracking and telemetry transmitters, and a device to release a cloud of sodium vapor in space.

The first vehicle of the Western world to be launched free of the earth's gravity and into a solar orbit was Pioneer IV, launched on March 3, 1959. This vehicle achieved its primary objective of attaining escape velocity on an earth-moon trajectory, and transmitted much valuable scientific information back to earth before its batteries failed near the end of their predicted 90-hour lifetime.

[1] The Vanguard program was initiated with the responsibility of placing at least one satellite in orbit about the earth. Three were successfully placed in orbit, eight attempts failed, three vehicles were used in preliminary tests, and one was given to the Smithsonian Institution.

The Pioneer IV flight came after five days of intense solar activity and found levels of radiation intensity about 10 times higher, and of a considerably deeper extension into space, than had the Pioneer III (launched Dec. 6, 1958), which was in flight during a time of solar quiet.[2]

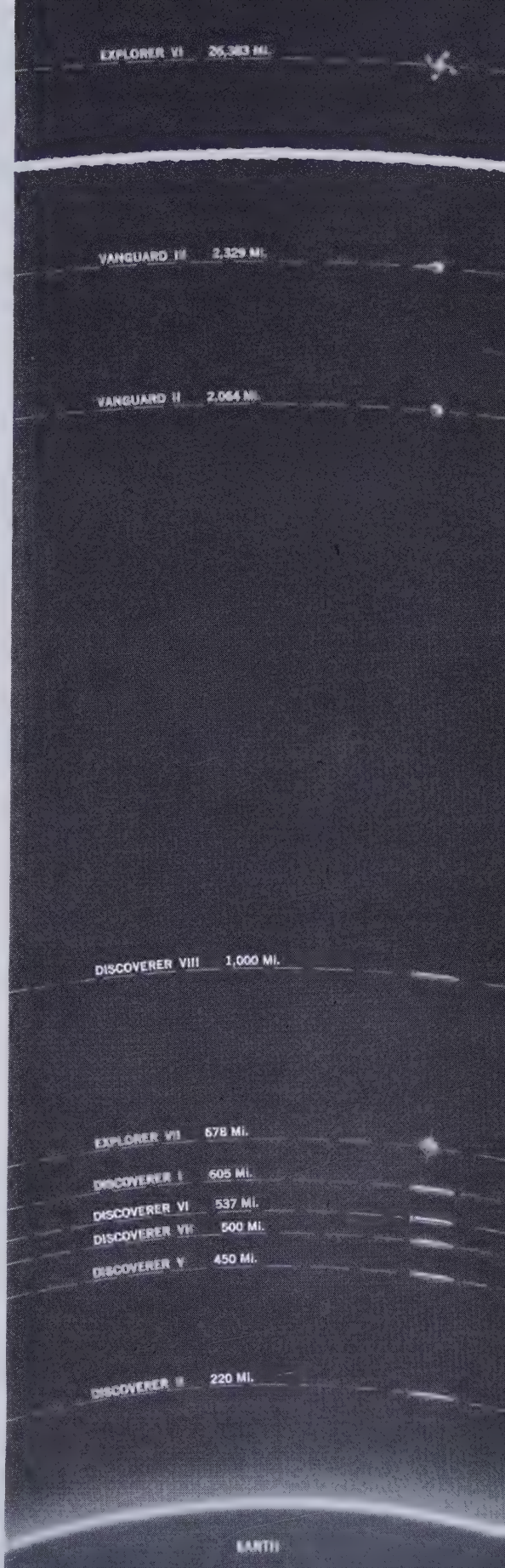
The Soviet space vehicle Lunik II became the first man-made vehicle to contact the moon, at 9:02 P.M. Greenwich Civil Time (5:02 P.M. EDT), Sept. 13, 1959. In addition to scientific research instruments, the rocket also contained a number of medals or pennants bearing the inscriptions "USSR" and "September 1959." Equipment was carried to release a cloud of sodium vapor in space. The artificial comet thus formed was photographed from a number of astronomical observatories in the Eastern Hemisphere and provided more precise trajectory data than could be achieved by electronic means alone. The location of the impact on the moon, according to articles appearing in the Soviet press, was in the vicinity of the Sea of Serenity. The Russians reported that "constructive measures were taken to secure the intactness of the pennants during the impact on the Moon." If these measures were successful, the moon now bears its first artifacts of earthly origin.

Lunik III, launched only three weeks after the lunar impact shot, again made history by obtaining the first photographs of the side of the moon never seen by man, after passing the moon at a distance of about 4,900 miles. The photographs were taken on October 7, when the Soviet rocket was about 40,000 miles from the moon; they were processed automatically, and then transmitted to earth by a type of television. Prior to release of the pictures, a team of Soviet scientists had assigned names to the most outstanding features in the photographs.[3] Exact descriptions of the features of the scientific payload and capabilities of the rocket were not disclosed by the Soviets. (See also ASTRONOMY.)

Other Space Explorations.—In late March 1959 the United States released a report on Project Argus. This report described the scientific results of experiments conducted in August and September 1958 in which three small atomic bombs were exploded at high altitude over the South Atlantic. The experiments were performed to study the physical effects from atomic bomb bursts above the major portion of the earth's atmosphere. These experiments have provided a sound basis for interpretation of the Van Allen belts of natural radiation surrounding the earth, and have also confirmed predictions, obtained by extrapolation of surface measurements, of the shape and intensity of the earth's magnetic field to distances of over 10,000

[2] On Nov. 26, 1959, the United States launched a three-stage Atlas-Able rocket in an attempt to send a 372-pound package of instruments to the moon. The vehicle malfunctioned and fell into the Atlantic when the fiberglass protective covering of the third stage fell off prematurely.

[3] The name "Sea of Moscow" was given to a 180-mile-wide depression north of the lunar equator, and a bay in the southern part of this depression was named "The Bay of Astronauts." Other names assigned included "Lomonosov," after the man (Mikhail V. Lomonosov, 1711–1765) credited by the Russians with the development of the first working model of a helicopter; "Joliot-Curie," after the well-known French Communist nuclear scientist; and "Tsiolkovsky," after a Russian authority (Konstantin E. Tsiolkovsky, 1857–1935) on rockets and space travel.



Relative heights (at initial apogee) of earth satellites launched in 1959 are shown in this diagram. The Soviet space probe Lunik III (not shown), which became a satellite of the earth after photographing the moon, went into an irregular orbit with its maximum distance from earth estimated at about 300,000 miles. The jagged line above Vanguard III indicates a discontinuity in the altitude scale.

AMERICANA DIAGRAM BY CHARLES HUNTER

Table 1—SUCCESSFUL EARTH SATELLITE LAUNCHINGS, 1957–59
(Launching dates shown are in Universal, or Greenwich Civil, Time)

Name	Launch date	Launch site[1]	Payload weight (pounds)	Weight in orbit (pounds)	Perigee & apogee (miles)	Initial period (minutes)	Inclination of orbit (degrees)	Dimensions[3]	Status
Sputnik I	Oct. 4, 1957	USSR	184	Unknown	142–588	96.17	65	22.8″ diam.	Fell Jan. 4, 1958
Sputnik II	Nov. 3, 1957	USSR	1,120	Unknown	140–1,038	103.7	65	19′ long; 4′ diam.	Fell Apr. 14, 1958
Explorer I	Feb. 1, 1958 (Jan. 31, EST)	Fla.	30.8	30.8	224–1,573	114.8	33.3	6′8″ long; 6″ diam.	To last 4 years
Vanguard I	Mar. 17, 1958	Fla.	3.25	50	409–2,453	134.29	34.25	6.4″ diam.	To last 200 years
Explorer III	Mar. 26, 1958	Fla.	31	31	121–1,746	115.87	33.4	6′8″ long; 6″ diam.	Fell June 27, 1958
Sputnik III	May 15, 1958	USSR	2,925	Unknown	135–1,167	106	65.3	11′9″ long; 5′8″ diam.	To fall Feb. 1, 1960
Explorer IV	July 26, 1958	Fla.	38.43	38.43	163–1,380	110.27	50.29	6′8″ long; 6″ diam.	Fell Oct. 22, 1959
Atlas-Score	Dec. 18, 1958	Fla.	150	8,700	110–920	101.46	32.3	85′ long; 10′ diam.	Fell Jan. 21, 1959
Vanguard II	Feb. 17, 1959	Fla.	20.74	20.74	344–2,064	125.85	32.88	20″ diam.	To last 101 + yrs.
Discoverer I	Feb. 28, 1959	Calif.	...	1,450	99–605	95.9	87	18.8′ long; 5′ diam.	Fell Mar. 5, 1959
Discoverer II	Apr. 13, 1959	Calif.	195[2]	1,610	142–220	90.5	Polar	19.2′ long; 5′ diam.	Fell Apr. 26, 1959
Explorer VI	Aug. 7, 1959	Fla.	142	142	156–26,383	768	46.9	26″ diam.; 29″ deep	To last 2 years
Discoverer V	Aug. 13, 1959	Calif.	300[2]	1,600	136–450	94	Polar	19.2′ long; 5′ diam.	Fell Sept. 28, 1959
Discoverer VI	Aug. 19, 1959	Calif.	300[2]	1,700	139–537	94	Polar	19.2′ long; 5′ diam.	Fell Oct. 20, 1959
Vanguard III	Sept. 18, 1959	Fla.	50	100	319.8–2,329	130.2	33.34	20″ sphere; 26″ tube extension	To last 30 years
Explorer VII	Oct. 13, 1959	Fla.	92.3	92.3	344.5–677.9	101.35	50.3	30″ diam.	To last 20 years
Discoverer VII	Nov. 7, 1959	Calif.	300[2]	1,700	104–500	95.1	Polar	19.2′ long; 5′ diam.	Fell Nov. 21, 1959?
Discoverer VIII	Nov. 20, 1959	Calif.	300[2]	1,700	120–1,000	103	Polar	19.2′ long; 5′ diam.	To fall Mar. 1, 1960

[1] All Florida launchings from Cape Canaveral; all California launchings from Vandenberg Air Force Base. [2] Re-entry capsule. [3] Shapes of satellites and space vehicles are as follows: spherical—Sputnik I, Vanguards I, II, and III (latter with tapered tube extension); cylindrical—Sputnik II, Explorers I, III, and IV, Atlas-Score, all Discoverers; conical—Sputnik III; spheroid—Explorer VI; shallow double cone—Explorer VII.

miles. The experiments were directed by the Advanced Research Projects Agency.

In two separate experiments, called Teak and Orange, the Atomic Energy Commission on Aug. 1 and Aug. 12, 1959, set off hydrogen bombs at altitudes of about 25 to 40 miles above Johnston Island, 700 miles southwest of Hawaii. The bombs were reported to be in the megaton range—much larger than the kiloton bombs used in the Argus experiments. The tests produced severe ionospheric disturbances, which resulted in disruption of radio communications over a wide area of the Pacific for a period of hours. New Zealand scientists in Samoa (located across the equator at the magnetic conjugate to Johnston Island) reported seeing an artificial aurora at the time of the experiments. (See also ATMOSPHERE RESEARCH; ATOMIC ENERGY.)

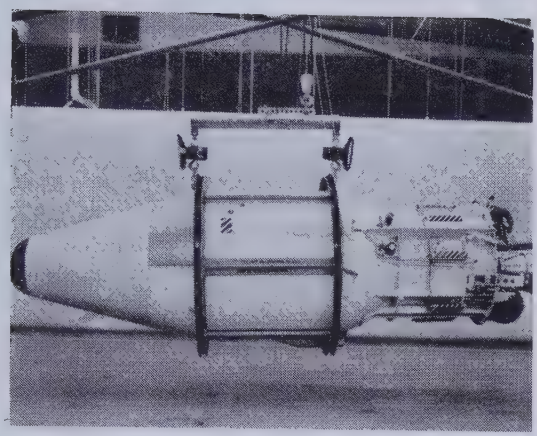
Progress was made in 1959 on the United States manned satellite program, Project Mercury. Intended to send a man into space and to recover him safely, the program is being conducted under the management of NASA with the assistance of the Advanced Research Projects Agency of the Department of Defense. (See above, the section on *Astronautics—Space Science and Technology*, and the article NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.)

During 1959 the pace of upper-atmosphere rocket soundings was maintained at a level comparable to, but somewhat less than, that set during the IGY. Studies were made of atmospheric and ionospheric properties, and some rocket astronomy was done. In the United States extensive programs were conducted by the Air Force Cambridge Research Center, by the U.S. Naval Research Laboratory, and by the National Aeronautics and Space Administration. The French continued their work with the Veronique sounding rocket in Africa, and the Japanese continued research using their Kappa VI type rocket in northern Japan. Soviet research included recovery experiments with

Table 2—SUCCESSFUL LUNAR AND DEEP SPACE PROBE LAUNCHINGS
(Launching dates shown are in Universal, or Greenwich Civil, Time)

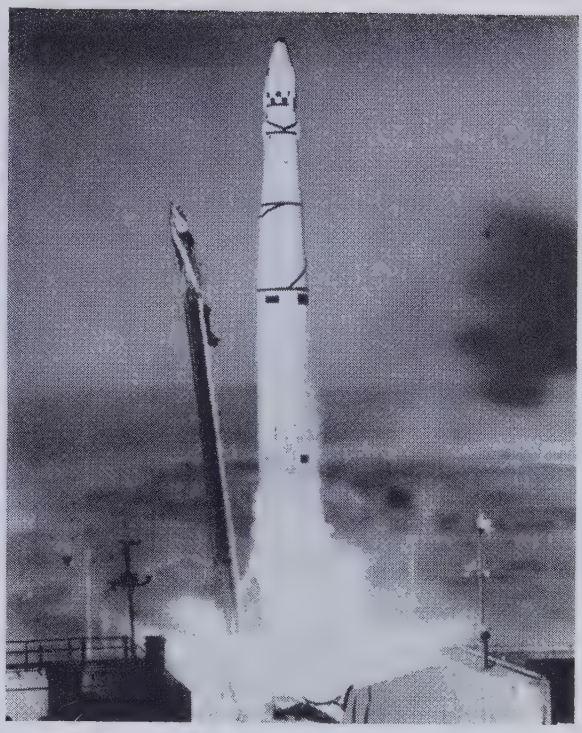
Name	Launch date	Launch site[1]	Mission	Trajectory	Dimensions[2] of payload	Payload weight (pounds)	Nearest approach to moon (mi.)	Perihelion (millions of miles)	Aphelion (millions of miles)
Pioneer I	Oct. 11, 1958	Fla.	Space probe	...	29″ diam.	83.8	71,300 mi. from earth	...	...
Pioneer III	Dec. 6, 1958	Fla.	Space probe	...	23″ long; 10″ diam.	12.9	66,654 mi. from earth	...	...
Lunik I	Jan. 2, 1959	USSR	Lunar probe	443-day solar orbit	24″ diam.	796.67	2,187	91.1	120
Pioneer IV	Mar. 3, 1959	Fla.	Lunar probe	407-day solar orbit	20″ long; 9″ diam.	13.4	37,300	91.7	107.9
Lunik II	Sept. 12, 1959	USSR	Lunar impact	Hit moon Sept. 13	Unknown	858.4	Impact	...	...
Lunik III	Oct. 4, 1959	USSR	Lunar orbit	Earth-moon orbit	87″ long; 47″ diam.	614	4,900	24,850 (perigee)	292,000 (apogee)

[1] All Florida launchings from Cape Canaveral, Fla. [2] Shapes of space vehicles are as follows: conical—Pioneers I, III, IV; spherical—Luniks I, II; cylindrical—Lunik III.



USAF

A 300-pound re-entry capsule (*above*) is used in the Air Force's Discoverer satellite program. Its launching vehicle, shown being fired (*right*) at Vandenberg AFB in California, consists of a Thor booster and an Agena upper stage.



dogs and rabbits. The United Kingdom continued with the Skylark rocket at Woomera, Australia, and rocket flights were conducted from Fort Churchill, Manitoba, with United States and Canadian rockets.

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Staff Scientist, Office of Space Sciences, National Aeronautics and Space Administration.

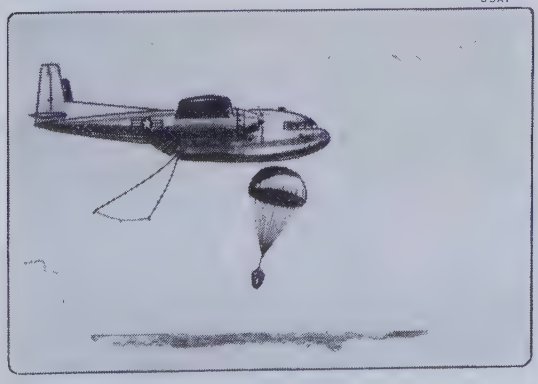
SPACE MEDICINE

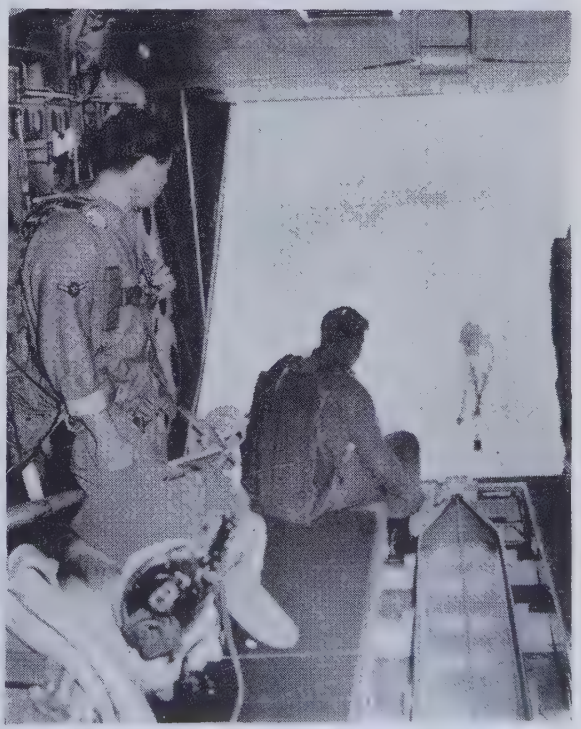
"Space medicine" is a term frequently applied to the broad area of physical, biological, and psychological research on the problems of protecting man from the hazards of space travel and assisting him to overcome the unaccustomed conditions of life in space sufficiently well to perform the functions required of him. A new term for this general area, "bioastronautics," was coined in 1958 and has gained widespread currency.

In comparison with the accomplishments in space medicine in the past decade, gains in 1959 were modest. Although several biological space probes were carried out, bioscientists were, in general, much busier with ground preparations for extra-atmospheric testing and research to be accomplished in subsequent years. The year was marked by five main types of activity: (1) intensive evaluation of the significance for living things of the physical data and the very limited biological information obtained from the year's successful probes; (2) consolidation of this information with years of practical experience in the bioengineering of advanced vehicles of various kinds, in order to specify details of construction needed to accommodate living creatures, including men, in earth-orbiting vehicles proposed for various projects; (3) laboratory simulation of various aspects of the space environment, and the study of their effects on animal and human well-being and behavior; (4) development and testing of protective personal gear, environmental control techniques and hard-

(*Below*) Drawing illustrates the recovery technique for Discoverer re-entry capsules. After the orbiting capsule is directed on a re-entry trajectory by a retro-rocket system, a parachute opens at about 55,000 feet and C-119 aircraft in the recovery area "home in" on a beacon transmitted by the capsule. When visual contact is made, the plane scoops up the payload with its special air-snatch gear. If the air recovery fails, ships in the area retrieve the capsule from the ocean. (*Right*) In test run, a plane hauls in model of the Discoverer capsule caught by its recovery apparatus. Technical failures upset all recovery attempts in 1959.

USAF





ware, and situational displays (which, like pictures, maps, or radar scopes, would show the spaceman his course and location with respect to the earth, moon, and solar system); and (5) some serious thinking about the possible results and implications of their future programs, both for life on this planet and for such extraterrestrial life forms as might be discovered elsewhere.

Rocket Space Probes in 1959.—Little important information was added to that from previous years by biological payloads boosted into space in 1959, although confirmation of physiological results of prior shots increased scientific confidence in predictions regarding effects of short-duration flights on man.

Soviet scientists, for example, confirmed their earlier results showing only minor effects of rocket flights to extreme altitude on the respiration, blood pressure, and heart rate of properly conditioned, conscious dogs. The animals were fired to, and successfully recovered by parachute from, heights greater than those previously achieved in the series of Soviet experiments. Some dogs fell in specially constructed full-pressure suits from altitudes of over 200 kilometers, while others descended in pressurized capsules ejected at heights of about 450 kilometers. Though the incidence of failures to recover live animals in this series was not stated, the Soviet workers emphasized strongly the engineering difficulties in maintaining proper stabilization and control of the dynamic forces imposed upon capsule occupants during re-entry.

The Army-Navy team of United States scientists, which in December 1958 successfully launched into a ballistic trajectory a small monkey named Gordo, using an Army Jupiter missile, repeated its success on May 28, 1959, at Cape Canaveral, Fla., with two passengers in separate small capsules: a tiny female squirrel monkey named Baker and a larger male rhesus monkey named Able. Instrumented to telemeter back cardiovascular and respiratory data, they showed findings qualitatively similar to results obtained in the Aerobees fired at Holloman AFB, N.Mex., in 1949–52, although the duration of both acceleration and weightlessness in the Jupiter shots was considerably greater. Provisions were made for the Able monkey to perform a simple performance task during the flight, but a required last-minute substitution of an untrained American-born monkey for the previously trained foreign-born monkey eliminated this portion of the experiment.

The U.S. Air Force also inaugurated a bioastronautic program in 1958, using vehicles in the Discoverer series launched into polar orbits from Vandenberg AFB, Calif. The first shot occurred on April 13, 1959, when an instrumented life-support cell suitable for mice was placed aboard Discoverer II and fired into a nominally circular orbit with an apogee of 354 kilometers. All biological equipment worked satisfactorily during the period of over 24 hours that it remained in orbit. At the end of this time the recovery capsule was ejected from the remainder of the satellite at the wrong point in orbit because of a timer malfunction, and is believed to have landed in the vicinity of the Spitsbergen islands on April 14, 1959, instead of near Hawaii, where recovery teams were waiting. The capsule was not found.

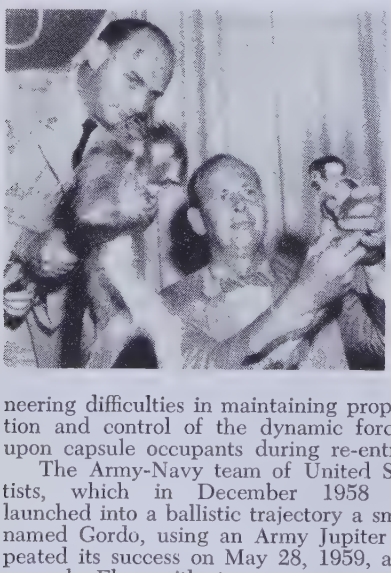
Encouraged by this limited success, the Air Force Ballistic Missile Division attempted another launching on June 3, 1959, with four mice. Discoverer III, which contained this payload, did not go into orbit, however, and only about 13 minutes of questionable data were obtained from the animals.

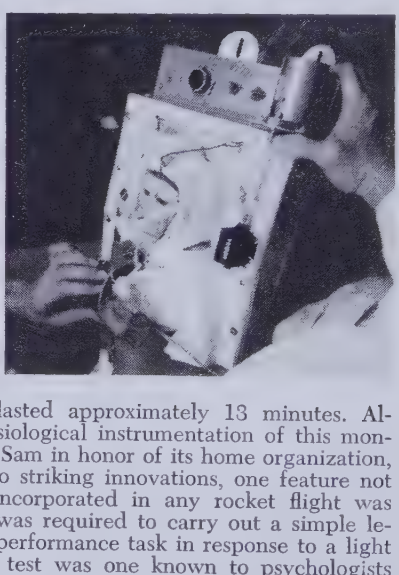
Near the close of the year still another short-range ballistic firing was carried out with an animal aboard. In a test conducted by the National Aeronautics and Space Administration (NASA) to prove the special separation and escape system of the Project Mercury capsule (see below, *Preparations for Human Space Flight*) a monkey (furnished by the USAF School of Aviation Medicine) enclosed in a self-contained life cell (biopack) went along. The flight, which went off on Dec. 4, 1959, attained a peak altitude of about 55 miles and lasted approximately 13 minutes. Although physiological instrumentation of this monkey, named Sam in honor of its home organization, presented no striking innovations, one feature not previously incorporated in any rocket flight was used: Sam was required to carry out a simple lever-pulling performance task in response to a light signal. The test was one known to psychologists as a "shock-avoidance" task, in that the animal is conditioned to perform as desired by the use of weak and painless electric shocks during the early phases of training.

The flight itself was completed without mishap, and the capsule was retrieved in 3 hours by the Navy destroyer *Borie* from the ocean about 200 miles off Wallops Island, Va., where the launching occurred. The monkey was in excellent shape when removed from the life cell; he was later flown to the School of Aviation Medicine together with data recorded on the flight.

Planetary and Space Environments.—Data collected from space probes and satellites is steadily adding to our knowledge and understanding of the physical characteristics and phenomena of the space milieu. Thermal forces, geomagnetic storms, solar phenomena, and ambient radiation in space all have important implications in weather forecasting, communications, and bioastronautics.

Explorer VII, the last (and heaviest) of the





(*Left*) Monkeys Able and Baker are introduced to the press after their 1,700-mile flight in the nose cone of a Jupiter missile, May 28. Recovered by ships in the Atlantic, they showed no ill effects from their journey. Shown holding them are Maj. Gerald Champlin (l.) and Dr. Donald Stullken. (*Right*) One of several monkeys trained for the flight is fitted in a contour couch like that used by Able. Test was part of the man-in-space program.

WIDE WORLD; U.S. ARMY

UPI; WIDE WORLD

(*Left*) The seven military pilots who were selected to train for manned space flight under Project Mercury are (from left) Lt. Comdr. Walter M. Schirra, Jr., Lt. Comdr. Alan B. Shepard, Jr., Capt. Virgil I. Grissom, Capt. Donald K. Slayton, Lt. Col. John H. Glenn, Jr., Lt. M. Scott Carpenter, and Capt. L. Gordon Cooper, Jr. The models are of an Atlas launching vehicle (left) and the space capsule which will carry an astronaut in the first orbital flight, set for 1961. (*Right*) In one phase of their training program, three astronauts experience weightlessness inside cabin of looping transport plane.

NASA-International Geophysical Year (IGY) satellites, was launched Oct. 13, 1959, into a stable, near-equatorial orbit with perigee and apogee at 344.5 and 677.9 miles, respectively. For its weight (92.3 lbs) it represented by far the most sophisticated and productive scientific space package launched by the United States. By the end of the year it was still telemetering new and useful data through its 20-megacycle transmitter, with an active life expectancy of one year.

Preliminary analyses of data obtained by Explorer VII have yielded information of considerable significance to biomedical workers. The Van Allen radiation layers now appear to be less sharply demarcated than previously thought, with extensive fringes between and below the two originally described layers. The ionizing components of these radiation belts, together with the heavy cosmic primaries, show variations in spatial distribution and intensity which appear related to solar activity and geomagnetic perturbations.

The biological impact of these ionizing radiations and particles in space cannot be determined until many more pieces of this massive tridimensional "jig-saw puzzle" are found, identified, and fitted into their proper places. Nothing has been discovered to change the exposure factor initially calculated for the first orbiting astronauts, which is well within the exposure limits prescribed by the Atomic Energy Commission.

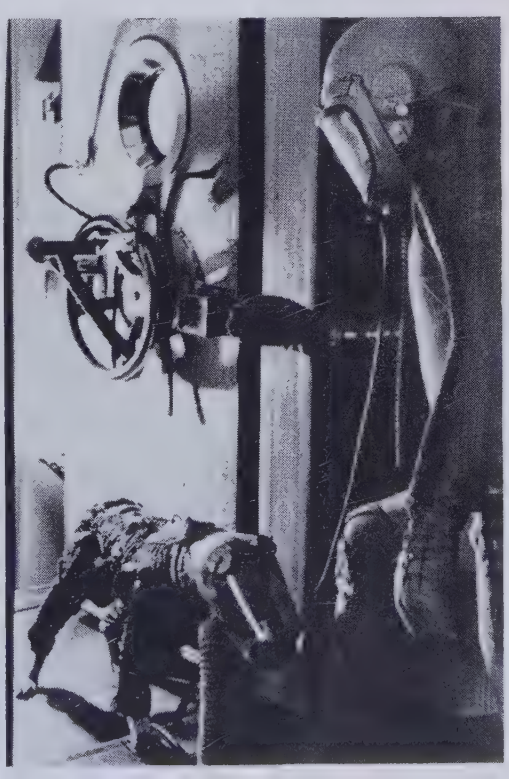
As the data from the radiation belts have been collected and correlated with the known mass and

(*Right*) Dressed in "space suits," a Russian astronaut and a dog enter a pressure chamber while training at a base in central Asia. Men and animals are conditioned in the laboratory to withstand the effects of vibration, noise, high acceleration, and other hazards.

UPI

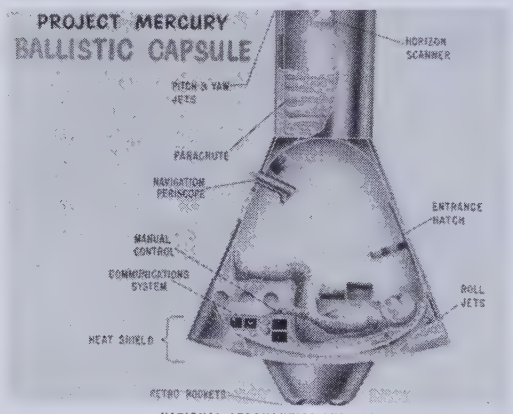
(*Below*) As part of the Soviet program for sending a man into space, test dogs and rabbits are studied under simulated flight conditions. Here, two dogs are prepared for the altitude chamber. Such tests provide data on how a living organism will react to space travel.

SOVFOTO



magnetic field of the earth, an interesting and potentially very useful astrophysical hypothesis has been developed. If the size, density, and magnetic field of a celestial body can be determined, then the existence of encircling radiation layers can be accurately predicted. For this reason, data furnished by Soviet scientists are interesting and highly relevant to future plans for manned lunar landings and exploration. The Russians have reported that telemetered data received from Lunik II, which reached the moon on Sept. 13, 1959, revealed only a very slight magnetic field. This would indicate that a manned lunar vehicle has no entrapped radiation gauntlet to run as an additional hazard to the difficult moon landing itself.

Spectrophotographic analysis of Venus and Mars in 1959 also was of biological interest. A Lowell Observatory scientist has reported that Martian surface areas (which, because of color changes, have been suspected of bearing vegetation) reflect the presence of carbon, hydrogen, and oxygen in proportions suggesting the presence of organic matter. Scientists at Georgetown Observatory have presented similar evidence for the presence of nitrogen tetroxide in Venus' atmosphere; and two Office of Naval Research physicists, in a balloon gondola 18 miles above the Midwestern prairie of the United States, made observations (unhampered by water vapor in the earth's own air) which indicate the presence of water vapor in the Venusian atmosphere. (See also ASTRONOMY.)



Cross-section drawing of the astronaut's capsule.

Preparations for Human Space Flight.—Preparations proceeded rapidly in the United States in 1959 for launching a manned satellite sometime in 1961–62. NASA contracted for the design, construction, and testing of a one-man capsule (Project Mercury) to be launched into orbit and reenter the earth's atmosphere with its occupant semi-supine, the better to tolerate acceleration as high as 21 g during launching and 16 g during re-entry. Weighing approximately 1 ton, the capsule will be launched by a modified Atlas intercontinental ballistic missile.

Short- and long-range ballistic test shots from Wallops Island and Cape Canaveral have already begun. One contained a monkey from the USAF School of Aviation Medicine, as noted above; others will carry chimpanzees; and later flights may be manned, for training and testing purposes prior to an orbital shot.

Seven astronauts to "fly" the Mercury capsule were selected from Navy, Marine Corps, and Air Force experimental flight test pilots who had been exhaustively screened for physical defects and tolerance for the predicted physiological and psychological stresses of orbital flight. Once selected, the astronauts were immediately enrolled in an extensive program carefully designed to provide them with the additional skills and knowledge which may be required of them during this epochal step in man's exploration of the unknown. The astronaut will not be going along solely for the ride or as a passive observer; he will be provided with displays and controls which will enable him to bypass the automatic equipment at any time and complete the mission with manually operated controls. (See also above, the section on *Astronautics—Space Science and Technology;* also the article, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.)

The USSR, too, was rumored to be selecting and training astronauts, although official confirmation of Soviet press statements was not forthcoming in 1959. United States observers have pointed out, however, that the payload of Sputnik III (1½ tons) would be quite adequate for a manned satellite. The engineering problems of providing safe re-entry and recovery yet to be solved have been emphasized by Soviet workers, and this may well be the last limiting factor in manned orbital flight to yield, in both the USSR and the United States.

Problems of Extraterrestrial Life.—Biologists, fascinated by the scientific and philosophical implications of past or present life on other planets, have repeatedly emphasized the importance of not tossing away chances to collect evidence of such life. They have therefore urged for both practical and theoretical reasons that contamination of other planetary surfaces, including that of the moon, be carefully avoided. Not only might earthly organisms confuse the precontamination picture, but their introduction on another planet might lead to such changes in them or in organisms native to the planet that efforts to clarify the previous situation would be scientifically impossible.

This difficulty became a matter for discussion between the U.S. National Academy of Sciences and corresponding bodies in other countries, particularly the Moscow Academy of Sciences, in 1959. Even prior to any international agreements, however, it became apparent that efforts were being made to prevent such a possibility. Moscow radio announced shortly after the lunar impact shot that steps had been taken to prevent contamination of the moon by its Lunik II rocket. Assurance was given by Soviet scientists, according to this source, that no earthly microorganisms were aboard.

In the United States, NASA notified the National Academy of Sciences that all practical precautions would be taken with each vehicle fired in the direction of other planetary bodies, including the moon, to preclude the possibility of transporting organisms from earth to their surfaces. Although the likelihood that there is indigenous life on the moon at this time is considered to be almost fantastically remote, evidence that it might have existed there in the past, or have been carried there somehow through space, would, indeed, be of considerable scientific significance.

DON FLICKINGER,
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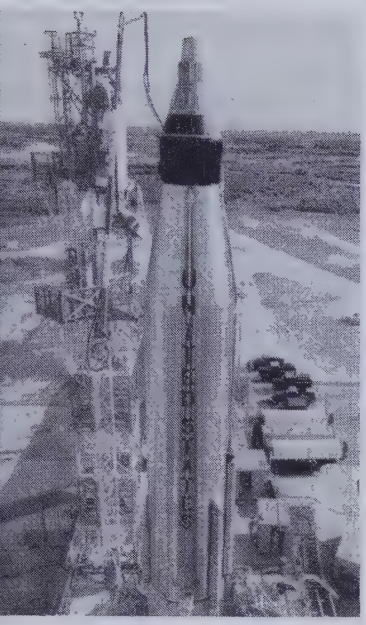
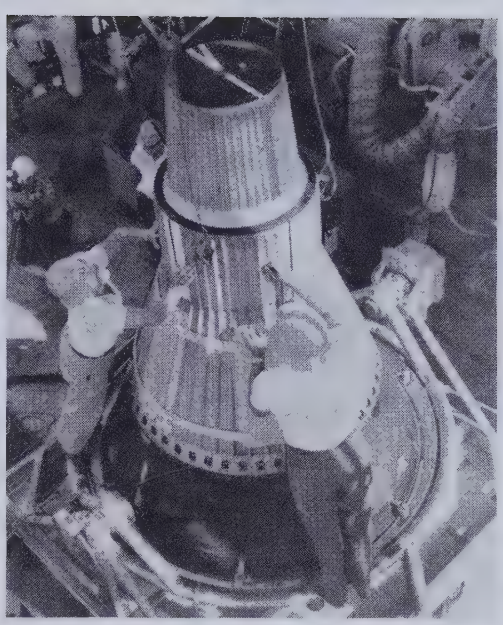
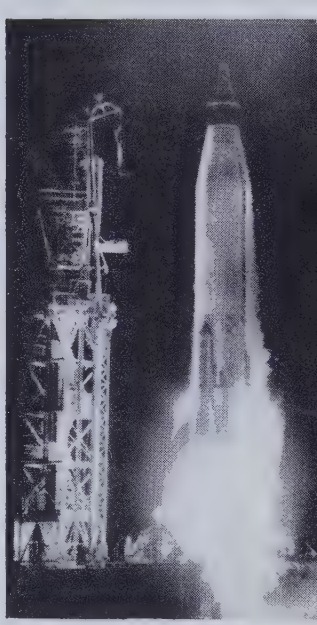
SPACE LAW

In 1959 space law received much more attention throughout the world than in the preceding year. Discussions generally were concentrated on practical questions relating to peaceful uses of

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Preparations proceeded in 1959 for manned space flight under NASA's Project Mercury. (*Left*) With the service tower rolled back, an Atlas lauching rocket topped with an astronaut capsule stands poised for flight. (*Center*) Workmen ready capsule model for test flight. Upon re-entry into atmosphere, blunt end of capsule may heat to temperature of 3,000°F. (*Right*) In a "Big Joe" test on September 9, an Atlas carrying a capsule model roars aloft from Cape Canaveral on a 1,500-mile flight.

space, rather than on academic problems such as the upper limits of national sovereignty. After the flight of the Soviet rocket Lunik II to the moon in September 1959, the question of possible territorial claims in outer space was raised again, even though a Soviet lawyer declared that the USSR would make no claim on the moon.

The first university courses devoted entirely to space law were offered in 1959 at McGill University's Institute of Air and Space Law in Montreal, at the Law Faculty of the University of Paris, and at the Academy of International Law in The Hague.

At the International Astronautical Federation's second colloquium on legal problems of space, convened in London on September 4, it was decided that the Permanent Legal Committee of the federation, created in 1958, should be replaced in 1960 by another international institution for the study of space law. In the interim, the general counsel of the federation was authorized to establish working groups entrusted with the consideration of special problems. The French Astronautical Society created a committee on space law in 1959, and a conference on the law and sociology of space was held in New York on March 20 under the auspices of the American Rocket Society.

The American Bar Association, which published an *Inventory of Space Law Literature,* is working on a code of space law; and alternative sets of legal rules have been published by Dr. Michel Smirnoff of Yugoslavia and other lawyers.

The U.S. House of Representatives' Science and Astronautics Committee, successor to the Select Committee on Astronautics and Space Exploration, and the Senate's Aeronautical and Space Sciences Committee held frequent meetings and hearings in 1959 on problems of outer space. Legal problems arising from man's probing of space received particular attention at the hearings on international control of outer space, on United States policy on the control and use of outer space, on satellites for world communications, and on Project Mercury. Two publications prepared for the use of these committees by their consultants are devoted to space law: *Survey of Space Law* (a House document), with an excellent bibliography prepared by Spencer M. Beresford; and *Symposium on Space Law* (a Senate document), prepared by Mrs. Eilene Golloway, containing the texts of selected articles published from 1951 to 1958, including some which originally appeared in the Soviet Union.

The Ad Hoc Committee on the Peaceful Uses of Outer Space, created by the 1958 U.N. General Assembly, first convened in May 1959 and established a special legal subcommittee which prepared a report for consideration by the 1959 session of the General Assembly. The report recommended that priority be given to the settlement of a number of problems, including freedom of outer space for exploration and use, liability for injury and damage caused by space vehicles, allocation of radio frequencies (already under consideration by the International Telecommunication Union), identification of space vehicles, and coordination of launching, re-entry, and landing of space vehicles. The subcommittee considered as premature any formal discussion of limits of territorial airspace, exploration of celestial bodies, and relations with living beings on other planets,

Recovery of Project Mercury capsule model is made by a Navy ship in the Atlantic after test firing on September 9.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

as well as the preparation of a code of space law.

On Dec. 12, 1959, the U.N. General Assembly adopted a resolution establishing the permanent 24-nation Committee on the Peaceful Uses of Outer Space. The Soviet Union, which had refused to serve on the ad hoc committee because of a preponderance of Western members, joined the United States in drafting the resolution. (See also UNITED NATIONS—*General Assembly.*)

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SPACE RESEARCH. See ATMOSPHERE RESEARCH; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; SPACE FLIGHT.

SPAIN. Strategically situated in the Iberian Peninsula of southwestern Europe, Spain is bounded on the north by the Bay of Biscay and the Pyrenees Mountains, which separate it from France; on the east by the Mediterranean Sea; on the south by the Mediterranean and the Atlantic Ocean; and on the west by the Atlantic and Portugal. Including the Balearic Islands and the Canary Islands, Spain has a total area of 194,232 square miles. The estimated population in 1958 was 30,128,056. Madrid, the capital, has a metropolitan population of over 2 million (1959 est.). Barcelona, an important industrial center, has a population of 1,453,000 (1958 est.), and Valencia, the agricultural center of the rich Levantine area, is the third largest city with 558,000 (1958 est.). Other leading cities are Seville, Málaga, Saragossa (Zaragoza), Bilbao, and Murcia.

Government.—The present Spanish regime was established in 1939. Generalissimo Francisco Franco Bahamonde is both the chief of state and head of the official political party, the Falange. He is assisted by ministers with administrative and advisory functions. The 542-member Cortes (Parliament) is restricted in its powers to the approval of official decrees. Free elections are held only for municipal offices and only heads of households may vote for the candidates, who are carefully screened by the government.

General Franco was endowed with life tenure as chief of state by the Law of Succession of March 31, 1947, approved by the Cortes and ratified by a national referendum. This fundamental law also provided for a Council of Regents to select Franco's successor. Juan Carlos, 22-year-old son of Juan, Count of Barcelona, and grandson of Alfonso XIII, is being trained for the succession. He will not be eligible for the royal post until he is 30 years of age, and his elevation is opposed by many Spaniards and passively disputed by his father.

Finance.—The Spanish government has tried repeatedly to revise expenditures and receipts in an effort to balance the budget, but deficits appear inevitable. The budget for 1959 totaled 50,462,072,000 pesetas. Of this amount, 5,959,445,000 pesetas were appropriated for the army, the Department of Interior received 5,276,833,000, public works were provided with 7,856,106,000, and 4,808,192,000 pesetas were allocated to education. The Spanish peseta was stabilized at 60 to U.S.$1 on July 21, 1959.

Education and Religion.—Through continued emphasis on education, Spain has reduced its illiteracy to 14.24% of the population over 10 years of age (1950 census). The government provides free and compulsory elementary education and requires religious training in all public and private schools. On Dec. 31, 1958, there were 3,028,700 students and 66,471 teachers in primary schools and, in 1956–57, 5,275 private schools, with 17,140 instructors and 462,407 students. In 1954, 292,503 students were enrolled in secondary schools. The 12 state universities in 1956–57 had 62,215 students.

Roman Catholicism is recognized officially "as the only religion of the Spanish people" by the concordat signed with the Vatican in 1953 which provided for the nomination of bishops by the Spanish government and the chief of state. There are some 26,000 Protestants, 3,000 Jews, and a relatively small number of Moslems in Spain, but they do not enjoy full religious freedom. Both public pressure and official policy prohibit proselytizing and public or advertised religious services.

National Defense.—Spain has an army of more than a third of a million men, modernly equipped by a program of joint United States and Spanish military action since 1953. While the program is technically under Spanish control, most of the matériel has been supplied by the United States. The air force and navy have also been modernized under this program. The air force has been provided with jet fighters, and the United States has constructed air and naval bases in Spain. The airbase at Morón de la Frontera, the supply base at San Pablo, the naval base at Rota, the major airbase at Saragossa, and subsidiary bases cost over $400 million.

Transportation and Communications.—Spain in 1958 had more than 75,000 miles of highways, consisting of some excellent main arteries and many secondary roads which are well maintained. Although the government has restricted the importation of automobiles and trucks, and Spain does not produce them in great quantity, as of Jan. 1, 1958, there were 193,007 automobiles and 114,627 trucks. The railway network consists of 8,273 miles of standard-gauge and 3,061 miles of narrow-gauge lines. Iberia, the most important Spanish airline, maintains regular service to other European countries, North Africa, South America, and the United States. On Jan. 1, 1958, the Spanish merchant marine consisted of 1,646 vessels, totaling 1,507,080 tons. There were 1,477,904 telephones in service in 1958. Regular television service, inaugurated in 1956, was expanded in 1959, when there were 50,000 television sets in the Madrid area and 15,000 in the rest of Spain.

Economic Conditions.—Production increased in Spain during 1958 by 2%, following a continued trend in recent years. The assistance of the United States was a major factor in this progress, as were also the increased capital, raw materials, and electric power available. With increased production, Spain was confronted with a crisis arising from inflation and the overvaluation of the peseta in terms of foreign exchange.

In July 1959 the Spanish government, after protracted negotiations, adopted a comprehensive program of economic stabilization, including internal fiscal and credit measures, easing of trade restrictions, and membership in the Organization for European Economic Cooperation (OEEC). The foreign exchange system was reformed and the par value of the peseta was reduced to 60 pesetas to the U.S. dollar, in agreement with the International Monetary Fund (IMF), effective July 21, 1959. In turn, the IMF permitted the Spanish government to draw $50 million to fulfill the program and an additional $25 million within 12 months. Spain also arranged credits of $100 million with the OEEC, $130 million with the United States government, and $68 million with commerical banks in the United States.

By devaluing the peseta the Spanish exchange structure was unified. Trade was also freed from many restrictions to eliminate inflationary pressures and give greater flexibility to the economy. The government began at once to abolish price controls and the quantitative restrictions on the import of certain commodities. The demands of both the government and private agencies for capital produced an expansion of bank credit and a trend toward inflation. Foreign investors had been reluctant to place their funds in Spain because of restrictions imposed by Spanish law, but in December 1958 a law liberalized restrictions on foreign investment in petroleum exploration and production. To attract capital, foreign investors were later permitted a 50% share in the ownership of mining and industrial enterprises, and greater freedom in the transfer of earnings and the repatriation of capital.

In 1958 the cost-of-living index, based on the pre-civil war base of 100, was 807.7. The money supply in November 1958 totaled 179 billion pesetas, including currency in circulation and bank deposits, and was 12% higher than in November 1957. The living standard of the average Spaniard is among the lowest in Europe. However, the new economic program demanded more austerity from the Spanish people and in 1959 produced a price increase while wages remained static.

Agriculture and Fisheries.—Spanish agricultural production was barely sufficient to meet modest domestic needs in 1958. Work in irrigation, recla-

mation, resettlement, and reforestation continued at an accelerated pace but did not produce the desired results. Spanish agriculture did not keep up with industrial progress, and the demand for unskilled industrial labor led to the migration of unemployed farm workers.

Cereal production for 1958 was estimated at 7.2 million metric tons, the second best crop in recent years. The 1958 wheat crop of 4.4 million tons supplied most of the domestic requirements and permitted a modest export of the surplus, but was inadequate to supply feed for consumption by the large livestock industry.

The 1958–59 citrus crop was estimated to have increased by one third over 1957–58 to 1.5 million tons. Olive production decreased slightly to 40,480 tons, and olive oil production was estimated at 310,000 tons. Olives, citrus fruits, and wine are important export items.

Output of sugar increased substantially in 1958 to 448,000 tons of beet sugar and 30,000 tons of cane sugar. The estimate of sugar production in 1959 was increased to 460,000 tons, largely because of the increase in the production of beet sugar. Cotton production in 1958 was estimated at 185,000 bales of short-staple and 13,500 bales of long-staple. The crop was insufficient to meet the demands of domestic consumption, and considerable imports from the United States, paid for by the United States with aid funds, were necessary to maintain textile production.

Fish have become a staple in the Spanish diet, but the fishing industry is relatively inefficient by western European standards. In 1957 there was only an 80,000 metric ton increase over the 612,000 metric tons of fish caught in Spanish waters in 1955. Meat production increased by 10% in 1958 to 524,000 tons, but some meat had to be imported.

Manufacturing and Mining.—Industrial production rose 7.8% in 1958 over 1957 despite supply difficulties, rising costs, and other obstacles. Electric power was estimated at 16.350 billion kw.-hr. in 1958, some 14% over that in 1957. Thermal power installations increased but hydroelectric plants actually decreased from 82% in 1957 to 68% of the total in 1958, resulting in an increased demand for the import of coal and petroleum. Spain made plans, in 1959 for the erection of its first atomic power station near Burgos, to cost an estimated 3.2 billion pesetas and to be completed by 1965.

Steel production increased 9.6% in 1958 to 1,475 million tons as a result of financial aid from the United States. The production of coal was still insufficient to meet the growing industrial demand, despite a 3.6% increase in 1958 to 17.1 million tons. There was a substantial recession in the Spanish textile industry during 1958. While Spain has enjoyed a building boom in recent years, construction reflected the problems caused by industrial expansion in a country of limited resources, for the government's efforts to meet the housing shortage impeded capital investment in other fields.

Foreign Trade.—Spain has a long record of deficits in foreign trade. In 1958, exports totaled $490 million; imports, $818 million. Imports increased only $5 million over 1957 as a result of rigid restrictions on import licenses and foreign exchange. Exports increased $30 million over the 1950–57 average, but failed to meet foreign exchange requirements. Gold and foreign exchange reserves continued to decline and reached the precarious total of less than $66.4 million at the beginning of 1959.

Agricultural products accounted for 65% of Spanish exports. Manufactured goods accounted for only 10% of the exports in 1957 and for only 6% during the first ten months of 1958. Spain's major trading partner is the United States. In 1958, United States imports from Spain totaled $55.36 million; exports, $214.6 million. Some 60% of United States imports were vegetable food products and beverages; one fourth of total exports to Spain consisted of raw cotton, and one third comprised edible vegetable oils. Most of the shipments were under the economic assistance programs.

UPI

Generalissimo Franco (in uniform) walks beside President Eisenhower at Torrejon airbase near Madrid on December 21, during a stop on the president's 11-nation goodwill tour.

Principal Events, 1959.—Discontent, rigidly restricted by an alert Spanish government, increased in Spain during 1959. While much of this restlessness could be attributed to economic causes, there was evidence that there were political factors also. Generalissimo Franco had the difficult role of reconciling dissident supporters and the strong rule he represented with the passive resistance of Spanish individualism, and he evidently hoped to retain his health for another decade in order to resolve national problems and consolidate the principles of his National Movement. By July 21, 1959, economic pressures had forced the government to conclude negotiations for economic stabilization, but the political problems still remained.

On February 1, a group of liberal and rightist Spaniards announced the formation of a new and illegal party to oppose the regime, the Spanish Union (Union Española). The announcement reflected a growing restiveness among the enemies of the Franco regime and a desire for the end of the dictatorship and the establishment of a liberal, constitutional monarchy. In March the clandestine Socialist Party urged the Count of Barcelona to break openly with Generalissimo Franco, recall Juan Carlos, and issue a manifesto defying Franco as a rallying point of opposition to the regime. Political action was impeded, however, by the fear of civil war and the alert security measures adopted by the government. Franco announced that he would tolerate no serious agitation and that he would rule the nation until his death, when a king or a regent might succeed him.

Another serious evidence of dissent, particularly in Catalonia, appeared in friction between civil authorities and the Roman Catholic Church, which opposed the centralization imposed by the Spanish government.

Communist activity increased in Spain during the year. Some agitators of the party entered Catalonia secretly and scattered throughout the nation to persuade the non-Communist opponents of the regime to join in a unified front and convert passive discontent into a program for revolutionary action. The government countered the clandestine

activity with the arrest in June of 123 persons charged with agitating for a national strike. Although there had been strikes earlier in the year, this strike never materialized. Nevertheless, late in November, 25 persons were tried for issuing illegal propaganda in connection with the strike, and 20 of them were sentenced to prison terms.

The government fined 369 Spanish citizens for maintaining unauthorized deposits in Swiss banks. This activity had been revealed in 1958 and had affected the economy by taking needed capital from Spain.

Another issue was raised by the desire of Franco to reconcile the animosity which had prevailed since the Spanish Civil War by removing the bodies of the dead of both sides to the recently completed, giant crypt in the so-called Valley of the Fallen. The generalissimo ceremoniously transferred the remains of José Antonio Primo de Rivera, founder of the Falange and martyr of the Civil War, from the Escorial to the costly new crypt, and he dedicated the shrine on April 1.

As the network of United States bases in Spain neared completion, there were over 18,000 Americans, including 8,000 servicemen and their families, stationed in Spain. Spaniards, despite their traditional reserve toward foreigners, accepted the American influx with forbearance.

In foreign relations, the Spanish government attempted to strengthen its ties with Arab nations in the Middle East. The 255-year-old controversy with Great Britain over Gibraltar continued to arouse speculation in the press and adversely cloud Anglo-Spanish relations. Generalissimo Franco supported President Eisenhower in his decision to meet Soviet Premier Khrushchev, and the Spanish foreign minister conferred with the president in London during his discussions with the western allies prior to Khrushchev's visit to the United States in September.

Franco conferred with President Dwight Eisenhower during the latter's visit to Madrid on Dec. 21–22, 1959, at the end of the president's goodwill, 11-nation tour. The meeting of the two leaders served to emphasize Spain's decreasing isolation in international affairs.

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SPANISH AMERICAN LITERATURE. See LATIN AMERICAN LITERATURE.

SPANISH COLONIES. Spain's overseas territories, situated along Africa's north and northwest coasts, are legally constituted as provinces (or parts of provinces) of Spain.

SPANISH TERRITORIES IN AFRICA

Territory	Area (sq. mi.)	Population 1950 census	Population 1958 estimate
Possessions in North Africa	82	141,302	145,000
Ceuta	7	59,936	61,000
Melilla	5	81,182	84,000
Others[1]	70	184	...
Ifni	579	38,295	52,000
Spanish Sahara	102,702	7,749	19,000
Rio de Oro	71,042	1,304	...
Saguia el Hamra	31,660	6,445	...
Spanish Guinea	10,831	198,663	214,000
Rio Muni[2]	10,045	156,785	...
Fernando Poo	779	40,475	...
Annobon	7	1,403	...

[1] Including Alhucemas Islands, the Chafarinas Islands, and Peñón de Vélez de la Gomera. [2] Including the island of Corisco and the Elobeys.

Possessions in North Africa.—Ceuta is located at the eastern entrance to the Strait of Gibraltar. It contains a military post and is governed as part of the Spanish Province of Cádiz. Economic activities include fishing and ship fueling. Melilla is governed as part of the Spanish Province of Málaga. Trade, fishing, boatbuilding, and manufacturing are of chief importance.

Ifni.—Ifni is a Spanish enclave on the Southwest coast of Morocco. It was constituted a province of Spain in 1958, and is ruled by a governor under the director general of African provinces in Madrid. Sidi Ifni (7,651) is the capital and chief town. Grains, grapes, fruit, and dates are grown, and there is some coastal fishing. In late 1957 and early 1958, fighting took place between the Spanish forces and the guerrilla Moroccan Liberation Army.

Spanish Sahara.—Spanish Sahara is a large, sparsely populated territory which is mostly desert in the interior. In 1958 it was constituted a province of Spain, and is ruled by a governor under the director general of African provinces in Madrid. Aiun (El Aiun; pop., 3,142), in Saguia el Hamra, is the capital. There is some fishing and production of cacao. In late 1957 and early 1958, fighting took place at Villa Cisneros (in Rio de Oro) and Aiun between Spanish forces and the Moroccan Liberation Army. On Jan. 10, 1960, it was revealed in Madrid that several American oil companies had obtained rights to prospect for oil in Spanish Sahara.

Spanish Guinea.—Spanish Guinea, a province of Spain, is ruled by a governor aided by territorial administrators. The European population totaled 4,436 in 1950. The port city of Santa Isabel (28,868), on Fernando Poo, is the capital. The territory's budget for 1956 totaled 125.9 million pesetas. In 1956 there were 126 primary schools (20,333 pupils), a secondary school (139), and 2 technical schools (282). The economy on the mainland is predominantly agricultural. Fishing and cattle raising are important on Fernando Poo. Cacao exports totaled 26,900 metric tons in 1957. Other important cash crops are coffee (1956 output, 6,350 metric tons), bananas, palm oil, palm kernels, and hardwoods. Exports in 1956 totaled 930.4 million pesetas; imports, 551.3 million. Trade is mostly with Spain. There are airports at Santa Isabel and Bata (in Rio Muni). In 1959 the Gulf Oil Company and its Spanish partner, CEPSA, obtained concessions to seek oil in Spanish Guinea.

SPANISH LITERATURE. One of the interesting aspects of contemporary Spanish literature is the fact that many of Spain's writers have been working in exile since the civil war of 1936–39. As a result, Spanish literature has been produced on two fronts: in Spain and in foreign countries—a statement that is borne out by the index of the first 100 issues of *Cuadernos americanos,* a periodical published in Mexico. Compiled by Angel Flores, the index shows that much of the material published in the magazine is the work of expatriate Spanish writers.

However, in Spain itself new names continually appear, especially in the literary magazines. These periodicals include *Indice,* which recently has lost some of its prestige, *Insula,* and *Papeles de Son Armadans.* An objective account of the Spanish literary scene may be found in "Carta de España," a regular feature of the Puerto Rican literary quarterly, *Asomante.*

Poetry.—New volumes of poetry by established poets include *El ciervo* by León Felipe, who is now living in Mexico. Blas de Otero gathers poems from two previous volumes in *Ancia,* and Carmen Conde has published *Los monólogos de la hija,* verses inspired by her mother.

In the realm of poetry criticism, Carlos Bousoño has made a study of the work of Vicente Aleixandre (*La poesía de Vicente Aleixandre*), the lyric poet who wrote the excellent *Sombra del paraíso* (1944). The late Juan Ramón Jiménez (1881–1958), winner of the 1956 Nobel Prize for literature, has inspired a number of critical studies. Among the best of these is *Juan Ramón Jiménez en su poesía* by Guillermo Díaz Plaja. Ricardo Gullón contributed *Conversaciones con Juan Ramón,* a revealing account of the great poet's last years in Puerto Rico, and *Páginas escogidas,* a compilation of Jiménez' selected works. Of a more general nature was *Antología de la poesía española, 1957–1958,* compiled by Jiménez Martos.

Fiction.—Among the outstanding recent Spanish novels are *Los hijos muertos* by Ana María Matute, *Cabeza rapada* by Jesús Fernández Santos, and *Las afueras* by José Luis Goytisolo. In 1958 the latter won the Biblioteca Breve Prize, one of Spain's many literary awards. Another prize-winner

was Fernando Bermúdez de Castro's *Pasos sin huellas,* which received the Planeta Prize.

Writers living outside of Spain were also represented. Ramón José Sender, who became a naturalized United States citizen in 1946, recently brought out *Los laureles de Anselmo.* Two writers living in Argentina were also represented. Ramón Gómez de la Serna, the inventor of the literary genre known as the *greguería* (a hybrid of prose aphorism and poetic metaphor), compiled *Flor de greguerías.* Rafael Alberti, the postmodernist lyric poet, published *Sonríe China,* written in collaboration with his wife, María Teresa León.

Nonfiction.—Books on Spanish culture and history were prominent. *Historia de la civilización española,* a thorough survey, was written by Emilio González López and published in the United States. Claudio Sánchez Albornoz' *Españoles ante la historia* was published in Buenos Aires. The German Hispanist, Karl Vossler, produced the scholarly *Espíritu y cultura en el lenguaje,* and Vicente García de Diego brought out the second edition of his *Manual de dialectología española.* Other important research volumes included Juan Bautista Avalle-Arce's *La novela pastoril española* and Fernando Díaz Plaja's *Antología del romanticismo español.*

Other recent books deal significantly with Spanish literature and literary figures. Gerald Brenan, the British Hispanist, is the author of *Historia de la literatura española,* published in Buenos Aires. The correspondence of Miguel de Unamuno y Jugo (1864–1936), with notes and comments by Manuel García Blanco, was edited under the auspices of the Hispanic Institute, New York City. Unamuno and Antonio Machado y Ruiz (1874–1947) were the subjects of Sánchez Barbudo's *Estudios sobre Unamuno y Machado. Paisaje y literatura de España,* with an introduction by Julián Marías, is a fine anthology of the Generation of 1898, those writers who promoted the patriotic and literary revival following Spain's defeat in the Spanish-American War. Other important writers of the past were treated with the critical insight of the modern scholar in volumes that included Dámaso Alonso's *La poesía de San Juan de la Cruz,* Américo Castro's *Hacia Cervantes,* López Jiménez' *Los hermanos Bécquer,* and Antonio Vilanova's *Las fuentes y los temas del Polifemo de Góngora.*

Translations.—Among the recent Spanish novels which became available in English translation in 1959 were Juan Goytisola's *Children of Crisis* (tr. by Christine Brooke-Rose) and *The Young Assassins* (tr. by John Rust), and Pio Baroja's *The Restlessness of Shanti Andía* (tr. by Anthony Kerrigan). José Ortega y Gasset's *Man and Crisis,* translated by Mildred Adams, appeared in 1958. Two translations of Spanish literary classics were published in 1959: *Celestina;* or, *The Tragi-Comedy of Calisto and Melibea* by Fernando de Rojas, translated by Phyllis Hartnall, and *Little Sermons on Sin* by Alfonso Martínez de Toledo, the Archpriest of Talavera, translated by Lesley Byrd Simpson. Seymour Resnick and Jeanne Pasmantier edited a two-volume *Anthology of Spanish Literature in English Translation,* published in 1958.

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SPANISH MOROCCO. See Morocco.

SPECIAL LIBRARIES ASSOCIATION. See Societies and Organizations.

SPEED RECORDS. See Flight Records; Sports, Games, and Shows.

SPICES. United States spice imports in 1958 totaled 135,738,000 pounds, a slight decrease from the 137,738,000 pounds in 1957. The decline was due mainly to a drop in mustard seed imports of 5,378,000 pounds.

Ten imported commodities showed gains in 1958, eight were substantially unchanged, and six dropped in poundage. Pepper, the industry's bellwether, advanced 3,118,000 pounds to 38,077,000; and paprika rose 1,545,000 pounds to 8,367,000. Cinnamon and nutmeg, two other traditional members of the top ten spices in import volume, showed smaller gains.

Domestic production of mustard seed showed an even greater decline than did imports, decreasing from 35,405,000 pounds in 1957 to 12,854,000 pounds in 1958. Since a large share of United States mustard seed imports, as well as most of domestic production, is in the same general area (Montana in the United States, and Alberta in Canada), poor crop conditions in 1958 accounted for both imported and domestic declines.

Production of chili peppers and paprika in the United States rose to 11.2 million pounds in 1958, from 10.8 million in 1957. Domestic output of sesame seed in 1958 remained at approximately 10 million pounds.

U.S. Department of Commerce import figures for leading spices in 1958, are shown in the accompanying table.

U.S. IMPORTS OF SPICES, 1958

Spice	Pounds	Value
Pepper	38,077,460	$8,948,078
Mustard seed	18,227,596	1,161,249
Sesame seed	14,737,050	2,379,263
Cinnamon	13,417,744	3,520,060
Paprika	8,367,453	2,587,694
Poppy seed	7,140,687	1,361,770
Caraway seed	6,815,843	627,627
Capsicums	6,090,013	1,216,989
Ginger	3,213,868	623,820
Nutmegs	2,702,679	3,394,064

William L. Macmillan,
President, American Spice Trade Association.

SPINACH. See Vegetables.

SPITSBERGEN. See Svalbard.

SPORTS, GAMES, AND SHOWS. New major leagues for professional athletes were formed in three sports in 1959. Expansion was under way in a fourth sport and was being considered in a fifth. The new leagues were in baseball, football, and soccer. The National Basketball Association scheduled the inclusion of a team from a ninth city (Chicago) in 1960, and the National Hockey League was investigating the advisability of giving franchises to Los Angeles, Pittsburgh, and Quebec City.

The formation of a third major baseball league, called the Continental League, was announced in New York City on July 27. At the head of the founding group was William A. Shea, chairman of the New York mayor's committee to get a second big league team for the city. This committee was formed after the New York Giants and the Brooklyn Dodgers of the National League had transferred to the west coast, leaving only the American League's Yankees in New York beginning with the 1958 season. The Continental League, with Branch Rickey as president, hoped to begin competition with the 1961 season.

The new football circuit—the American Football League—was formed in August. It hoped to start its schedule in 1960 with a 14-game round-robin. Joe Foss, a former governor of South Dakota, was picked to head the organization.

A new International Soccer League, with teams from 11 nations and New York City, was organized, and play was planned to begin on May 25, 1960. Most of the schedule will be played in the Polo Grounds. The foreign teams will play

after finishing their regular league games at home. The new circuit will include teams from Northern Ireland and Eire (in alternate years) and from England, Scotland, Sweden, West Germany, Austria, Hungary, France, Italy, and Portugal.

During the year, fans in the United States saw much thrilling competition both on and off television. In only their second season at Los Angeles, the Dodgers won the World Series by beating the Chicago White Sox, 4 games to 2. Each of the three games in the series played in the Los Angeles Coliseum drew more than 90,000 fans. The unbeaten Syracuse University football team defeated the University of California at Los Angeles on December 5 for its 10th victory of the regular season.

In other team competition, the Boston Celtics won the National Basketball Association play-offs to replace the St. Louis Hawks as the professional champions, and the Montreal Canadiens continued as the top team in the National Hockey League by finishing first in the regular season standings and by retaining the Stanley Cup in the play-offs.

The American professional golf scene was dominated by Art Wall, Jr., who won the Masters and collected more than $50,000 in tournament prize money during the year, and by Bob Rosburg, who took the Professional Golfers' Association championship. Jack Nicklaus won the United States amateur title.

In international horse races, Jamin, a French entry, won the $50,000 International Trot, at Roosevelt Raceway, Westbury, N.Y., and, in thoroughbred racing, Bald Eagle of the Cain Hoy Stable won the $100,000 Washington (D.C.) International at Laurel.

Americans took considerable punishment in boxing and tennis during the year. Ingemar Johansson stopped Floyd Patterson of Brooklyn in the third round of a June 26 bout in New York City to become the first Swede to win the world heavyweight championship. The United States tennis team lost the Davis Cup to Australia, and Neale Fraser of the Aussie team beat Alex Olmedo in the final of the United States national singles. A Brazilian, Maria Bueno, scored a tennis sweep by taking the women's Wimbledon and United States crowns.

The host team dominated the third Pan-American Games held in Chicago from August 27 to September 7, winning 121 gold medals out of 164; Argentina was second with 9. The American men beat the Soviet Union track team in a return meet held July 18–19 in Philadelphia, but the American women lost for the second time to the Russian women.

In swimming, Becky Collins of Indianapolis set three world records in the Amateur Athletic Union's national championships. An American, Mrs. Greta Andersen Sonnischen, was the first woman to finish in the annual English Channel swim. Alfredo Camarero of Argentina was the winner.

Donald Campbell of England broke his own world speed record on water in his jet-powered *Bluebird II* with a time of 260.35 miles per hour on Lake Coniston, England, in May.

Jack Brabham of Australia won the world auto racing drivers' title—on foot. He pushed his disabled Cooper Climax the last half mile at Sebring, Fla., on December 12 in the final Grand Prix point race of the year, to finish fourth in the race and first in the final standing with 31 points.

The United States scored impressive equestrian victories in the National Horse Show in Madison Square Garden, the Pennsylvania National at Harrisburg, Pa., and the Royal Winter Fair in Toronto. But United States ski hopes for the 1960 Olympics were shattered when Bud Werner of Steamboat Springs, Colo., suffered a broken leg on the slalom course at Aspen, Colo., on December 12. Werner had been named skier of the year by the National Ski Association.

Carol Heiss of Ozone Park, N.Y., retained the women's world, North American, and United States figure skating championships. David Jenkins of Colorado Springs again took the world and United States men's titles, and Don Jackson of Canada scored in the North American championship meet.

The National Collegiate Athletic Association held championship play in soccer for the first time, with the title going to St. Louis University.

Following are summaries of some of the developments in major sports activities in 1959, together with listings of champions and of many outstanding performances. Team or residential affiliations are provided for each winner, where possible, but are usually indicated only once for a multiple winner—the first time his name is listed.

Archery

World Championships

(Stockholm, Sweden, August 5–9)

Men—James Caspers, Racine, Wis. (2,247 pts.)
Women—Mrs. Ann Corby, Bloomfield, N.J. (2,023)
Men's Team—U.S. (James Caspers, Robert Kadlec, James Neeley; 6,633)
Women's Team—U.S. (Mrs. Corby, Lucille Shine, Carole Meinhart; 5,847)

United States Championships

National Archery Association

(Lancaster, Pa., August 17–21)

Men—Wilbert Vetrovsky, Cleveland (3,473 pts.)
Women—Carole Meinhart, Pittsburgh (3,732)
Men's Team—Minneapolis (2,961)
Women's Team—Philadelphia (2,800)

National Field Archery

(Bend, Oreg., July 27–30)

Men's Instinctive—Carl Heinrich, Richmond, Mich. (2,799 pts.)
Women's Instinctive—Faye Sconyers, Modesto, Calif. (2,182)
Men's Freestyle—Robert Kadlec, Rochester, Minn. (2,970)
Women's Freestyle—Cloe Roberson, Samaria, Mich. (2,621)
Men's Heavy Tackle—Jim Palmer, Dansville, N.Y. (2,663)
Women's Heavy Tackle—Anna Van Dolson, Vallejo, Calif. (1,758)

Auto Racing

American Races

Indianapolis Speedway (500 miles, May 30)—Rodger Ward, Indianapolis (driving a Leader Card Special; Speed, 135.856 mph.)
Florida Grand Prix of Endurance, 12 Hours (Sebring, March 21)—Phil Hill, Santa Monica, Calif., and Olivier Gendebein, Belgium (Ferrari; speed, 81.46 mph.; distance, 977.6 miles)
U.S. Grand Prix (Sebring, Fla., Dec. 12)—Bruce McLaren, New Zealand (Cooper Climax; speed, 98.87 mph.; time, 2:12:36.6; distance, 218.4 miles)

European Races

Grand Prix of France and Europe (Rheims, July 5)—Tony Brooks, Britain (Ferrari; speed, 128 mph.; time, 2:01:26; distance, 260 miles)
Grand Prix of Britain (Aintree, England, July 18)—Jack Brabham, Australia (Cooper Climax; speed, 89.88 mph.; time, 2:30:11.6; distance, 225 miles)
Grand Prix of Germany (Berlin, Aug. 2)—Tony Brooks (Ferrari; speed, 139 mph.; time, 2:09:31.6; distance, 311 miles)
Grand Prix of Italy (Monza, Sept. 13)—Stirling Moss, England (Cooper; speed, 125 mph.; time, 2:04:05; distance, 258 miles)
Grand Prix of Holland (Zandvoort, the Netherlands, May 31)—Joakim Bonnier, Sweden (British Racing Motors; speed, 94 mph.; time, 2:05:26; distance, 196 miles)
Grand Prix of Monaco (Monte Carlo, May 10)—Jack Brabham (Cooper Climax; speed, 67 mph.; time, 2:55:51.3; distance, 196 miles)
Grand Prix of Portugal (Lisbon, Aug. 23)—Stirling Moss (Cooper; speed, 96 mph.; time, 2:11:56; distance, 211 miles)
Le Mans (France, June 20–21) 24-Hour Endurance—Carroll Shelby, Dallas, and Roy Salvadori, Britain (Aston Martin; speed, 112 mph.; distance, 2,717 miles)
Mille Miglia (Brescia, Italy, May 31)—Mario Carlo Abate and Gianni Balzarini, Italy (Ferrari; time, 2:06:16.8)

INDIVIDUAL CHAMPIONS

World—Jack Brabham, Australia (31 pts.)
U.S. Auto Club Big Car—Rodger Ward

Sports Car Club of America

Class B Modified—John Staver, Virginia, Minn.
Class B Production—James Jeffords, Milwaukee
Class C Modified—Walt Hansgen, Westfield, N.J.
Class C Production—Robert Grossman, West Nyack, N.Y.
Class D Modified—Alan Connell, Fort Worth
Class D Production—Fred Spross, Poughkeepsie, N.Y.
Class E Modified—Gaston Andrey, Framingham, Mass.
Class E Production—Pierre Mion, Arlington, Va.
Class F Modified—Don Sesslar, Lancaster, Ohio
Class F Production—Harry Blanchard, Greenwich, Conn.
Class G Modified—Arthur Tweedale, Falls Church, Va.
Class G Production—Charles Stoddard, Mentor, Ohio
Class H Modified—James Eichenlaub, Ellwood City, Pa.
Class H Production—Ray Heppenstall, Philadelphia
Class I Production—Paul Richards, Wappinger Falls, N.Y.
Class J Production—A. Edward Wright, Richmond, Va.
Formula III—James Haynes, New York
Rally—*Driver:* Juanita De Loof, Manhattan Beach, Calif.; *navigator:* Mel De Loof, Manhattan Beach, and Thomas R. Lusk, Alexandria, Va. (tied)

BADMINTON

Thomas Cup (world men's team championship)—Indonesia
Uber Cup (world women's team championship)—U.S.
All-England (unofficial world) Championships (London, England, tourney ending March 21)—*Singles:* Tan Joe Hok, Indonesia; *women's singles:* Heather Ward, England; *doubles:* Lim Say Hup and Teh Kew San, Malaya; *women's doubles:* Mrs. E. J. Timperley and Mrs. W. C. E. Rogers, England
U.S. Championships (Detroit, tourney ending April 4)—*Singles:* Tan Joe Hok, Indonesia; *women's singles:* Judith Devlin, Baltimore; *doubles:* Lim Say Hup and Teh Kew San, Malaya; *women's doubles:* Judith and Susan Devlin; *mixed doubles:* Judith Devlin and Michael Roche, Baltimore

BASEBALL

The Los Angeles Dodgers, playing only their second year on the west coast, finished strong at the end of the 1959 baseball season to wind up in a tie for first place with the Milwaukee Braves after both clubs had overtaken the National League leader, the San Francisco Giants. In a two-out-of-three-game play-off, the Dodgers won two in a row by scores of 3–2 and, in 12 innings, 6–5. Then, weary but willing, they faced the Chicago White Sox, the American League flag winners, in the World Series.

The White Sox, feared for their spectacular fielding, shut out the exhausted Dodgers in the first game and added to the indignity by belaboring five Dodger pitchers for 11 runs. But, since Los Angeles had risen to the league championship from a seventh-place finish the season before, it could not be counted out. And, indeed, the Dodgers won the next three games, by scores of 4–3, 3–1 and 5–4. In the fifth game, the White Sox, held to 5 hits, got a run in the fourth inning for the only score of the game. A record crowd of 92,706 watched the fifth contest in Los Angeles. It was the third straight day the crowd exceeded 90,000. But the sixth game wrapped up the championship for the Dodgers as they scored 6 runs in the fourth inning and won by 9 to 3.

Larry Sherry, a pitcher called up from the minors by the Dodgers in midseason, won two games in the series in relief roles and appeared in two other series games.

While fans witnessed in 1959 the spectacular rise of the Dodgers they also watched the fall of the once-mighty New York Yankees. The Yankees had been picked to win the American League pennant again and to retain the world title. They got off to an indifferent start, dropped to last on May 20, and finished in third place.

But if interest flagged from time to time in the pennant races, fans were kept in something of a turmoil by the formation of a third major league, called the Continental League, which hoped to start competition with the 1961 season. At the outset there were five entries in the new circuit—New York, Toronto, Denver, St. Paul–Minneapolis, and Houston. Atlanta and Dallas–Fort Worth were added later, and on Jan. 29, 1960, Buffalo entered the league as the eighth member. Branch Rickey was named president of the new league.

On the playing field, Harvey Haddix of the Pittsburgh Pirates pitched 12 straight innings against the Braves on May 26 without permitting a batter to reach first base. But in the 13th inning an error put the first batter aboard and the Braves went on to win, 1–0. No other major leaguer had pitched so many consecutive perfect innings.

The fans got a double dose of All-Star baseball for the first time, with the National League winning the first game by 5–4 on July 7 at Pittsburgh, and the American League winning the second game, 5–3, on August 3 at Los Angeles.

After the season, the critics named Nelson (Nellie) Fox, the White Sox second baseman, and Ernie Banks, Chicago Cubs shortstop, as the most valuable players in their respective leagues. The batting title in the American League was won by Harvey Kuenn of the Detroit Tigers, who hit .353, and in the National League by Hank Aaron of the Braves, who batted .355. The Cy Young Memorial Award, for the best pitcher in the majors, went to Early Wynn of the White Sox.

In the customary juggling of managers, the Tigers replaced Bill Norman with Jimmie Dykes; Bill Jurges succeeded Mike Higgins with the Boston Red Sox; Fred Hutchinson took over for Mayo Smith at Cincinnati; Charlie Grimm followed Bob Scheffing as the Cubs' manager; Kansas City released Harry Craft and hired Bob Elliott; and the Braves signed Charley Dressen to a two-year contract to replace Fred Haney.

Besides winning the pennant and world title, the Dodgers were the most popular team, attracting 2,070,720 fans to the vast Coliseum in Los Angeles. A total of 9,994,200 watched National League games during the year—the third highest figure in the league's history. The American League drew 9,149,454 spectators, with the Yankees accounting for 1,552,030 at their home games. Some observers claimed that a lot of fans went to the ball park to see the Yankees lose.

PROFESSIONAL—MAJOR LEAGUES

National League (Final Standing)

Club	Won	Lost	Pct.
Los Angeles*	88	68	.564
Milwaukee*	86	70	.551
San Francisco	83	71	.539
Pittsburgh	78	76	.506
Chicago	74	80	.481
Cincinnati	74	80	.481
St. Louis	71	83	.461
Philadelphia	64	90	.416

American League (Final Standing)

Club	Won	Lost	Pct.
Chicago	94	60	.610
Cleveland	89	65	.578
New York	79	75	.513
Detroit	76	78	.494
Boston	75	79	.487
Baltimore	74	80	.481
Kansas City	66	88	.429
Washington	63	91	.409

* Includes two-game play-off.

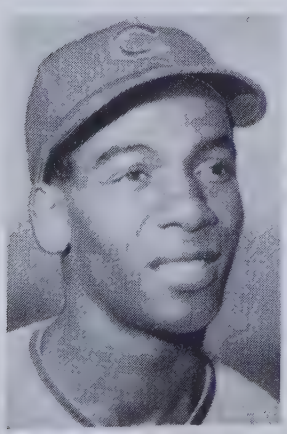
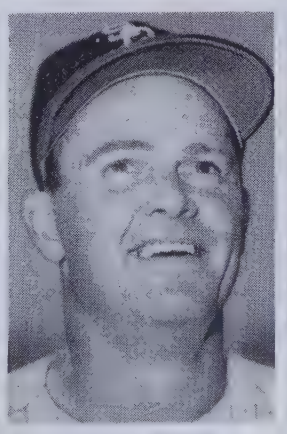
World Series—Won by Los Angeles Dodgers; attendance 6 games, 420,784; net receipts, $2,626,973.44; commissioner's share, $394,046; players' share (first 4 games only), $892,365.04, including full share of $11,231.18 for each Dodger and $7,275.17 for each White Sox player; clubs' and leagues' share, $1,340,562.40

Standings: Los Angeles (NL) won 4 games, lost 2, pct. .667; Chicago White Sox (AL) won 2, lost 4, pct. .333

First Game (Chicago, Comiskey Park, Oct. 1): Chicago 11, Los Angeles 0; *Second Game* (Chicago, Comiskey Park, Oct. 2): Los Angeles 4, Chicago 3;

Sports headliners of 1959 included (left to right) Ernie Banks of the Chicago Cubs and Nelson Fox of the White Sox, most valuable players in their respective leagues; Maria Bueno of Brazil, winner of both the Wimbledon and United States women's championships; and Art Wall, Jr., who won the Masters golf tourney at Augusta and was the year's leading money-winner.

WIDE WORLD

WIDE WORLD

Larry Sherry (51) World Series pitching hero for the Los Angeles Dodgers, is congratulated by teammates as they leave field after defeating White Sox in final game, 9-3.

Third Game (Los Angeles Coliseum, Oct. 4): Los Angeles 3, Chicago 1; *Fourth Game* (Los Angeles Coliseum, Oct. 5): Los Angeles 5, Chicago 4; *Fifth Game* (Los Angeles Coliseum, Oct. 6): Chicago 1, Los Angeles 0; *Sixth Game* (Chicago, Comiskey Park, Oct. 8): Los Angeles 9, Chicago 3

All-Star Games—*First game* (Pittsburgh, July 7): National League 5, American League 4; *second game* (Los Angeles, Aug. 3): American League 5, National League 3.

Most Valuable Player—*American:* Nelson Fox, Chicago second baseman; *National:* Ernie Banks, Chicago shortstop

Cy Young Memorial Award (outstanding major league pitcher)—Early Wynn, Chicago White Sox

Rookies of Year—*American:* Bob Allison, Washington outfielder; *National:* Willie McCovey, San Francisco first baseman

Leading Batters—*American:* Harvey Kuenn, Detroit Tigers; .353; *National:* Hank Aaron, Milwaukee Braves, .355

Home Runs—*American:* Rocky Colavito, Cleveland, and Harmon Killebrew, Washington, 42 each; *National:* Ed Mathews, Milwaukee, 46

Runs Batted In—*American:* Jackie Jensen, Boston, 112; *National:* Ernie Banks, Chicago, 143

Leading Pitchers—Best percentage (10 or more wins)—*American:* Robert Shaw, Chicago (18–6), .750; *National:* Elroy Face, Pittsburgh (18–1), .947.

Most Wins—*American:* Early Wynn, Chicago, 22; *National:* Sam Jones, San Francisco, Lew Burdette, Milwaukee, and Warren Spahn, Milwaukee, 21.

Earned-Run Average—*American:* Hoyt Wilhelm, Baltimore, 2.19; *National:* Stu Miller, San Francisco, 2.84

Managers of Year—*American:* Al Lopez, Chicago; *National:* Walter Alston, Los Angeles

Professional—Minor Leagues

(Where two teams are named, the first won the regular-season championship, the second won the play-off; otherwise the team named won both. Asterisk (*) indicates that the play-offs determine championship. Letters in parentheses indicate league class.)

Alabama-Florida (D)—Montgomery; Selma

American Association (AAA)—*East:* Louisville; *West:* Omaha; *play-off:* Minneapolis

Appalachian (D)—Morristown; no play-off

California (C)—Bakersfield (1st half); Modesto (2d half and play-off*)

Carolina (B)—Raleigh; Wilson

Eastern (A)—Springfield

Florida State (D)—Tampa (1st half); St. Petersburg (2d half and play-off)

International (AAA)—Buffalo; Havana

Mexican (AA)—Poza Rica; Mexico City Reds

Midwest (D)—Waterloo (both halves); no play-off

Nebraska State (D)—McCook; no play-off

New York–Pennsylvania (D)—Wellsville

Northern (C)—Winnipeg

Northwest (B)—Salem (1st half); Yakima (2d half and play-off*)

Pacific Coast (AAA)—Salt Lake City; no play-off

Pioneer (C)—Boise; Billings

Sophomore (D)—*North:* Carlsbad; *South* and play-off: Alpine

South Atlantic (A)—Knoxville; Gastonia

Southern Association (AA)—Birmingham (1st half); Mobile (2d half and play-off)

Texas (AA)—Victoria; Austin

Three I (B)—Green Bay (1st half and play-off*); Des Moines (2d half)

Junior World Series—Havana (International League) defeated Minneapolis (American Association), 4 games to 3

Pan-American Series—Austin (Texas League) defeated Mexico City Reds (Mexican League), 4 games to 1

College Conferences

NCAA—Oklahoma State
NAIA—Southern University
Eastern Intercollegiate—Navy
Atlantic Coast—Clemson
Southeastern—Mississippi
Southern—George Washington
Border—Arizona
Southwest—Texas A. and M.
Western (Big Ten)—Minnesota
Big Eight—Oklahoma State
Missouri Valley—Bradley
Pacific Coast—Southern California

Other Champions

Little League World Series—Hamtramck, Mich.
National Amateur Federation—*Junior:* Detroit and Cincinnati (tied)
American Legion—Thomas A. Edison Post, Detroit
Babe Ruth League—Tulsa
National Congress—Houston Fed-Marts

Basketball

Growing interest and some controversy featured the 1958–59 basketball season. In the United States a west coast team won the National Collegiate Athletic Association (NCAA) championship and an east coast team won the National Invitation Tournament in Madison Square Garden. The world amateur tournament was held in Santiago, Chile, and a political note was injected into it by a team from the Soviet Union.

Among the professional basketball players, the Boston Celtics were at the top when all the results were in. By scoring a record four-game sweep over the Minneapolis Lakers in the National Basketball Association's final play-offs, the Celtics replaced the St. Louis Hawks as world professional champions.

In winning the NBA scoring title, Bob Pettit of the Hawks set six major records, including most points in a season (2,105); highest game average (29.2); and most 50-point games in a season (3). Boston and Minneapolis staged the wildest scoring spree in basketball history on February 27, with the Celtics finally winning by 173–139. Seven NBA records were shattered in the one game.

In a postseason development, the NBA revealed that Chicago would enter the league for the 1960–61 season, bringing the number of teams in the circuit to nine.

It was reported also that Los Angeles and San Francisco might be admitted.

The top college honors were gained by the University of California, which defeated West Virginia in the final of the NCAA tournament. Playing in Louisville, Ky., on March 21, the west coast five took a 39–33 lead at half-time and went on to win by 71–70. Kansas State, the No. 1 team in the UPI and AP polls, had been eliminated by Cincinnati in the Midwest regional final. Pacing the Cincinnati quintet was Oscar Robertson, who was named to most all-America teams at the end of the season. With 978 points (an average of 32.6 points per game), Robertson won the national major college scoring title for the second straight season. Other players honored on most all-America fives were Jerry West of West Virginia, Bob Boozer of Kansas State, Bailey Howell of Mississippi State, and Johnny Cox of Kentucky. Cox had helped Kentucky snap Auburn's 30-game winning streak with a 75–56 victory at Lexington on February 21. In the National Invitation Tournament, St. John's University of Brooklyn defeated Bradley, 76–71, in an overtime final to become the first team to win the event three times.

Despite the excellent quality of American basketball in general, a weak Air Force team was sent to represent the United States in the world amateur tournament. This team was routed by the Russians, 62 to 37, and by Brazil, 81 to 67, in the final round. The Soviet quintet, on its way to the title after winning 5 games in a row, refused to meet the Nationalist Chinese team from Taiwan, and Brazil was recognized as champion. The reasons given for sending a weak team from the United States were that the excellent players on Amateur Athletic Union teams were busy in January with their own league games, and that collegians were occupied with their studies.

At the start of the 1959–60 season, Soviet men's and women's teams toured the United States, with the men winning two out of six games and the women taking all of their six games.

Amateur

Major Tournaments

NCAA—California (defeated West Virginia in final, 71–70)

National (New York) Invitation—St. John's (defeated Bradley in overtime period of final, 76–71)

National Intercollegiate (NAIA)—Tennessee State (defeated Pacific Lutheran in final, 97–87)

Men's AAU—Wichita Vickers (defeated Phillips Oilers in final, 105–83)

Women's AAU—Wayland College, Texas (defeated Nashville Business College in final, 43–37)

College Conference Champions

(Figure in parentheses are for conference games only)

Ivy League—Dartmouth (won 13, lost 1)
Yankee Conference—Connecticut (won 8, lost 2)
Middle Atlantic (University Division)—St. Joseph's (won 7, lost 0)
Middle Atlantic (Northern College Division)—Hofstra (won 10, lost 1)
Middle Atlantic (Southern College Division)—West Chester (won 5, lost 2)
Mid-Eastern—Iona and Lemoyne (each won 4, lost 1)
Ohio Valley—Eastern Kentucky (won 10, lost 2)
Southern—West Virginia (won 11, lost 0)
Border—New Mexico State (won 9, lost 3)
Atlantic Coast—North Carolina State (won 12, lost 2)
Big Eight—Kansas State (won 13, lost 0)
Western (Big Ten)—Michigan State (won 12, lost 2)
Midwest—Knox (won 15, lost 1)
Mid-American—Bowling Green and Miami (each won 9, lost 3)
Pacific Coast—California (won 14, lost 2)
West Coast—St. Mary's (won 11, lost 1)
Skyline—Utah (won 13, lost 1)
Rocky Mountain—Idaho State (won 9, lost 1)
Southwest—Texas Christian (won 12, lost 2)
Southeastern—Mississippi State (won 13, lost 1)
Missouri Valley—Cincinnati (won 13, lost 1)

Professional

NATIONAL BASKETBALL ASSOCIATION (FINAL STANDINGS)

Eastern Division	Won	Lost	Pct.	Western Division	Won	Lost	Pct.
Boston	52	20	.722	St. Louis	49	23	.681
New York	40	32	.556	Minneapolis	33	39	.458
Syracuse	35	37	.486	Detroit	28	44	.389
Philadelphia	32	40	.444	Cincinnati	19	53	.264

Eastern Division Play-offs—Boston defeated Syracuse, 4 games to 3; *Western Division Play-offs*—Minneapolis defeated St. Louis, 4–2; *NBA Finals*—Boston defeated Minneapolis, 4–0

NBA All-Star Game (Detroit, Jan. 23, 1959)—West 124, East 108

Billiards

World Champions—*3-Cushion:* Harold Worst, Grand Rapids, Mich.; *pocket:* Willie Mosconi, Haddon Heights, N.J.

U.S. Amateur 3-Cushion Champion—Edward Lee, New York A.C.

Bobsledding

World Championships (mile course, St. Moritz, Switzerland, Feb. 6–15)—*2-man:* Eugenio Monti (pilot) and Renzo Alvera (brake), Italy (time: 5:23.86 for 4 runs); *4-man:* Art Tyler (pilot), Gary Sheffield, Parker Vooris, Tom Butler, U.S. (5:10.82)

North American Championships (mile course, Lake Placid, N.Y., Feb. 21–22)—*2-man:* Fred Fortune and Jack Young, Lake Placid (4:58.33); *4-man:* Stanley Benham (pilot), Neil Rogers, Jim Lamy, Charles Pandolph, Saranac Lake, N.Y. (4:44.84)

Bowling

American Bowling Congress Tournament (St. Louis, Mo., tourney ending April 26)—*All-events:* Ed Lubanski, Detroit (2,116 pts.); *singles:* Ed Lubanski (764); *doubles:* Gib Fischbach and Barney Vehige, St. Louis (1,372); *team:* Pfeiffer Beer, Detroit (3,243)

Women's International Bowling Congress Tournament (Buffalo, N.Y.)—*All-events:* Pat McBride, Grand Rapids, Mich. (1,927); *singles:* Mae Ploegman Bolt, Chicago (664); *doubles:* Sylvia Wene and Adele Isphording, Philadelphia (1,263); *team:* Bill Snethkamp-Chrysler, Detroit (3,030)

National Match-Game Champions (Bowling Proprietors' Association of America)—*Singles:* Billy Welu, St. Louis (311.48 Petersen pts.); *women's singles:* Marion Ladewig, Grand Rapids, Mich. (149.33 Petersen pts.); *doubles:* Don Carter and Tom Hennessey, St. Louis (31 Petersen pts.); *women's doubles:* Marion Ladewig and LaVerne Carter, St. Louis (6,043); *team:* Budweiser Beer, St. Louis (12,576); *women's team:* Steelcase Majors, Grand Rapids, Mich. (10,905)

U.S. Duckpins Tournament (Baltimore)—*All-events:* Bill Bursey, Washington, D.C. (1,301); *women's all-events:* Frances Wilson, Washington, D.C. (1,190); *singles:* Hilmar Sperschneider, Baltimore (473); *women's singles:* Dorothy Cridlin, Richmond, Va. (432); *doubles:* Vernon Marsch and Frank Hugelmeyer, Baltimore (850); *women's doubles:* Ruth Freeman and Audrey Atkinson, Baltimore (774); *team:* Chevy Chase Chevrolet, Washington (2,081); *women's team:* Carousel-Eastway, Baltimore (1,882)

Boxing

Ingemar Johansson became the first Swedish-born fighter to win the world heavyweight title when he knocked out Floyd Patterson in the third round at Yankee Stadium, New York, on June 26. But the outside-the-ring fighting which that bout provoked continued for the rest of the year.

WIDE WORLD

Wilt (the Stilt) Chamberlain, star rookie of the Philadelphia Warriors, uses his seven-foot height to grab a rebound in game with Syracuse. Leaving the University of Kansas to turn professional, he became the top NBA player.

The Manhattan district attorney launched an investigation into the promotional aspects of the fight after he had uncovered violations of the rules of the New York State Athletic Commission. As a result of the investigation, Patterson's pilot, Cus D'Amato, had his manager's and second's licenses revoked, and Bill Rosensohn, who had staged the bout, had his promoter's license suspended for three years.

In a defense of his title earlier in the year, in Indianapolis on May 1, Patterson stopped Brian London of England in 11 rounds.

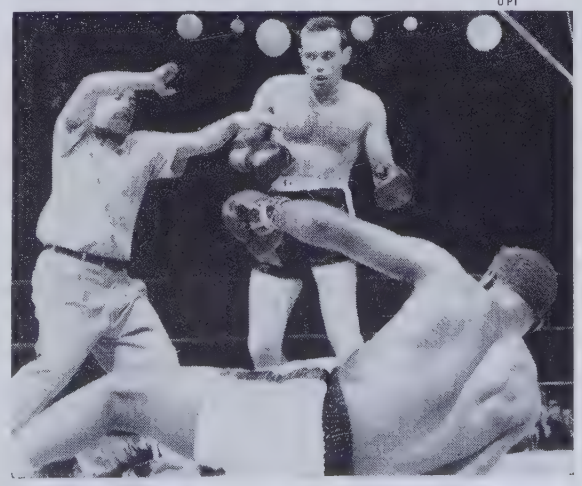
Sugar Ray Robinson was another fighter who had trouble outside the ring in 1959. The National Boxing Association (NBA) declared his world middleweight title vacant on charges by Carmen Basilio, former champion, that he could not get Sugar Ray to honor an agreement for a return bout. New York State and Massachusetts continued to recognize as champion Robinson, who had regained the 160-pound title from Basilio in March 1958. On Jan. 22, 1960, Robinson's version of the title was stripped from him by Paul Pender of Brookline, Mass., in a 15-round split-decision bout in Boston.

Basilio and Gene Fullmer of West Jordan, Utah, fought for the NBA version of the title in Los Angeles on August 18, Fullmer scoring a knockout in the 14th round to regain the title he had lost to Robinson in May 1957. In a defense on December 4 at Logan, Utah, Fullmer outpointed Spider Webb of Chicago.

Two challengers for the world welterweight championship were turned back in 1959. Don Jordan of Los Angeles

Ingemar Johansson of Sweden, new heavyweight champion of the world, stands over Floyd Patterson after scoring stunning victory at Yankee Stadium, June 26. Referee Ruby Goldstein signals end of bout in 2:03 of the third round.

UPI



defeated Virgil Akins of St. Louis on April 24 in Akins' home town, and beat Dennis Moyer in Portland, Oreg., on July 10 in successful defenses of his world title.

Joe Brown of New Orleans, one of the busiest of titleholders, defended his lightweight crown three times. He scored over Johnny Busso of New York in Houston on February 11, stopped Paolo Rosi of Italy in the ninth round in Washington on June 3, and halted Dave Charnley, the British Empire champion, at the end of five rounds in Houston on December 2.

The aging but indefatigable Archie Moore knocked out Canada's Yvon Durelle in the third round in Montreal on August 12 to keep the world light heavyweight title. Moore, who is "between 44 and 50" years of age, had outpointed Durelle in a title bout the previous December.

New world champions rose in the featherweight and bantamweight divisions. Davey Moore of Springfield, Ohio, captured the 126-pound title by knocking out Hogan (Kid) Bassey of Nigeria in the 13th round on March 18. He also beat Bassey in 11 rounds on August 19. The 118-pound title was won by Jose Becerra of Mexico, who stopped Alphonse Halimi of France in three rounds in Los Angeles on July 8.

Pascual Pérez of Buenos Aires kept the flyweight title in two defenses. He beat Kenji Yonikura in 15 rounds in Tokyo on August 10, and stopped Sadao Yaoita in 13 rounds in Osaka on November 5.

World Professional Champions
(Dec. 31, 1959)

Heavyweight—Ingemar Johansson, Sweden
Light Heavyweight—Archie Moore, San Diego
Middleweight—Gene Fullmer, West Jordan, Utah (recognized by the National Boxing Association); Ray Robinson, New York (recognized by New York and Massachusetts state athletic commissions)
Welterweight—Don Jordan, Los Angeles
Lightweight—Joe Brown, New Orleans
Featherweight—Davey Moore, Springfield, Ohio
Bantamweight—Jose Becerra, Mexico
Flyweight—Pascual Pérez, Argentina

National AAU Championships
(Toledo, Ohio, April 2–4)

112 Pounds—Gil Yanez, Toledo
119 Pounds—Fred Griffin, Toledo
125 Pounds—Roy Houpe, Columbus, Ohio
132 Pounds—Quincy Daniels, Seattle
139 Pounds—Brian O'Shea, Chicago
147 Pounds—Vernon Vinson, Cleveland
156 Pounds—Wilbert McClure, Toledo
165 Pounds—Jimmy McQueen, Elyria, Ohio
178 Pounds—Cassius Clay, Louisville, Ky.
Heavyweight—James Blythe, Hartford
Outstanding Boxer—Wilbert McClure
Team—Ohio Association (27 pts.)

National Collegiate AA Championships
(Reno, Nev., April 2–4)

119 Pounds—Ron Nichols, San Jose State
125 Pounds—Bobby Cornwell, Washington State
132 Pounds—Nick Akana, San Jose State
139 Pounds—Joe Bliss, Nevada
147 Pounds—Buddy Rausch, Idaho State
156 Pounds—Terry Smith, Sacramento State
165 Pounds—Charles Mohr, Wisconsin
178 Pounds—John Horne, Michigan State
Heavyweight—Hal Espy, Idaho State
Team—San Jose State, Calif. (24 pts.)

Bridge, Contract

World Team Championships (New York, N.Y.; final hand, Feb. 15)—Italy (defeated U.S. and Argentina in a 3-way contest)

Spring Nationals
(Seattle, Wash., March 14–22)

Harold S. Vanderbilt Cup Team (final hand, March 25)—B. Jay Becker, John R. Crawford, George Rapee, Tobias Stone, all of New York; Sidney Silodor, Havertown, Pa.; Norman Kay, Merchantville, N.J.
Men's Pairs—John Swanson, Berkeley, Calif., and James Pestaner, San Francisco
Women's Pairs—Mrs. Bert Epstein, Beverly Hills, Calif., and Blossom Grossblatt, Los Angeles
Mixed Pairs—Mary Jane Farell, Los Angeles, and Alvin Roth, Washington, D.C.
Open Pairs—Edward O. Taylor, and Lewis Mathe, Los Angeles
Individual—Joe Jabon, Seattle

Summer Nationals
(Chicago, Ill., July 25–August 2)

Masters Team—Oswald Jacoby, Dallas; Samuel Stayman, Victor Mitchell, Morton Rubinow, William Grieve, all of New York; Ira Rubin, Los Angeles
Masters Mixed Team—Mr. and Mrs. Charles J. Solomon, Robert Jordan, Mrs. Sally Young, all of Philadelphia; Peter Leventritt, New York
Life Masters Pairs—Edward Rosen and Daniel Rotman, Chicago
Men's Pairs—Harry J. Fishbein, New York, and John Gerber, Houston
Women's Pairs—Dorothy Hayden, Hastings-on-Hudson, N.Y., and Betty Goldberg, Baltimore
President's Pairs—Mrs. G. Bass, Milwaukee, and Thomas Laverenz, Whitefish Bay, Ill.

Winter Nationals
(Coronado, Calif., November 28–December 6)

Masters Team—Lewis Mathe, Edward Taylor, Meyer Schleifer, all of Los Angeles, and Don Oakie, San Francisco
Men's Team—Oswald Jacoby; Robert Sharp, Covington, Ky.; Ivan Erdos and Oliver Adams, Los Angeles
Women's Team—Mrs. John Simon, St. Louis; Mrs. Robert Sharp, Covington, Ky.; Mrs. Sidney Kasle, Indianapolis; Mrs. Stanley Alcorn, San Antonio; Mrs. Paul McDaniel, Houston
Masters Pairs—Samuel Stayman and Morton Rubinow, New York
Mixed Pairs—John R. Crawford and Dorothy Hayden
Individual Life Master—Leo Pressburg, Hawthorne, Calif.

Canoeing

U.S. Senior Paddling Champions
(Washington, D.C., July 25)

1-Man Single Blade—Istvan Hernek, Hudson, Ohio
Tandem Single Blade—Frank Krick and Jake Kastner, Philadelphia
4-Man Single Blade—Edward Budrock, Robert Manley, Paul Bouchnewich, and Stuart Messur, Yonkers, N.Y.
1-Man Kayak—Joe Redela, Washington, D.C.
Tandem Kayak—Miklos Tottossy and Joe Redela, Washington, D.C.
4-Man Kayak—Kenneth Wilson, Fred G. Wolters, Jr., Donald O'Brien, and Eric Feicht, all of New York
1-Woman Kayak—Mary Ann DuChai, Hudson, Ohio
Team—Washington C.C. (31 pts.)

Checkers

World Champions—*3-Move:* Walter Hellman, Gary, Ind.; *2-move:* Samuel Cohen, London, England; *go-as-you-please:* Thomas Wiswell, Brooklyn; *blindfold:* Newell W. Banks, Detroit
U.S. Champion—Walter Hellman

Chess

World Champions—*Men:* Mikhail Botvinnik, USSR; *junior men:* Carlos Bielicki, Argentina; *women:* Elizabeth Bykova, USSR; *students (team):* Bulgaria
World Challengers' Tournament—*Men:* Mikhail Tal, USSR; *women:* Mme. Kira Zvorkina, USSR
U.S. Champions—*Men:* Bobby Fischer, Brooklyn; *women:* Lisa Lane, Philadelphia; *men's open:* Arthur B. Bisguier, New York; *women's open:* Sonja Graf-Stevenson, Los Angeles; *men's amateur:* Russell Chauvenet, Silver Spring, Md.; *women's amateur:* Lisa Lane; *junior:* Robin Ault, Cranford, N.J.; *speed:* James T. Sherwin, New York
Rosenwald Trophy—Bobby Fischer

Cross-Country

NCAA (4 miles)—Al Lawrence, University of Houston (20:35.7); *team:* Michigan State (44 pts.)
ICAAAA (5 miles)—Crawford Kennedy, Michigan State (23:51.8); *team:* Michigan State (50 pts.)
Heptagonal (5 miles)—Richard M. Greene, Army (24:42); *team:* Army (31 pts.)
AAU (10,000 meters)—Al Lawrence (32:22.4); *team:* Houston

Curling

U.S. Championships (Green Bay, Wis., March 30–April 4)—Hibbing, Minn. (Frank Kleffman, skip)
U.S. Women's Championships (Wausau, Wis., Feb. 15)—Skokie Club Thistles, Glencoe, Ill. (Mrs. David Wilson, skip)
Gordon Grand National—Utica No. 1 Rink (Roy Read, skip)
Gordon International Medal—Canada (defeated United States, 519–336)
Canadian Champion—Regina, Sask. (Ernie Richardson, skip)
Mitchell Medal—Utica No. 3 Rink (George Johnston, skip)
Douglas Medal—Hamilton (Ont.) Thistles (Ross Tarlton, skip)
Ardsley—St. George Curling Club, Montreal (W. E. Thompson, skip)

Cycling

Tour de France (2,706 miles)—Federico Bahamontes, Toledo, Spain (123:46:45)

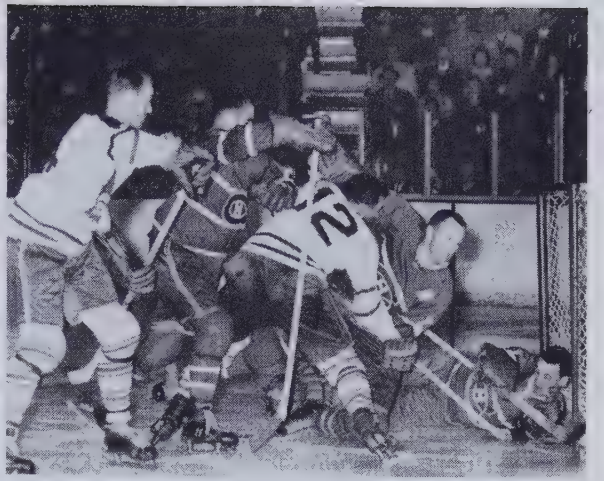
World Championships
(Amsterdam and Zandvort, the Netherlands)

Professional

Road—Andre Darrigade, France
Sprint—Antonio Maspes, Italy
Pursuit—Roger Rivière, France
Motor-Paced—Guillermo Timoner, Spain

Amateur

Road—Gustav Schur, East Germany
Sprint—Valentino Gasparella, Italy



WIDE WORLD

(*Left*) Billy Cannon, L.S.U. halfback and No. 1 college football player of 1959, eludes tacklers as he returns punt 89 yards for touchdown which defeated Mississippi, 7–3. (*Right*) In final game of 1959 Stanley Cup hockey play-offs, won again by Montreal, goalie Jacques Plante of Les Canadiens sprawls on ice to block scoring effort by Toronto's Ron Stewart (12).

Pursuit—Rudi Altig, West Germany
Motor-Paced—R. E. Van Houwelingen, the Netherlands

U.S. Amateur Championships
(Kenosha, Wis.)

Senior Open—James Rossi, Chicago
Mile—David Sharp, Pacific Palisades, Calif.
2 Miles—James Rossi
5 Miles—Jack Hartman, Los Gatos, Calif.
10 Miles—James Rossi

Dog Shows

Westminster Kennel Club Show (New York, N.Y., Feb. 9–10)—*Best in show:* Miniature poodle, Ch. Fontclair Festoon of Dunwalke Kennels, owned by Clarence Dillon, Far Hills, N.J. (2,544 dogs shown)
International Kennel Club Show (Chicago, Ill., April 4–5)—*Best in show:* Pekingese, Ch. Chik T'Sun of Caversham, owned by Mr. and Mrs. C. C. Venable, Atlanta, Ga. (2,541 dogs shown)

Fencing

World Championships
(Budapest, Hungary, July 14–26)

Individual—*Foil:* Allen Jay, England; *épée:* Bruno Khabarov, USSR; *saber:* Rudolf Karpati, Hungary; *women's foil:* Emma Efimova, USSR
Team—*Foil:* USSR; *épée:* Hungary; *saber:* Poland; *women's foil:* Hungary; *over-all:* USSR

United States Championships
(Los Angeles, June 27–July 4)

Individual—*Foil:* Joseph Paletta, U.S. Navy; *épée:* Henry Kolowrat, Fencers Club, New York; *saber:* Thomas Orley, Pannonia A.C., San Francisco; *women's foil:* Maria del Pilar Roldan, Mexico
Team—*Foil:* New York University; *épée:* U.S. Army Modern Pentathlon Team; *saber:* Salle Santelli, New York; *women's foil:* Los Angeles A.C.; *3-weapon:* Fencers Club, New York; *over-all:* Fencers Club, New York

National Collegiate AA Championships
(Annapolis, Md., March 27–28)

Individual—*Foil:* Joseph Paletta, Navy; *épée:* Roland Wommack, Navy; *saber:* Al Morales, Navy
Team—Navy (72 pts.); *second:* New York University (65)

Fly and Bait Casting

National Association Championships
(Columbus, Ohio, August 18–23)

(Distances given represent the total distance for the three longest of five casts made in each of two events, involving different baits or flies.)

All-Around—Marion Garber, Toledo
All-Distance—Marion Garber (3,184 ft.)
Distance Baits—Sib Liotta, Cleveland (2,221 ft.)
Distance Flies—Jon Tarantino, San Francisco (1,113 ft.)
All-Accuracy—William Peters, Toledo (392 pts.)
Accuracy Baits—John Crewdson, Chicago (197 pts.)
Accuracy Flies—Dick Fujita and Tom Sibila, Cleveland; Steve Aleshi and Baldi Darnay, Kansas City, Mo.; Jim Randall, Hartford, Conn.; and Marion Garber (all tied)

Women

All-Accuracy—Mel Gavin, St. Louis (390 pts.)
Accuracy Baits—Mel Gavin (194 pts.)
Accuracy Flies—Mel Gavin (192 pts.)

Football

Only one major college team finished the 1959 football season undefeated. Syracuse, which had been completely overlooked as a contender for national honors in the preseason forecasts, completed its first unbeaten campaign by defeating the University of California at Los Angeles, 36 to 8, on December 5, for its 10th victory of the year. Such a record made it easy for the coaches in the United Press International voting and for the writers and broadcasters in The Associated Press poll to name Syracuse the nation's No. 1 team in their final balloting. In the postseason Cotton Bowl game at Dallas (Jan. 1, 1960) Syracuse continued its streak by defeating Texas, 23–14.

While Syracuse provided a sustained drive to rise to the top and to stay there, Navy delivered a single-day blow to Army that startled the football world by its magnitude. The Middies, playing before 100,000 fans at Philadelphia's Municipal Stadium on November 28, overwhelmed favored Army, 43–12, rolling up the biggest score in the 60 games of the rivalry between the academies.

Form also was upset early in the season when Northwestern crushed Oklahoma, 45–13, and Tennessee topped third-ranked Auburn, 3–0, in opening games. Oklahoma, along with Louisiana State, had been at the top of preseason polls. Oklahoma also was beaten by Texas and Nebraska, and Tennessee toppled L.S.U. from the ranks of the undefeated.

Billy Cannon of L.S.U. won the John W. Heisman Memorial Trophy as the year's best college football player, and Ben Schwartzwalder of Syracuse won about every honor possible for a football coach for the season.

A new professional league, organized as the American Football League in 1959, was hoping to begin competition with the 1960 season. The cities in the circuit were Boston, New York, Buffalo, Los Angeles, Dallas, Houston, Denver, and (after a franchise in Minneapolis–St. Paul was withdrawn in January 1960) Oakland.

The prospect of open interleague warfare became likely when the National Football League owners voted on Jan. 28, 1960, to grant a franchise to Dallas for the 1960 season and to admit Minneapolis–St. Paul in 1961. AFL Commissioner Joe Foss denounced the action as "an out-and-out attempt to wreck our league." The Dallas club, owned by Lamar Hunt, founder and president of the AFL, is regarded as a key franchise in the new circuit, and the city is considered capable of supporting only one professional football team.

In National Football League competition in 1959, the New York Giants and Baltimore Colts retained their conference titles. In the championship game at Baltimore on December 27, the Colts defeated the Giants for the second straight year, 31–16, as their great quarterback, Johnny Unitas, led his club in a fourth-quarter splurge of 24 points that swept away a 9–7 deficit in the third period.

Paul Hornung of Green Bay tallied 22 points on the final day of the season for a league-leading total of 94 points, to pass Pat Summerall, a kicking specialist for the Giants who finished with 90 points.

The commissioner of the NFL, Bert Bell, died on Oct. 11, 1959, and was succeeded on an interim basis by Austin Gunsel, the league treasurer. On Jan. 26, 1960, Pete Rozelle, general manager of the Los Angeles Rams, was elected the new commissioner.

Pete Dawkins, an Army football star of the 1958 season, attracted considerable attention by gaining a place on the Oxford rugby team that defeated Cambridge in a traditional match on December 8.

Major Bowl Games
(Games played Jan. 1, 1960, unless otherwise indicated)

Rose (Pasadena, Calif.)—Washington 44, Wisconsin 8
Sugar (New Orleans)—Mississippi 21, Louisiana State 0
Cotton (Dallas)—Syracuse 23, Texas 14

Orange (Miami)—Georgia 14, Missouri 0
Gator (Jacksonville, Fla., Jan. 2, 1960)—Arkansas 14, Georgia Tech 7
Liberty (Philadelphia, Dec. 19, 1959)—Penn State 7, Alabama 0
Sun (El Paso, Texas, Dec. 31, 1959)—New Mexico State 28, North Texas State 8
Tangerine (Orlando, Fla.)—Middle Tennessee State 21, Presbyterian 12
Bluebonnet (Houston, Dec. 19, 1959)—Clemson 23, Texas Christian 7
Blue-Gray Game (Montgomery, Ala., Dec. 26, 1959)—North 20, South 8
Senior Bowl (Mobile, Ala., Jan. 9, 1960)—North 26, South 7
Shrine North-South Game (Miami, Dec. 26, 1959)—North 27, South 17
Shrine East-West Game (San Francisco, Jan. 2, 1960)—West 21, East 14
Pro Bowl (Los Angeles, Jan. 17, 1960)—West 38, East 21

College Conference and League Champions

(Figures in parentheses represent wins, losses, and ties in conference games only)

National (AP and UPI Polls)—Syracuse
Eastern (Lambert Trophy)—Syracuse
Eastern Small College (Lambert Cup)—Delaware
Ivy League—Pennsylvania (6–1–0)
Yankee—Connecticut (4–0–0)
Middle Atlantic (University Division)—Delaware (5–0–0)
Middle Atlantic (College Division, North)—Albright (6–1–0)
Middle Atlantic (College Division, South)—Johns Hopkins (6–0–0)
Southeastern—Georgia (7–0–0)
Atlantic Coast—Clemson (6–1–0)
Southern—Virginia Military Institute (5–0–1)
Ohio Valley—Tennessee Tech (5–0–1)
Western (Big Ten)—Wisconsin (5–2–0)
Mid-American—Bowling Green (6–0–0)
Missouri Valley—North Texas and Houston (tie, 3–1–0)
Big Eight—Oklahoma (5–1–0)
Southwest—Texas, Texas Christian, Arkansas (tie, 5–1–0)
Border—Arizona State (5–0–0)
Skyline—Wyoming (7–0–0)
Rocky Mountain—Idaho State (3–0–0)
Pacific Big Five—Washington, Southern California, U.C.L.A. (tie, 3–1–0)

NATIONAL FOOTBALL LEAGUE
(Final Standings, Regular 1959 Season)

Eastern Conference	W.	L.	T.	Pct.	Points for	Points against
New York Giants*	10	2	0	.833	284	170
Philadelphia Eagles	7	5	0	.583	268	278
Cleveland Browns	7	5	0	.583	270	214
Pittsburgh Steelers	6	5	1	.545	257	216
Washington Redskins	3	9	0	.250	185	350
Chicago Cardinals	2	10	0	.167	234	324
Western Conference						
Baltimore Colts*	9	3	0	.750	374	251
Chicago Bears	8	4	0	.667	252	196
Green Bay Packers	7	5	0	.583	248	246
San Francisco 49ers	7	5	0	.583	255	237
Detroit Lions	3	8	1	.273	203	275
Los Angeles Rams	2	10	0	.167	242	315

* The NFL title was won at Baltimore on December 27 by the Colts, who defeated New York, 31–16.

Canadian Professional Football

Grey Cup (November 28)—Winnipeg Blue Bombers defeated Hamilton Tiger-Cats, 21–7.

Golf

A couple of professional golfers who swing their clubs as if they were holding baseball bats did some excellent hitting along the fairways in 1959. Art Wall, Jr., of Pocono Manor, Pa., finished with a flourish in the Masters Tournament at Augusta, Ga., on April 5 to win with a 72-hole score of 284. He had five birdies on the last six holes in his final round and posted a 66.

Another player who holds his club with a baseball grip, Bob Rosburg of Palo Alto, Calif., took the Professional Golfers' Association title with a 277, turning in a 66 in the final round on August 2 at Minneapolis.

In the U.S. Open, held at the Winged Foot Club in Mamaroneck, N.Y., Rosburg finished as runnerup to Billy Casper, Jr., of Apple Valley, Calif. Casper's 72-hole total was 282 to Rosburg's 283.

The United States amateur title was won by 19-year-old Jack Nicklaus of Columbus, Ohio. He beat Charley Coe of Oklahoma City, 1 up, in the 36-hole final, scoring a birdie 3 on the last hole as Coe finished with a par.

Women golfers were paced by Mickey Wright of San Diego, Calif., who won the open for the second year in a row; Betsy Rawls of Spartanburg, S.C., winner of the Ladies PGA championship; and Barbara McIntire of Lake Park, Fla., who became the amateur titleholder.

In team competition between the United States and Britain, the Americans won the Walker and Ryder cups. The Canada Cup was captured by the Australian team of Peter Thomson and Kel Nagle with a 563 total, and the International Trophy competition, held simultaneously with the Canada Cup, was won by Stan Leonard of Vancouver, B.C., who beat Thomson in a play-off.

Wall was the leading money-winner among the men. By the year's end he had collected more than $50,000. Miss Rawls earned more than $25,000 to finish first among the women.

Sam Snead turned in a sensational round in the tournament named after him and held at his home course in White Sulphur Springs, W.Va. Snead carded a 59, the lowest 18-hole score on record in PGA-sanctioned competition. This accomplishment helped him to win the tourney with a 259 total, only 2 strokes above the four-round PGA record set by Mike Souchak in the 1955 Texas Open.

Men's Individual Champions

U.S. Open—Bill Casper, Jr., Apple Valley, Calif.
U.S. Amateur—Jack Nicklaus, Columbus, Ohio
PGA—Robert Rosburg, Palo Alto, Calif.
Tournament of Champions—Mike Souchak, Grossinger, N.Y.
Augusta Masters—Art Wall, Jr., Pocono Manor, Pa.
U.S. Public Links—William Wright, Seattle, Wash.
North-South Amateur—Jack Nicklaus
Eastern Open—David Ragan, Chattanooga, Tenn.
Eastern Amateur—Ward Wettlaufer, Buffalo, N.Y.
Southern Amateur—Richard Crawford, El Dorado, Ark.
Trans-Mississippi—Jack Nicklaus
Western Open—Mike Souchak
Western Amateur—Dr. Edgar Updegraff, Tucson, Ariz.
NCAA—Richard Crawford, University of Houston
British Open—Gary Player, South Africa
British Amateur—Deane Beman, Silver Spring, Md.
British PGA—Dai Rees, Wales
French Open—David Thomas, Wales
French Amateur—Henri de LaMaze, Paris
German Open—Kenneth Bousfield, England
Canadian Open—Doug Ford, Paradise, Fla.
Canadian Amateur—John Johnston, Vancouver, B.C.
Canadian PGA—Stan Leonard, Vancouver, B.C.
Mexican Open—Angel Miguel, Spain
Australian Open—Kel Nagle, Australia
World Senior Professional—Willie Goggin, San Jose, Calif.
PGA Senior—Willie Goggin
U.S. Senior—Willie Goggin

Women's Individual Champions

U.S. Open—Mickey Wright, San Diego, Calif.
American Open—Beverly Hanson, Fargo, N.Dak.
U.S. Amateur—Barbara McIntire, Lake Park, Fla.
PGA—Betsy Rawls, Spartanburg, S.C.
Titleholders'—Louise Suggs, Sea Island, Ga.
Heart of America Open—Beverly Hanson
Eastern Amateur—Mrs. Edward McAuliffe, Haverhill, Mass.
Western Open—Betsy Rawls
Western Amateur—JoAnne Gunderson, Seattle, Wash.
North-South—Ann Casey Johnstone, Mason City, Iowa
Trans-Mississippi—Ann Casey Johnstone
Southern—Judy Eller, University of Miami, Fla.
NCAA—Judy Eller
Canadian Open Amateur—Marlene Stewart Streit, Toronto
Canadian Closed—Marlene Stewart Streit
British Open Amateur—Elizabeth Price, England
U.S. Junior—Judy Rand, Aurora, Ohio
U.S. Senior—Mrs. Harrison Flippin, Ardmore, Pa.
North-South Senior—Mrs. Charles Bartholomew, Haverhill, Mass.

Men's Team Champion

Canada Cup (professionals)—*Team:* Australia (Peter Thomson, 275; Kel Nagle, 288—563); *International Trophy:* Stan Leonard, Canada (beat Thomson with par 4 on extra hole after tie at 275)
Walker Cup—United States 9, Great Britain 3
Ryder Cup—United States 8½, Great Britain 3½
NCAA—University of Houston
U.S. Public Links—Dallas, Texas

Gymnastics

Men's National AAU Championships
(Amherst, Mass., April 24–25)

All-Around—John Beckner, Los Angeles Turners (106.65 pts.)
Horizontal Bar—Arthur Shurlock, U. of California (18.35)
Parallel Bars—John Beckner, and Edward Scrobe, New York A.C. (tied at 18.25)
Side Horse—John Beckner (18.40)
Still Rings—Jamile Ashmore, Army (18.60)
Swinging Rings—Thomas Darling, Pittsburgh, Pa., unatt. (9.00)
Long Horse—Donald Tonry, Pond's Palaestrum, Champaign-Urbana, Ill. (17.80)
Tumbling—Harold Holmes, Urbana, Ill., unatt. (9.40)
Trampoline—Ron Munn, Amarillo, Texas, unatt. (9.45)
Calisthenics—Jamile Ashmore (18.55)
Rope Climb—Garvin Smith, Los Angeles, Calif., unatt. (time: 0:02.9)
Team—Los Angeles Turners (44 pts.)

Women's National AAU Championships
(Kent, Ohio, May 8–9)

All-Around—Ernestine Russell, Michigan State (70.95 pts.)
Uneven Parallel Bars—Marta Nagy, U. of Colorado (17.90)
Side Horse Vaulting—Ernestine Russell (18.20)
Balance Beam—Muriel Davis, Pond's Palaestrum (17.90)
Tumbling—Teresa Montefusco, Flint Acrolympian Club (9.00)
Calisthenics—Betty J. Maycock, Cleveland, Ohio, unatt. (18.20)

National Collegiate AA Championships
(Berkeley, Calif., March 20–21)

All-Around—Armando Vega, Penn State (551.25)
Horizontal Bar—Stan Tarshis, Michigan State (96.5)
Parallel Bars—Armando Vega (95.5)
Side Horse—Art Shurlock, California (97.0)
Still Rings—Armando Vega (94.0)
Flying Rings—Jay Werner, Penn State (94.0)
Tumbling—Dave Dulaney, Penn State (85.5)
Trampoline—Ed Cole, Michigan (92.0)
Free Exercise—Don Tonry, Illinois (94.5)
Rope Climb—Don Littlewood, Penn State (time: 0:03.5)
Team—Penn State (152 pts.)

Handball

National AAU—*1-wall singles:* Oscar Obert, New York A.C.; *1-wall doubles:* Oscar and Rudy Obert, New York A.C.
National Combined AAU–YMCA—*4-wall singles:* John Sloan, Chicago YMCA; *4-wall doubles:* John Sloan and Phil Collins, Chicago YMCA; *masters 4-wall doubles:* Oscar Penchaf and George Miller, Toledo YMCA

Harness Racing

Seven trotters from seven countries were imported into the United States to oppose Trader Horn on August 1—opening night at Roosevelt Raceway, Westbury, N.Y. Trader Horn, with Billy Haughton in the sulky, was the 17–20 favorite, even though the distance to be covered was a mile and a half, or half a mile more than the usual distance at which American trotters race. The keenest opposition was expected to come from Jamin, the French entry. In 28 races in Europe between January 1958 and Aug. 1, 1959, Jamin had scored 21 victories. Whether his ballyhooed passion for artichokes was the key, or whether Jamin was simply the best trotter in the world, the French horse took the $50,000 International Trot at Roosevelt, beating Tornese of Italy by half a length and finishing three quarters of a length in front of the third-place Trader Horn.

The other horses in order of finish were Icare IV, Italy; Ivacourt, Germany; Adept, Sweden; Philip Frost, Canada; and Jens Protector, Norway. The race served greatly to increase interest in international trotting, for it had been generally assumed that American standardbreds were superior to foreign horses. Jamin won three times and placed second once and third once in five starts in the United States. In balloting conducted by the U.S. Trotting Association, Jamin was named the aged trotter of the year. Jamin also finished in a tie for fourth with Diller Hanover for horse-of-the-year honors. The top award in the poll was won by Bye Bye Byrd, followed by Adios Butler and Bullet Hanover.

Bye Bye Byrd earned a record $212,192 for the year and turned in the world's fastest time on a half-mile track. The four-year-old paced a mile in 1:57⅘ at Roosevelt Raceway.

Adios Butler swept the Messenger Stakes, the Cane Futurity, and the Little Brown Jug to win pacing's triple crown, the first time any horse had achieved that distinction. Trotting's triple crown was shared by two Hanovers, Diller taking the Hambletonian and the Kentucky Futurity, and John A. winning the Yonkers Trot.

Haughton was replaced as the leading driver by William D. (Buddy) Gilmour, with 165 victories, but Haughton finished at the top of the earnings list (for the eighth straight time) with $695,296.

Records were set for attendance and betting, with 14,128,702 fans sending $793,815,975 through the parimutuel machines in the 13 states which permit such wagering.

Champions—Mile Track

Two-Year-Olds—*Pacer:* Bullet Hanover (time, 1:57; world record); *trotter:* Uncle Sam (2:01⅖)
Three-Year-Olds—*Pacer:* Adios Butler (1:55⅘; world record); *trotter:* Expresson (1:58)
Aged—*Pacer:* Widower Creed and Sunbelle (tied at 1:57⅖); *trotter:* Senator Frost (1:58⅘)

Champions—Half-Mile Track

Two-Year-Olds—*Pacer:* Muncy Hanover (2:00⅘; world record); *trotter:* Carlene Hanover (2:04)
Three-Year-Olds—*Pacer:* Adios Butler (1:59⅖; world record); *trotter:* Diller Hanover and John A. Hanover (tied at 2:03⅘)
Aged—*Pacer:* Bye Bye Byrd (1:57⅘; world record); *trotter:* Trader Horn (2:01⅖)

Stakes Winners

Trotting

American Championship—Jamin
American Classic—Senator Frost
American National Maturity—Senator Frost
Blossom—Elaine Rodney
Castleton—Blaze Hanover
Dream—Circo
Gotham—Mr. Saunders
Hambletonian—Diller Hanover
Hilltop—Blaze Hanover
Horsemen Futurity—Expresson
Horseman Stake—Blaze Hanover
Illinois Colt (2-year-old)—Prince Jamie
Illinois Colt (3-year-old)—Greve
International—Jamin
Kent—Steamin' Demon
Kentucky Futurity—Diller Hanover
Minute Man—Regal Pick
Miss America—Beloved
Mr. America—Newport Mercury
National Championship—Trader Horn
Suffolk Downs—Dalyce Blue
Titan—Trader Horn
Yonkers—John A. Hanover

Pacing

American Classic—Sunbelle
American National Maturity—Bye Bye Byrd
Bostonian—Merrie Adios
Buckeye State—Major Goose
Canadian Juvenile Circuit—Splurge
Cane Futurity—Adios Butler
Devotion—Countess Adios
Empire—Bright Knight
Encore—Adios Butler
Fox—Bullet Hanover
Good Time—Bye Bye Byrd
Governor's Cup—Right Time
HTA Pace—Bye Bye Byrd
HTA Final—Bye Bye Byrd
Hopeful—Burwell Hanover
Horseman Futurity—Newport Admiral
Illinois Colt (2-year-olds)—Hark Win
Illinois Colt (3-year-olds)—Royal Ronald
Jubilee—Right Time
Little Brown Jug—Adios Butler
Messenger—Adios Butler
National Championship—Speedy Pick
National Derby—Bye Bye Byrd
Star Pointer—Right Time
Sussex County—Meadow Al
Twentieth Anniversary—Great Pleasure
W. H. Cane Futurity—Adios Butler

Hockey

In hockey, an enormously popular sport in the robust Canadian climate, Dominion skaters continued their roles as the world's best players. That Canadians won the professional honors, however, came as no surprise, because the National Hockey League, in which the world's best professionals compete, is made up almost exclusively of Canadians even though the league has teams in New York, Boston, Detroit, and Chicago. Among the pro-

Tomy Lee (right), ridden by Willie Shoemaker, noses out Sword Dancer in the home stretch to capture 85th running of the Kentucky Derby at Louisville, Ky., on May 13, 1959.

WIDE WORLD

fessionals Montreal emerged as the best by finishing first in the 1958–59 league standing and winning the Stanley Cup in the postseason play-offs for the fourth straight time. The league championship was the 11th for the Canadiens. The other team in the finals was Toronto, the second Canadian city in the six-team league. Montreal defeated Toronto's Maple Leafs, who had finished fourth in the regular season, 4 games to 1. This was the first time since 1951 that both Canadian cities had gained the final.

The top individual prize among the professionals was gained by Andy Bathgate of the New York Rangers. He received the Hart Trophy as the most valuable player to his team after receiving 133 points out of a possible 180. A league point-scoring record was set by Montreal's Dickie Moore, who registered 96 points on 41 goals and 55 assists. The Art Ross Trophy went to him for the second straight time. Jacques Plante of Montreal, for the fourth time in a row, took the Vezina Trophy for allowing the fewest goals. Others honored were Alex Delvecchio of the Detroit Red Wings, winner of the Lady Byng Trophy for sportsmanship combined with ability; Ralph Backstrom of Montreal, a center who was the outstanding rookie and winner of the Calder Memorial Trophy; and Tom Johnson of Montreal, who won the James Norris Memorial Trophy as the best defenseman.

Canadians had a little more trouble in amateur competition than they did among the professionals. In the world amateur tournament, which ended in Prague, Czechoslovakia, on March 15, the North Americans kept the title on a point-total basis after finishing in a won-lost tie with the Russians. The Soviet and the Canadian teams each had 4–1 records, but the Dominion skaters made 21 goals and allowed only 7, while the USSR sextet made 20 goals and permitted 10. A squad from the Soviet Union made a successful tour of the United States in January 1959. It was undefeated in 8 games, winning 5 and tying 3.

NATIONAL HOCKEY LEAGUE
(Final Standings, March 22)

Team	Won	Lost	Tied	Points	Goals for	Goals against
Montreal	39	18	13	91	258	158
Boston	32	29	9	73	205	215
Chicago	28	29	13	69	197	208
Toronto	27	32	11	65	189	201
New York	26	32	12	64	201	217
Detroit	25	37	8	58	167	218

Stanley Cup Play-offs

Semifinals—Montreal defeated Chicago, 4 games to 2; Toronto defeated Boston, 4 games to 3
Finals—Montreal defeated Toronto, 4 games to 1

OTHER PROFESSIONAL CHAMPIONS

American Hockey League—*Regular season:* Buffalo; *Calder Cup play-offs:* Hershey (defeated Buffalo in finals, 4 games to 2)
Western Hockey League—*Prairie Division:* Calgary; *Coast Division:* Seattle; *play-offs:* Seattle
Quebec Hockey League—*Regular season:* Montreal; *play-offs:* Montreal

AMATEUR CHAMPIONS

World—Canada (tied with USSR with 4 games won and 1 lost, but gained title for having scored more goals, 21 to the Soviet Union's 20)
International League—*Regular season:* Louisville; *play-offs:* Louisville
Eastern Hockey League—*Regular season:* Clinton, N.Y.; *play-offs:* Clinton
U.S. Amateur—*Senior:* Brockton (Mass.) Wetzells; *intermediate:* Minneapolis Royals

Canadian

Allan Cup (senior amateur)—Whitby Dunlops
Memorial Cup (junior amateur)—Winnipeg Braves
Intercollegiate—University of Toronto

United States Intercollegiate

NCAA—North Dakota
Pentagonal (Ivy) League—Dartmouth

HORSE RACING

Sword Dancer, who finished second to Tomy Lee in the Kentucky Derby and second to Royal Orbit in the Preakness, won the Belmont Stakes—the third jewel in throughbred racing's triple crown—and was named the horse of the year for 1959. The leading jockey of the year was Willie Shoemaker, who rode Tomy Lee in the Derby and Sword Dancer in the Belmont.

Before winning the Belmont, the three-year-old Sword Dancer outraced older horses in the Metropolitan Handicap at Jamaica, and after the Belmont he outran older horses in the Monmouth Handicap. Sword Dancer's final big test came in the Woodward Stakes at Aqueduct on September 26 against such formidable opponents as Round Table and Hillsdale. With Eddie Arcaro riding, the horse owned by Mrs. Isabel Dodge Sloane beat Hillsdale by a head, with Round Table finishing third. Sword Dancer scored over Round Table again in the two-mile Jockey Club Gold Cup at Aqueduct. Sword Dancer won $537,004 in 1959, the highest by any horse during the year.

Round Table, named the champion older horse by the Thoroughbred Racing Associations (TRA), was retired after the Jockey Club Gold Cup, having scored nine victories in the year and having earned $413,380. With a career total of 43 triumphs in 66 starts, Travis Kerr's horse won $1,749,869, the most ever gained by a racer.

Warfare, owned by Mr. and Mrs. Clifford Jones, took the honors among two-year-old colts. His victories included the Cowdin and Champagne Stakes at Aqueduct and the Garden State at Camden, N.J. The Garden State on October 31, a race for two-year-olds, had a gross of $283,075, with $157,845 taken by the victor. Warfare finished with $394,610 in earnings for the year. The record for two-year-olds, $396,460, was set by First Landing in 1958.

Silver Spoon, the first filly to win the $100,000 Santa Anita Derby, was the TRA choice as three-year-old filly of the year. My Dear Girl headed the list of two-year-old fillies. Among My Dear Girl's victories were the Gardenia and the Frizette.

In thoroughbred racing's Washington (D.C.) International, Bald Eagle, the United States entry from Cain Hoy Stable, was the winner.

Records for attendance, parimutuel betting, and revenue to the states were set in 1959, the annual Associated Press survey revealed. The 24-state survey (totals in some of these states were incomplete) showed that 30,484,807 fans, an increase of 3.43% over 1958, attended the races. The parimutuel turnover was $2,391,647,521, a gain of 7.07%. The states' share was $180,382,990, a 7.49% rise.

A new Aqueduct track in New York, built at a cost of $33 million, helped to attract the fans. From September 14 through November 30, Aqueduct drew a total of 1,847,592 spectators, a daily average of 27,994. The betting handle was $178,095,629, a daily average of $2,698,419.

THOROUGHBRED RACING ASSOCIATIONS CHAMPIONS

American Champion—Sword Dancer
Handicap Division—Round Table
Handicap Filly or Mare—Tempted
3-Year-Old Colt—Sword Dancer
3-Year-Old Filly—Silver Spoon
2-Year-Old Colt—Warfare
2-Year-Old Filly—My Dear Girl
Steeplechaser—Ancestor

STAKES WINNERS

American Derby (Washington Park)—Dunce
Arlington Classic—Dunce
Arlington Futurity—T.V. Lark
Arlington Handicap—Round Table
Arlington Lassie—Monarch
Beldame Handicap (Aqueduct)—Tempted
Belmont Stakes—Sword Dancer
Brooklyn Handicap (Jamaica)—Babu
California Stakes (Hollywood Park)—Hillsdale
Carter Handicap (Belmont Park)—Jimmer
Champagne Stakes (Aqueduct)—Warfare
Coaching Club American Oaks (Belmont Park)—Resaca
Del Mar Futurity—Azure's Orphan
Delaware Handicap—Endine
Dwyer Handicap (Jamaica)—Waltz
Flamingo Stakes (Hialeah Park)—Troilus
Florida Derby (Gulfstream Park)—Easy Spur
Frizette (Aqueduct)—My Dear Girl
Gallant Fox Handicap (Aqueduct)—Bald Eagle
Futurity (Aqueduct)—Weatherwise
Garden State Stakes—Warfare
Gardenia Stakes (Garden State Park)—My Dear Girl
Grand National Steeplechase (Aqueduct)—Sun Dog
Grey Lag Handicap (Jamaica)—Vertex
Gulfstream Park Handicap—Vertex
Hawthorne Gold Cup—Day Court
Hialeah Turf Cup—Tudor Era
Hollywood Gold Cup—Hillsdale
Hollywood Juvenile Championship—Noble Noor
Idlewild (Aqueduct)—The Irishman
Jersey Stakes (Garden State Park)—Waltz
Jockey Club Gold Cup (Aqueduct)—Sword Dancer
John B. Campbell Memorial Handicap (Bowie)—Vertex
Kentucky Derby (Churchill Downs)—Tomy Lee
Man o' War Handicap (Aqueduct)—*First Division:* Dotted Line; *Second Division:* Tudor Era
Massachusetts Handicap (Suffolk Downs)—Air Pilot
Metropolitan (Belmont Park)—Sword Dancer
Monmouth Handicap—Sword Dancer
New Castle (Delaware Park)—Tempted
Pimlico Futurity—Progressing
Preakness Stakes (Pimlico)—Royal Orbit
Princess Pat (Washington Park)—Heavenly Body
Roamer Handicap (Aqueduct)—Poly Lad
San Juan Capistrano (Santa Anita)—Royal Living
Santa Anita Derby—Silver Spoon
Santa Anita Handicap—Terrang
Santa Anita Maturity—Hillsdale
Saratoga Handicap—Bald Eagle
Stars and Stripes Stakes (Arlington)—Round Table
Suburban Handicap (Belmont Park)—Bald Eagle
Sunset Handicap (Hollywood Park)—Whodunit
Temple Gwathmey (Belmont)—Muguet II
Travers Stakes (Saratoga)—Sword Dancer
Trenton Handicap (Garden State Park)—Greek Star
United Nations Handicap (Atlantic City)—Round Table
Vineland Handicap (Garden State Park)—High Bid

Washington (D.C.) International (Laurel)—Bald Eagle
Washington Park Futurity—Venetian Way
Washington Park Handicap—Round Table
Widener Handicap (Hialeah Park)—Bardstown
Withers Stakes (Belmont Park)—Intentionally
Wood Memorial Stakes (Jamaica)—Manassa Mauler
Woodward Stakes (Aqueduct)—Sword Dancer
World's Playground (Atlantic City)—Vital Force

Foreign Races

Epsom Derby (England)—Parthia
Grand National Steeplechase (England)—Oxo
King George VI and Queen Elizabeth (England)—Alcide
Ascot Gold Cup (England)—Wallaby II
Melbourne Cup (Australia)—MacDougal
Prix de l'Arc de Triomphe (France)—Saint Crespin
Queen's Plate (Canada)—New Providence

Horse Shows

American Horse Shows Association
High-Score Winners

Open Jumper—Harry De Leyer's Snowman, St. James, N.Y.
Green Jumper—Mrs. Andrew L. Lewis' Lillibuck, Lederach, Pa.
Conformation Hunter—John S. Pettibone's The Duke of Paeonian, Middleburg, Va.
Green Conformation Hunter—Mr. and Mrs. L. Clay Camp's Sunset Hill, Shadwell, Va.
Working Hunter—Mr. and Mrs. Henry D. Paxson's Chappaqua, Holicong, Pa.
Green Working Hunter—Mrs. Henry D. Paxson's Flying Curlew
Hunter Pony—Elise and Billy Boyce, 3d's Smoky Joe, Glencoe, Md.
Junior Hunter—Wendy Wanamaker's Brave War, Philadelphia
Three-Gaited Saddle Horse—Linda Joan Travaini's Miss Laurel, Hackensack, N.J.
Five-Gaited Saddle Horse—M. Van Rapoport's Glorious Attraction, Boonton, N.J.
Fine Harness Horse—R. B. Christy's The Lemon Drop Kid, Scott City, Kans.
Hackney Pony—Mr. and Mrs. Charles Davis' King's Mystic Lady, Hannibal, Mo.
Harness Pony—Mr. and Mrs. Charles Davis' King's Sweet Rythm
Shetland Pony—P. R. Corey's Grandee Pompa Tom of Larigo, Columbus, Ohio
Roadster—W. M. Keck, Jr.'s Trick or Treat, Rosamond, Calif.
Arabian—Lloyd Brauninger, Sr.'s Mraff, Hubbard, Ohio
Morgan—Mr. and Mrs. John A. Noble's Dennisfield, Clarks Summit, Pa.
Stock—Olwen Beach's Red Hawk, La Jolla, Calif.

National Horse Show Championships
(Madison Square Garden, New York, November 3–10)

International Jumping (Individual)—William C. Steinkraus, U.S.
International Jumping (Team)—United States
Green Conformation Hunter—Mr. and Mrs. J. Deane Rucker's Cold Climate
Conformation Hunter—Mrs. Eleo R. Sears' Pikes Peak
Working Hunter—Peggy Augustus' Little Sailor
Open Jumper—Mr. and Mrs. W. R. Ballard's Windsor Castle
Fine Harness Horse—Sunnyslope Farms' The Lemon Drop Kid
Harness Pony (Long Tail)—Mr. and Mrs. Jacob Bunn, Jr.'s My Inspiration
Three-Gaited Saddle Horse (Amateur)—Margaret Wyse's Copper Rocket
Three-Gaited Saddle Horse (under 15.2)—Mr. and Mrs. Bunn's Fairview's Future
Three-Gaited Saddle Horse (over 15.2)—Dodge Stables' Belle of the Dell
Five-Gaited Saddle Horse (Amateur)—Margaret Wyse's Fair Warning
Small Pony—Parnell Gore's Pretty Penny
Large Pony—J. Rodman Wanamaker's Cathy
A.S.P.C.A. Equitation (Maclay)—Hank Minchin
A.H.S.A. Saddle Seat—Brienne Jorgensen
A.H.S.A. Hunter Seat—Wendy Hanson
Three-Gaited Grand Champion Harness Horse—Dodge Stables' Belle of the Dell
Five-Gaited Grand Champion Harness Horse—Mr. and Mrs. Bruce H. Seabright's Glamorous Lucretia
Hackney Pony (Short Tail)—Adolph Stors' Stables' King's Nanette

Horseshoe Pitching

World Champions—*Men:* Ted Allen, Boulder, Colo.; *women:* Vicki Chapelle, Portland, Oreg.; *junior:* Donnie Roberts, Lucasville, Ohio
National AAU Champion—Glenn Riffle, Dayton, Ohio

Ice Skating

Figure Skating

World Championships
(Colorado Springs, Colo., February 24–28)

Men—David Jenkins, Colorado Springs, Colo.
Women—Carol Heiss, Ozone Park, N.Y.
Pairs—Barbara Wagner and Robert Paul, Toronto, Ont.
Dance—Doreen Denny and Courtney Jones, Great Britain

European Championships
(Davos, Switzerland, February 2–8)

Men—Karel Divin, Czechoslovakia
Women—Hanna Walter, Austria
Dance—Doreen Denny and Courtney Jones, Great Britain

North American Championships
(Toronto, Ont., February 6–7)

Men—Don Jackson, Oshawa, Ontario
Women—Carol Heiss, Ozone Park, N.Y.
Pairs—Barbara Wagner and Robert Paul, Toronto
Dance—Geraldine Fenton and William McLachlan, Toronto

United States Championships
(Rochester, N.Y., January 29–February 1)

Men—David Jenkins, Colorado Springs, Colo.
Women—Carol Heiss, Ozone Park, N.Y.
Senior Pairs—Nancy and Ronald Ludington, Roxbury, Mass.
Gold Dance—Andree and Donald Jacoby, Syracuse, N.Y.
Silver Dance—Marilyn Meeker and Larry Pierce, Indianapolis
Junior Men—Gregory Kelley, Newton Center, Mass.
Junior Women—Laurence Owen, Winchester, Mass.
Junior Pairs—Julianne and Jerry Fotheringill, Tacoma, Wash.

Speed Skating

World Championships—Men
(Oslo, Norway, February 14–15)

All-Around—Juhani Jarvinen, Finland (190.155 pts.)
500 Meters—Gennadij Voronin, USSR (time: 0:42.4)
1,500 Meters—Toivo Salonen, Finland (2:15.8)
5,000 Meters—Jan Pesman, Netherlands (8:12.1)
10,000 Meters—Knut Johannesen, Norway (17:00.8)

World Championships—Women
(Sverdlovsk, USSR, February 28–March 1)

All-Around—Tamara Rylova, USSR (204.916 pts.)
500 Meters—Tamara Rylova and Sofia Kondakova, USSR (tied; time, 0:47.5)
1,000 Meters—Tamara Rylova (1:41.0)
1,500 Meters—Inga Artamonova, USSR (2:31.6)
3,000 Meters—Evi Huttunen, Finland (5:30.3)

North American Outdoor
(West Allis, Wis., February 7–8)

Senior Men

220 Yards—David Arends, Cedar Rapids, Iowa (0:18.0)
440 Yards—William Carow, Madison, Wis. (0.35.8)
880 Yards—Keith Meyer, Glen Ellyn, Ill. (1:22.2)
¾ Mile—Gene Sandvig, Minneapolis (2:12.3)
Mile—Phil Elliott, Chicago (3:20.0)
2 Miles—Keith Meyer (5:59.1)
5 Miles—Richard Hunt, Los Angeles (15:35.8)
Champions—Keith Meyer and Gene Sandvig (12 pts. each)

Senior Women

220 Yards—Jeanne Omelenchuk, Detroit (0:20.1)
440 Yards—Jeanne Omelenchuk (0:41.4)
880 Yards—Jeanne Omelenchuk (1:28.9)
¾ Mile—Jeanne Omelenchuk (2:19.0)
Mile—Jeanne Omelenchuk (3:26.4)
Champion—Jeanne Omelenchuk (25 pts.)

North American Indoor
(Lake Placid, N.Y., February 28–March 1)

Senior Men

440 Yards—Steve Stenson, College Point, N.Y. (0:41.8)
880 Yards—Steve Stenson (1:27.0)
¾ Mile—Don Beam, Binghamton, N.Y. (2:12.1)
Mile—Dick Ring, Brighton, Mass. (3:06.4)
2 Miles—Dan Mount, College Point, N.Y. (6:19.9)
Champion—Don Beam (17 pts.)

Senior Women

440 Yards—Jean Ashworth, Wilmington, Mass. (0:44.2)
880 Yards—Jean Ashworth (1:31.4)
¾ Mile—Jean Ashworth (2:38.2)
Mile—Jean Ashworth (3:27.8)
Champion—Jean Ashworth (20 pts.)

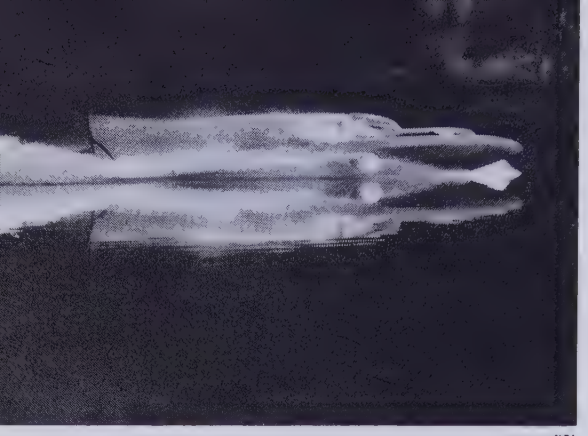
United States Outdoor
(St. Paul, Minn., January 31–February 1)

Senior Men

220 Yards—William Carow, Madison, Wis. (0:19.2)
440 Yards—Roland Carlson, Minneapolis (0:36.0)
880 Yards—Robert Snyder, Detroit (1:16.1)
¾ Mile—Ken Bartholomew, Minneapolis (2:20.1)
Mile—Ken Bartholomew (3:04.1)
2 Miles—Ken Bartholomew (5:46.6)
5 Miles—Ken Bartholomew (16:58.5)
Champion—Ken Bartholomew (21 pts.)

Senior Women

220 Yards—Jeanne Omelenchuk, Detroit (0:21.3)
440 Yards—Mary Novak, Lombard, Ill. (0:42.0)
880 Yards—Jeanne Omelenchuk (1:24.8)
¾ Mile—Jeanne Omelenchuk (2:19.3)
Mile—Jeanne Omelenchuk (3:04.5)
Champion—Jeanne Omelenchuk (20 pts.)



UPI

Skimming across Lake Coniston, England, in his jet-powered *Bluebird II* on May 14, Donald Campbell clocks an average of 260.35 mph. to better his own world water speed record.

United States Indoor
(Champaign, Ill., March 14–15)

Senior Men

440 Yards—Steve Stenson, College Point, N.Y. (0:38.3)
880 Yards—Steve Stenson (1:21.9)
¾ Mile—Steve Stenson (2:05.9)
Mile—Richard Hunt, Los Angeles (2:55.4)
2 Miles—Richard Hunt (6:30.3)
Champions—Steve Stenson and Richard Hunt (tied at 19 pts.)

Senior Women

440 Yards—Jean Ashworth (0:41.4)
880 Yards—Jean Ashworth (1:26.2)
¾ Mile—Jean Ashworth (2:21.3)
Mile—Jean Ashworth (3:14.8)
Champion—Jean Ashworth (20 pts.)

Judo

National AAU Championships
(San Jose, Calif., April 10–11)

130 Pounds—Sumi Nozaki, Gardena, Calif.
150 Pounds—Mas Yoshioka, Los Angeles
180 Pounds—Vincent Tamura, Chicago
Heavyweight—Lenwood Williams, Air Force
Grand Champion—Lenwood Williams, Air Force
Team—Southern California Club (19 pts.)

Lacrosse

National Open—Mt. Washington Club, Baltimore
Intercollegiate—Army, Johns Hopkins, and Maryland (co-champions); (division champions) *Cy Miller:* Johns Hopkins, Maryland, Army; *Laurie Cox:* Baltimore University; *Roy Taylor:* Lehigh University and Massachusetts Institute of Technology (co-champions)
North-South Game—South 10, North 9
Ivy League—Princeton

Motorboating

Major Races

Gold Cup—*Maverick* (William T. Waggoner, Jr., owner; Bill Stead, driver)
President's Cup—*Wahoo* (William Boeing, Jr., owner; Mira Slovak, driver)
Silver Cup—*Maverick*
Detroit Memorial Trophy—*Miss Supertest III* (J. Gordon Thompson, owner; Bob Hayward, driver)
Diamond Cup—*Maverick*
Harmsworth Trophy—*Miss Supertest III*
Governor's Trophy—*Hawaii Kai* (Joseph Mascari, owner; Ron Musson, driver)
International Sweepstakes Trophy—*Maverick*
Apple Cup—*Miss Pay'n' Save* (Ausland-Stoen-Anderson)
Lake Mead Cup—*Wahoo*
Martini-Rossi High Point Trophy (Season)—*Maverick* (2,525 pts.)

American Power Boat Association Champions

Inboard Hydroplanes

48-Cubic-Inch—F. C. Moor, Miami
91-Cubic-Inch—Jim Cox, Jr., Lake Alfred, Fla.
135-Cubic-Inch—R. Frank Neely, El Monte, Calif.
136-Cubic-Inch—Sidney Johnson, Cambridge, Md.
225-Cubic-Inch—Henry Vogel, Webster, N.Y.
266-Cubic-Inch—William Ritner, Gladwyn, Pa.
280-Cubic-Inch—Alton Pierson, Queenstown, Md.
Seven-Litre—George Byers, Columbus, Ohio
Pacific One-Design—Elmer Cravener, Long Beach, Calif.

Inboard Racing Runabouts

44-Cubic-Inch—A. P. Roques, Metairie, La.
Class B—Robert Rice, Arcadia, Calif.
Class E—Ralph Barker, Niagara Falls, N.Y.
Class E Service—Dick Cooper, Miami Beach
Class F Service—Henry Turner, Lake Hopatcong, N.J.
Crackerbox—Joe Herron, San Bruno, Calif.
Jersey Speed Skiff—James Camp, Newark, N.J.
Ski Racing—Les Brown, Oak Lawn, Ill.

Outboard Hydroplanes

Class A—Wally Adams, Auburndale, Fla.
Class B—David L. Christner, Quincy, Ill.
Class C—Jack Leek, Seattle
Class C Service—*Section I:* Homer Kincaid, Carbon Cliff, Ill.; *Section II:* Gerald Waldman, Milwaukee
Class D—Fred Goehl, Quincy, Ill.
Class F—Hubert Entrop, Seattle
Class M—E. S. Brady, Jr., Los Angeles

Outboard Runabouts

Class A Racing—Homer Kincaid
Class B Racing—Gene Hilton, Newton, N.C.
Class C Racing—Fred Goehl
Class F Racing—Chuck Parsons, Lodi, Calif.
Class C Service—Rocky Stone, Willamina, Oreg.

Stock Outboard Runabouts

Class AU—Edwin Wulf, Amityville, N.Y.
Class BU—Ronald Zuback, Morgan, N.J.
Class CU—Dean Mahaffey, Roseburg, Oreg.
Class DU—John Schedel, Secaucus, N.J.
Class JU—Jack Holden, Seattle
36 Class—William Kennedy, 3d, Halesite, N.Y.

Stock Outboard Hydroplanes

Class A—Edwin Wulf
Class B—Robert Hering
Class C—Bob Brown
Class D—Richard O'Dea, Paterson, N.J.

Cruiser Champions

National Predicted Log—*Hurricane III,* Dr. Allan B. DuMont, Cedar Grove, N.J. (6,637 pts.)
Herbert L. Stone Trophy—*Relax'n,* Wes Lance, Bellflower, Calif.
George W. Codrington Trophy—*Hurricane III*
Frederick W. Horenburger Trophy—*Hurricane III*
James Craig Trophy—*Reveller IV,* Frank Ruppert, Pomona, Calif.
International Trophy (Team)—New York A.C.
Express Cruiser Trophy—*Seafarer,* Anson Hoty, Red Bank, N.J.
Motor Yacht Trophy—*Valencia III,* V. J. Taubner, Pelham Manor, N.Y.
Frank Huckins Memorial Trophy—*Suzanne II,* D. W. Clephane, Larchmont, N.Y.
Bear Mountain Trophy—*Mar-Lin,* Lawrence Riordan, Nutley, N.J.

National Outboard Association Champions

Professional Hydroplanes

Class A—Bud Proffer, Flint, Mich.
Class B—Dale Kaus, Austin, Minn.
Class C—Dub Parker, Gadsden, Ala.
Class D—Dick Pond, Keokuk, Iowa
Class F—Arlen Crouch, Quincy, Ill.
Unlimited—Clay Pettefer, Lake Charles, La.

Professional Runabouts

Class A—Don Kinsey, St. Charles, Mich.
Class B—Bill Seebold, Jr., Granite City, Ill.
Class C—Stanley Levendusky, Kansas City, Kans.
Class C-1—Todd Brinkman, Springfield, Ill.
Class D—Fred Goehl, Quincy, Ill.
Class F Runabout—Clay Pettefer
Unlimited Runabout—Fred Goehl

Semiprofessional Hydroplanes

Class A—Bill Settle, Columbus, Ind.
Class B—D. Kendall, Sabetha, Kans.
Class C—Johnny Ayrs, Fort Smith, Ark.
Class D—W. F. Lavery, Jr., Cushing, Okla.

Semiprofessional Runabouts

Class A—Alan Collins, Columbus, Ind.
Class B—Ralph Collins, Columbus, Ind.
Class C—Bob Cotterman, Terre Haute, Ind.
Class D—Mike Lemon, Anderson, Ind.

High Point Drivers

Professional—Dick Pond (59,826 pts.)
Semiprofessional—Bill Settle (19,599 pts.)

Motorcycling

National Championships

Road Racing

200 Miles (Daytona Beach, Fla., March 8)—Brad Andres, San Diego, Calif. (driving an H-D; time, 2:45:04.0)
100 Miles—(Laconia, N.H., June 21)—Brad Andres (H-D; 1:42:59.47)

Cross-Country

153 Miles (Big Bear, Calif., Jan. 11)—Bud Ekins, Sherman Oaks, Calif. (Triumph, 4:20)

Endurance

500 Miles (Lansing, Mich., Sept. 6–7)—Sal Scirpo, Middletown, Conn. (Triumph, 978 pts.)
250 Miles (May 30)—John Penton, Columbus, Ohio (NSU, 833 pts.)

Hill Climb

Class A (Muskegon, Mich., Aug. 9)—*45 cu. in. amateur:* Harold Werner, Easton, Pa. (H-D, 0:08.08); *80 cu. in. professional:* Joe Hemmis, Cumberland, Md. (Triumph, 0:06.74)

Half-Mile Track

5 Miles (Minneapolis, Sept. 5)—Carroll Resweber, Cedarburg, Wis. (H-D, 4:24.93)
T.T. 7 Miles (Peoria, Ill., Aug. 30)—*45 cu. in.:* Dick Mann, El Sobrante, Calif. (BSA, 7:23.3); *80 cu. in.:* Duane Buchanan, Pekin, Ill. (H-D, 7:18.58)
8 Miles (Los Angeles, July 25)—Sammy Tanner, Houston, Texas (Triumph, 8:18.14)
10 Miles (Columbus, Ohio, June 28)—Dick Klamfoth, Groveport, Ohio (BSA, 9:14.48)
15 Miles (Heidelberg, Pa., June 14)—Dick Klamfoth (BSA, 13:58.39)

Mile Track

25 Miles (Sacramento, Calif., July 19)—Carroll Resweber (H-D, 18:13.23)
50 Miles (Springfield, Ill., Aug. 23)—Carroll Resweber (H-D, 33:25.11)

Grand National Point Champion

Carroll Resweber, Cedarburg, Wis. (52 pts.)

Pan-American Games

The third Pan-American Games were held in the United States in 1959, and the host team had little competition from the other 23 nations in the hemispheric meet. The United States was represented by a squad of 404 athletes at Chicago, where the games were held from August 27 to September 7.

Ray Norton and Lucinda Williams paced the United States in track, winning 3 gold medals each. The men's team won 18 of 22 gold medals in all, and the women's team took 8 of 10 gold medals.

The star in swimming was Chris von Saltza, who garnered 5 gold medals as the hosts swept the 10-event women's competition. The United States men won 9 of 10 events. Miss von Saltza, a 15-year-old from Santa Clara, Calif., scored in the 100-, 200-, and 400-meter freestyle, and helped win the freestyle and medley relays.

The United States swept all the wrestling titles, all the men's fencing honors, 11 of 12 men's gymnastic events, and 6 out of 7 championships in weightlifting. Victories also were scored by the United States in basketball, boxing, rowing, and shooting.

In one of the outstanding track events, Tom Murphy of Brooklyn defeated George Kerr of Jamaica in the 800-meter run. Kerr was the victor in the 400-meter run and also led the West Indies to victory in the 1,600-meter relay.

The United States finished with a total of 121 gold medals out of 164. Argentina was second in gold medals with 9. The other gold-medal winners were Brazil, 8; Canada, 7; Mexico, 6; Chile, 5; West Indies, 2; Bahamas, 2; Cuba, 2; Venezuela, 1; and Uruguay, 1.

Pentathlon, Modern

World Championships

(Hershey, Pennsylvania, September 26–30)

Individual Champion—Igor Novikov, USSR (4,847 pts.)
Team Champion—USSR (13,802 pts.); *2d:* Finland (13,287)

Polo

National Outdoor Champions

Open—Circle F, Dallas (Delmar Carroll, Ray Harrington, Jr., William A. Mayer, Russell Firestone, Jr.)
Intercircuit—Menlo Circus, Menlo Park, Calif. (William G. Gilmore, David S. Moore, Robert Skene, W. Mackall Jason)
12-Goal—Menlo Circus (Frank A. McNeilly, David S. Moore, Robert Skene, W. Mackall Jason)
20-Goal—Circle F (Russell Firestone, Jr., William A. Mayer, Ray Harrington, Jr., Lester Armour)
Butler Handicap—Oak Brook, Hinsdale, Ill. (Victor Graber, William Linfoot, Cecil Smith, Jack Murphy)

National Indoor Champions

12-Goal—Milwaukee (Paul Smithson, Jr., William E. Stevens, Donald G. McCarroll)
Sherman Memorial—Huntington (L.I.) Turtles (Joseph Schwartz, Arthur Nichols, Frank Rice)
Intercollegiate—Cornell (Bennet M. Baldwin, Peter D. Baldwin, Stanley R. Woolaway)

Racquets

National Amateur—Geoffrey Atkins, England; *doubles:* Clarence C. Pell, Jr., and C. E. Pearson, New York
Tuxedo Gold Cup—Geoffrey Atkins

Roller Skating

World Championships

(Christchurch, New Zealand, tourney ending January 12)

Singles—Robert Wollard, Santa Ana, Calif.; *women:* Carolyn Sliger, Oklahoma City
Figures—Darrell Glenn, Long Beach, Calif.; *women:* Christie Benda, Springfield, Mo.
Pairs—Ken Trotter and Ruth Heeseman, Mineola, N.Y.
Dance—Charles Wahlig and Claire Farrell, Elmont, N.Y.
Speed—John Drewry, Manasquan, N.J.; *women:* Suzanne Richardson, Detroit

Roller Skating Rink Operators Association Championships

(Boston, Mass., July 25–August 1)

Singles—*Senior:* James Mohler, North Sacramento, Calif.; *women's senior:* Sylvia Haffke, Agawam, Mass.
Pairs—*Senior:* Robert Wollard and Carol Stout, Santa Ana, Calif.; *senior dance:* Charles Wahlig and Claire Farrell, Elmont, N.Y.
Senior Fours—Mineola, N.Y. (Edmund Kline, Lillian Manzo, Kenneth Trotter, and Ruth Heeseman)
Speed—*Senior:* Gerald Gohs, Detroit; *women's senior:* Mary Merrell, Fullerton, Calif.

U.S. Amateur Roller Skating Association Championships

(Indianapolis, Ind., July 12–18)

Senior—David Julien, Livonia, Mich.; *women's senior:* Dawn Brown, Trenton, N.J.
Pairs—*Senior mixed:* David Julien and Linda Kobane, Livonia, Mich.; *women's senior:* Linda Beaton and Linda Kobane, Livonia, Mich.; *senior dance:* Marshall Rule and Gaile Gilmartin, Levittown, N.Y.
Senior Fours—Elizabeth, N.J. (Ernest Schmid, Barbara Jablonski, Paul Zukowski, and Dianne Ludwig)
Speed—*Senior:* James Richardson, Alexandria, Va.; *women's senior:* Geraldine Gehret, Reading, Pa.

Rowing

Intercollegiate Team Champions

I.R.A. Regatta (Syracuse, June 20)—*Varsity:* Wisconsin; *junior varsity:* California; *freshman:* Cornell; James Ten Eyck Trophy (team point total): Washington (14 pts.)
Yale-Harvard (New London, Conn., June 13)—*Varsity:* Harvard; *junior varsity:* Harvard; *freshman:* Yale
Eastern Association (Princeton, N.J., May 16)—*Varsity:* Harvard; *junior varsity:* Pennsylvania; *freshman:* Cornell
Eastern Association 150's (Cambridge, Mass., May 16)—*Varsity* (Wright Trophy): Harvard; *junior varsity:* Princeton; *freshman:* Harvard
Adams Cup—Harvard
Blackwell Cup—Yale
Carnegie Cup—Yale
Childs Cup—Pennsylvania
Compton Cup—Harvard
Dad Vail Trophy—Brown
Goes Trophy—Syracuse
Pennsylvania-Cornell—Pennsylvania
Washington-California—Washington
Oxford-Cambridge—Oxford

United States Championships

(Detroit, Mich., August 8–9)

Single Sculls—Harry Parker, Vesper B.C., Philadelphia
Double Sculls—Vesper B.C.
Pair-Oared Shell with Coxswain—Detroit B.C.
Pair-Oared Shell without Coxswain—Lake Washington R.C., Seattle
4-Oared Shell without Coxwain—Lake Washington R.C.
4-Oared Shell with Coxswain—Lake Washington R.C.

John Kelley, a schoolteacher from Groton, Conn., crosses the finish line four minutes ahead of his nearest rival to win the Pan-American Games marathon in Chicago, September 2. He covered the 26-mile, 385-yard course in 2:27:54.2.

WIDE WORLD

8-Oared Shell—Lake Washington R.C.
Association Single Sculls—Harry Parker
¼-Mile Dash—Paul Yeager, Potomac B.C., Washington, D.C.
Quadruple Sculls—Detroit B.C.
Intermediate 8-Oared Shell—St. Catharine's R.C., Canada
150-Pound Single Sculls—Robert Houston, New York A.C.
150-Pound ¼-Mile Single Sculls—Robert Houston
150-Pound Double Sculls—Detroit B.C.
150-Pound Quadruple Sculls—Detroit B.C.
150-Pound 4-Oared Shell with Coxswain—Detroit B.C.
150-Pound 8-Oared Shell—Detroit B.C.
Team (Barnes Trophy)—Detroit B.C. (233½ pts.)

British Henley
(Henley-on-Thames, England, July 4)

Diamond Sculls—Stuart MacKenzie, Australia
Grand Challenge Cup—Harvard
Thames Challenge Cup—Harvard
Four-Man Crews—Oxford
Double Sculls—Stuart MacKenzie, and Chris Davidge, England
Pairs—Oxford (R. B. Norton and H. H. Scurfield)

Canadian Henley
(Port Dalhousie, Ont., July 29–August 1)

Team Point Trophy—Detroit B.C. (428 pts.)
Senior Eights—Detroit B.C.
Singles—Pat Costello, Detroit B.C.
Doubles—New York A.C.

Shooting

Rifle

National Outdoor Champions

Smallbore—Cpl. Walter R. Kamila, U.S. Marine Corps
High Power (NRA match)—Ammon E. Bell, Hummelstown, Pa.
High Power (M-1 service)—Lt. Thomas W. Atwood, U.S. Army
Women's Smallbore—Lenore M. Jensen, Allen Park, Mich.
Women's High Power (NRA match)—Mrs. Miralotte Ickes, Berkeley, Calif.
Women's High Power (M-1 service)—Laura Boyt, Renton, Wash.
Civilian High Power (M-1 service)—Gerritt H. Stekeur, Latham, N.Y.

National Indoor Champions

Men—Lt. Milton Friend, U.S. Army
Women—Laura Boyt

Pistol

National Outdoor Champions

Men—Sgt. Huelet L. Benner, U.S. Army
Women—Irma Tesch, Lawton, Okla.

National Indoor Champion

Men—Sgt. William B. Blankenship, U.S. Army

Skeet

World Championships
(Lynnhaven, Va., August 2–8)

Open All-Around (4 guns aggregate)—B. C. Hartman, RCAF, Ottawa, Ont. (545 × 550)
Women's All-Around—Mrs. Katharine Dinning, Ruxton, Md. (528 × 550)
Industry All-Around—D. Lee Braun, San Mateo, Calif. (538 × 550)
Open All-Gauge—Robert Shuley, Roselle, Ill. (250 × 250)
Women's All-Gauge—Kathleen Fitchett, Baltimore (249 × 250)
Industry All-Gauge—D. Lee Braun (250 × 250)
Open 20-Gauge—Kenneth Sedlecky, Baldwin, Mich. (100 × 100)
Women's 20-Gauge—Mrs. Katharine Dinning (99 × 100)
Industry 20-Gauge—D. Lee Braun (100 × 100)
Open Small Gauge—Glenn Brown, Bloomsburg, Pa. (100 × 100)
Women's Small Gauge—Kathleen Fitchett (96 × 100)
Industry Small Gauge—Clifford Doughman, East Alton, Ill. (100 × 100)
Open Sub-Small Gauge—Alex H. Kerr, Beverly Hills, Calif. (99 × 100)
Women's Sub-Small Gauge—Mrs. C. A. McDowell, Jr., Shreveport, La. (89 × 100)
Industry Sub-Small Gauge—David Yeager, Anoka, Minn. (96 × 100)
Champion of Champions—Andy Laird, Stockton, Calif. (100 × 100)

Trap

Grand American Championships
(Vandalia, Ohio, August 21–29)

Grand American Handicap—Clyde Bailey, Oquawka, Ill. (21 yds., 99 × 100, 23–24 shoot-off)
Women's Grand American—Susan Hardy, Devon, Pa. (19 yds., 97 × 100)
Professional Grand American—R. L. Andrews, Jr., Jackson, Miss. (25 yds., 98 × 100)
Preliminary Handicap—Richard Krohn, Harvard, Ill. (19 yds., 99 × 100)
Women's Preliminary Handicap—Helen Hofman, Danville, Ill. (18 yds., 96 ×100, 23 shoot-off)
Professional Preliminary Handicap—Cliff Doughman, Alton, Ill. (27 yds. 94 × 100)
Champion of Champions—Arnold Riegger, Castle Rock, Wash. (100 × 100, 225 shoot-off)
Women's Champion of Champions—Vera Holdsworth, Calgary, Alberta (98 × 100, 24–24–25 shoot-off)
North American Clay Target—Kevin Onka, Sugar Creek, Mo. (200 × 200, 150 shoot-off)
Women's North American Clay Target—Helen Urban, Mentor, Ohio (199 × 200)
Professional North American Clay Target—Cliff Doughman (200 × 200)
High Over-All—John Kurth, Columbus, Wis. (972 × 1,000)
Women's High Over-All—Helen Urban (938 × 1,000)
Professional High Over-All—R. L. Andrews, Jr. (970 × 1,000)
National Doubles—Victor Reinders, Waukesha, Wis. (99 × 100)
Women's National Doubles—Iva Jarvis, Phillipsburg, Kans. (94 × 100)
Professional National Doubles—Cliff Doughman (99 × 100)
All-Around—Victor Reinders (390 × 400)
Women's All-Around—Iva Jarvis (374 × 400)
Professional All-Around—R. L. Andrews, Jr. (393 × 400)

Skiing

United States Championships

Jumping (Leavenworth, Wash., February 22)—Willie P. Erickson, Iron Mountain, Mich. (jumps of 273 and 268 ft.; 220.9 pts.)
Cross-Country—*30 Kilometers* (Andover, Me., March 14): Leo Massa, Finnish Ski Club, Jamaica, N.Y. (2:14:03); *15 Kilometers* (Steamboat Springs, Colo., March 6–7): Clarence Servold, Denver University (1:01:54)
Nordic Combined (Steamboat Springs, Colo., March 6–7)—Alfred Vincellette, Denver University (cross-country, 232 pts.; jumping, 219.2; total, 451.2)

Alpine
(Aspen, Colo., March 6–8)

Downhill—Bud Werner, Steamboat Springs, Colo., (2:16.2); *women:* Beverly Anderson, Mullan, Idaho (2:08.6)
Slalom—Bud Werner (total time for two runs, 2:13.1); *women:* Linda Meyers, Mammoth Lakes, Calif. (total time for two runs, 2:28.6)
Giant Slalom—Bud Werner (1:59.5); *women:* Beverly Anderson (1:40.6)
Triple Combined (downhill, slalom, and giant slalom)—Bud Werner (0.00 F.I.S. pts.); *women:* Linda Meyers (5.40 F.I.S. pts.)

North American Championships
(Squaw Valley, Calif., February 21–March 3)

Men

Special Jumping—Kalevi Karkinen, Finland (jumps of 278.8 and 290.3 ft.; 223.7 pts.)
Cross-Country—*15 Kilometers:* Pavel Kolchin, USSR (54:10.7); *30 Kilometers:* Sixten Jernberg, Sweden (1:52:59.9)
Nordic Combined—Dmitri Kochkin, USSR (60-meter jump, 224.5 pts.; 15-kilometer cross-country, 240; total, 464.5)
Downhill—Bud Werner, Steamboat Springs, Colo. (1:30.4)
Slalom—Bud Werner (total time for two runs, 2:13.9)
Giant Slalom—Christian Pravda, Sun Valley, Idaho (2:00.6)
Alpine Combined—Bud Werner (giant slalom, 2.82 pts.; slalom, 0.00; total, 2.82)
Biathlon (20-kilometer cross-country and shooting)—Lawrence Damon, Burlington, Vt. (1:48:09.3)

Women

Downhill—Linda Meyers, Mammoth Lakes, Calif. (2:05.2)
Slalom—Linda Meyers (total time for two runs, 2:00.7)
Giant Slalom—Joan Hannah, Franconia, N.H. (1:39.7)
Alpine Combined—Beverly Anderson, Mullan, Idaho (giant slalom, 0.17 pts.; slalom, 2.10; downhill, 0.76; total, 3.03)

National Collegiate AA Championships
(Winter Park, Colo., March 26–28)

Slalom—Marvin Melville, Utah (1:59.0)
Cross-Country (9 miles)—Clarence Servold, Denver (59:55.0)
Downhill—Marvin Melville (1:28.8)
Jumping—Dave Butts, Colorado (163 ft.; 222.0 pts.)
Combined Alpine—Marvin Melville (100.0 pts.)
Nordic Combined—Ted Farwell, Denver (96.7 pts.)
Team—Colorado (549.4 pts.)

Soccer

United States Champions

National Challenge Cup—McIlwaine Canvasbacks, San Pedro, Calif.
National Amateur Cup—Kutis S.C., St. Louis
National Junior Cup—New York Ukrainians
American League—Hakoah S.C., New York
Lewis Cup—Ukrainian Nationals, Philadelphia
New York State Cup—United Kingdom, New York
German-American League—New York Hungarians, New York
Eastern District League—Sons of Malta, New York
National League—United Kingdom, New York
NCAA—St. Louis University

British Champions

Football Association Cup—Nottingham Forest
English Football League—Wolverhampton Wanderers
Scottish League Cup—Hearts
Scottish Cup—St. Mirren
Scottish League (First Division)—Glasgow Rangers

Other Champions

World Cup—Brazil
European Cup—Real Madrid, Spain
French Association—Nice
Italian Soccer League—Milan Club
Spanish Cup—Barcelona

Softball

Amateur Softball Association Champions

Men—Sealmasters, Aurora, Ill.
Women—Raybestos Brakettes, Stratford, Conn.

Squash Racquets

U.S. Open—G. Diehl Mateer, Jr., Philadelphia
U.S. Professional—Al Chassard, Bethlehem, Pa.
U.S. Amateur—Ben Heckscher, Devon, Pa.; *women's singles:* Mrs. W. Pepper Constable, Jr., Princeton, N.J.; *men's doubles:* G. Diehl Mateer, Jr., and John Hentz, Philadelphia; *women's doubles:* Mrs. Charles Wetzel and Mrs. Carter Simonin, Philadelphia
Canadian Open—Henri Salaun, Boston

Squash Tennis

National Squash Tennis Association Championship—J. Lennox Porter, New York

Swimming

American swimmers excelled at home and abroad in 1959. In the United States, six world records were set during the Amateur Athletic Union's women's national championships at Redding, Calif., July 16–19. Three were made by Becky Collins of Indianapolis, two by Sylvia Ruuska of Berkeley, Calif., and one by Carin Cone of Ridgewood, N.J. Miss Collins lowered the 110-yard, 200-meter, and 220-yard butterfly marks. Miss Ruuska set standards for the 400-meter and 440-yard individual medley, and Miss Cone clipped the 220-yard backstroke record.

In the Pan-American Games at Chicago, Nancy Ramey of Mercer Island, Wash., lowered the 100-meter butterfly mark; Miss Cone clipped the record for the 100-meter backstroke; and the medley relay team of Miss Cone, Ann Bancroft, Miss Collins, and Chris von Saltza established a world record for 400 meters. Miss von Saltza, of Santa Clara, Calif., won 5 gold medals at the games.

Mike Troy of the Indianapolis Athletic Club set a men's butterfly mark for 200 meters in Los Altos, Calif., on July 11, and on July 25, in Tokyo, Frank McKinney, Jr., also of Indianapolis A.C., established a record for the 200-meter backstroke. The United States men's medley relay team (Elton Follett, Lance Larson, Jeff Farrell, and Joe Alkire), in a dual meet with Japan, cut the 400-meter mark on July 21. The American men split two dual meets with the Japanese, winning at Osaka, 37 to 33, and losing at Tokyo, 41 to 38.

In the annual swim across the English Channel, an American, Mrs. Greta Andersen Sonnischen, 31, was the first woman to finish and collected a prize of $1,400. The overall winner was Alfredo Camarero of Argentina, whose time against 22 rivals was 11 hours 48 minutes 26 seconds.

Jon and Ilsa Konrads of Australia continued to shatter world records. Jon lowered his freestyle standards for 220 yards, 440 yards, 800 meters, and 880 yards. Ilsa bettered her own marks in the 800-meter and 880-yard events and also improved on her 1,500-meter and 1,650-yard times. Tsuyoshi Yamanaka of Japan established freestyle records for 200 meters and 400 meters.

Men's AAU Outdoor Championships
(Los Altos, Calif., July 10–12)

100-Meter Freestyle—Jeff Farrell, Naval ROTC, Yale (time, 0:56.9)
200-Meter Freestyle—Jeff Farrell (2:06.9)
400-Meter Freestyle—Alan Somers, Indianapolis A.C. (4:30.6)
1,500-Meter Freestyle—Alan Somers (17:51.3)
100-Meter Backstroke—Frank McKinney, Jr., Indianapolis A.C. (1:03.6)
200-Meter Backstroke—Frank McKinney, Jr. (2:17.9; world record)
100-Meter Breaststroke—Manuel Sanguily, unatt., Columbus, Ohio, and Cuba (1:14.6)
200-Meter Breaststroke—Ronald Clark, Detroit A.C. (2:45.6)
100-Meter Butterfly—Lance Larson, Los Angeles A.C. (1:01.1)
200-Meter Butterfly—Mike Troy, Indianapolis A.C. (2:16.4; world record)
400-Meter Individual Medley—Bill Barton, Indianapolis A.C. (5:14.6)
400-Meter Medley Relay—Detroit A.C. (John Smith, David Gillanders, Ronald Clark, Carl Woolley; 4:21.9)

WIDE WORLD

Trio of United States swimmers admire flowers after victory in the 400-meter freestyle event at the Pan-American Games. Chris von Saltza (center), 15-year-old California star, won in 4:55.9, in one of five meet-record performances which earned her five gold medals. Sylvia Ruuska (right) finished second, and Donna Graham took third place.

800-Meter Freestyle Relay—Indianapolis A.C. (Alan Somers, Dennis O'Neil, George Breen, Mike Troy; 8:35.9)
3-Meter Springboard Diving—Don Harper, Cincinnati (532.3 pts.)
10-Meter Platform Diving (San Francisco, July 12)—Gary Tobian, Los Angeles Pan-Hellenic Club (463.1 pts.)
Team Champion—Indianapolis A.C. (102 pts.)
Long-Distance (4-mile) Championship (Grand Rapids, Mich., August 12)—*Individual:* Roy Saari, El Segundo Swim Club, Calif. (1:33:22.1); *team:* New York A.C. (Drury Gallagher, Kenneth Zinkand, Henry Frey; 21 pts.)

Men's AAU Indoor Championships
(New Haven, Conn., April 2-4)

100-Yard Freestyle—Lance Larson, Southern California (time, 0:49.2)
220-Yard Freestyle—Murray Rose, Southern California and Australia (2:02.2)
440-Yard Freestyle—Murray Rose (4:18.8)
1,500-Meter Freestyle—Murray Rose (18:18.4)
100-Yard Backstroke—Charles Bittick, S. Calif. (0:55.5)
220-Yard Backstroke—Frank McKinney, Jr., Bloomington, Ind. (2:16.1)
100-Yard Breaststroke—Norbert Rumpel, Southern Illinois and Germany (1:04.9)
220-Yard Breaststroke—Norbert Rumpel (2:36.1)
100-Yard Butterfly—Frank Legacki, Ann Arbor (0:53.6)
220-Yard Butterfly—Mike Troy, Bloomington (2:18.6)
200-Yard Individual Medley—Joe Hunsaker, San Jose, Calif. (2:07.0)
400-Yard Individual Medley—George Harrison, Stanford, Calif. (4:35.8)
400-Yard Medley Relay—New Haven Swim Club (Jim Dolbey, Joe Koletsky, Tim Jecko, Elton Follett; 3:47.0)
400-Yard Freestyle Relay—Southern California (Tom Winters, Don Redington, M. Rose, Jon Henricks; 3:21.1)
1-Meter Diving—Sam Hall, Columbus, Ohio (493.35 pts.)
3-Meter Diving—Jozsef Gerlach, Ann Arbor, and Hungary (505.7 pts.)
Individual High Point Scorer—Murray Rose (21 pts.)
Team—Southern California (62 pts.)

Women's AAU Outdoor Championships
(Redding, Calif., July 16–19)

110-Yard Freestyle—Chris von Saltza, Santa Clara (Calif.) S.C. (time, 1:04.8)
220-Yard Freestyle—Chris von Saltza (2:21.1)
440-Yard Freestyle—Chris von Saltza (4:59.6)
1-Mile Freestyle—Sylvia Ruuska, Berkeley (Calif.) YMCA (21:38.9)
110-Yard Backstroke—Carin Cone, Houston Shamrock Club (1:13.3)
220-Yard Backstroke—Carin Cone (2:37.9; world record)
110-Yard Breaststroke—Marianne Hargreaves, Kris Kristensen S.S., Los Angeles (1:22.4)
220-Yard Breaststroke—Ann Warner, Santa Clara S.C. (3:02.4)
110-Yard Butterfly—Becky Collins, Indianapolis Riviera Club (1:11.2; world record)
220-Yard Butterfly—Becky Collins (2:37.0; world record)
440-Yard Individual Medley—Sylvia Ruuska (5:40.2; world record)
440-Yard Freestyle Relay—Berkeley YMCA (Patricia Ruuska, Carolyn Schuler, Sylvia Ruuska, Ann Bancroft; 4:29.0)
440-Yard Medley Relay—Santa Clara S.C. Team A (Chris von Saltza, Ann Warner, Kathy Simcek, Doxey Ransom; 4:59.9)
1-Meter Diving—Irene MacDonald, Los Angeles A.C. (381.75 pts.)
3-Meter Diving—Irene MacDonald (467.75 pts.)

Platform Diving (San Francisco, July 12)—Paula Jean Myers Pope, unatt., Los Angeles (250.70 pts.)
Leading Scorer—Chris von Saltza (26 pts.)
Team—Berkeley YMCA (76 pts.)
Long-Distance (3-mile) Championship (Grand Rapids, Mich., August 12)—*Individual:* Donna Graham, Indianapolis Riviera Club (1:15:47.5); *team:* Indianapolis Riviera Club (Donna Graham, Patsy Harrower, Nancy Galvich; 7 pts.)

Women's AAU Indoor Championships
(West Palm Beach, Fla., April 9–11)

100-Yard Freestyle—Shirley Stobs, Miami Shores (Fla.) C.C. (time, 0:57.7)
250-Yard Freestyle—Molly Botkin, Los Angeles A.C. (2:44.4)
500-Yard Freestyle—Sylvia Ruuska, Berkeley (Calif.) YMCA (5:46.6)
100-Yard Backstroke—Carin Cone, U. of Houston (1:04.3)
200-Yard Backstroke—Carin Cone (2:20.2)
100-Yard Butterfly—Nancy Ramey, Washington Athletic Club, Seattle (1:02.0)
200-Yard Butterfly—Becky Collins, Indianapolis Riviera Club (2:16.8)
100-Yard Breaststroke—Linda Clark, unatt., Los Angeles (1:13.6)
250-Yard Breaststroke—Susie Ordogh, Washington A.C. (3:24.3)
400-Yard Individual Medley—Sylvia Ruuska (4:58.2)
400-Yard Medley Relay—Berkeley YMCA (Ann Bancroft, Carolyn Schuler, Patricia and Sylvia Ruuska; 4:25.4)
400-Yard Freestyle Relay—Berkeley YMCA (Ann Bancroft, Carolyn Schuler, Patricia and Sylvia Ruuska; 3:59.5)
1-Meter Diving—Irene MacDonald, Los Angeles A.C. (414.15 pts.)
3-Meter Diving—Barbara Gilders, Detroit A.C. (461.50 pts.)
Individual High Point Scorer—Sylvia Ruuska (22 pts.)
Team—Berkeley YMCA (78 pts.)

National Collegiate AA Championships
(Ithaca, N.Y., March 26–28)

50-Yard Freestyle—Fred Westphal, Wisconsin (time, 0:22.3)
100-Yard Freestyle—Frank Legacki, Michigan (0:49.6)
220-Yard Freestyle—Dick Hanley, Michigan (2:04.3)
440-Yard Freestyle—Bill Steuart, Michigan State and South Africa (4:31.9)
1,500-Meter Freestyle—Bill Steuart (18:26.2)
400-Yard Freestyle Relay—Michigan (John McGuire, Carl Woolley, Dick Hanley, Frank Legacki; 3:21.6)
100-Yard Backstroke—Frank McKinney, Indiana (0:56.1)
200-Yard Backstroke—Frank McKinney (2:01.4)
100-Yard Butterfly—David Gillanders, Michigan (0:54.1)
200-Yard Butterfly—David Gillanders (2:02.5)
100-Yard Breaststroke—Gordon Collet, Oklahoma (1:03.2)
200-Yard Breaststroke—Bill Mulliken, Miami University, Ohio (2:21.3)
200-Yard Individual Medley—George Harrison, Stanford (2:06.7)
400-Yard Medley Relay—Michigan (John Smith, Ron Clark, David Gillanders, Dick Hanley; 3:46.1)
1-Meter Diving—Ron O'Brien, Ohio State (468.95 pts.)
3-Meter Diving—Sam Hall, Ohio State (465.1 pts.)
Team—Michigan (137½ pts.)

College Conferences

Eastern Intercollegiate—Yale
Eastern Collegiate—Pittsburgh
Mason-Dixon—American University
Atlantic Coast—North Carolina
Southeastern—Florida
Southwest—Southern Methodist
Mid-American—Bowling Green State
Midwest—Grinnell
Missouri Valley—Cincinnati
Western (Big Ten)—Michigan
Big Eight—Oklahoma
Mountain States—Wyoming

Table Tennis

U.S. Table Tennis Association Championships (Inglewood, Calif., March 13–15)—*Singles:* Bobby Gusikoff, New York; *women's singles:* Susie Hoshi, Los Angeles; *doubles:* Sol Schiff and Bobby Gusikoff, New York; *women's doubles:* Tiny Eller, Culver City, Calif., and Susie Hoshi; *mixed doubles:* Sol Schiff and Tiny Eller
World Table Tennis Championships (Dortmund, Germany, March 27–April 5)—*Team:* Japan; *women's team:* Japan; *singles:* Jung Kuo-Tuan, China; *women's singles:* Kimiyo Matsuzaki, Japan; *doubles:* Ichiro Ogimura and Teruo Murakami, Japan; *women's doubles:* Taeko Namba and Kazuko Yamaizumi, Japan; *mixed doubles:* Ichiro Ogimura and Fujie Eguchi, Japan

Tennis

The United States lost the Davis Cup to Australia nine months after it had won it; the chief American tennis hope, Alejandro (Alex) Olmedo of Peru, lost in the national singles two months after winning the Wimbledon final; and amateur tennis in the United States lost its top-ranked player when Olmedo turned professional and joined Jack Kramer's troupe on December 1. Thus, amateur tennis in the United States was in an unsettled condition at the year's end.

Olmedo, who won two singles and helped in the doubles as the United States beat Australia in the 1958 Davis Cup matches, was in good form during the Wimbledon tournament. He beat Rod Laver of Australia, 6–4, 6–3, 6–4, there on July 3 to win the All-England title, considered the top amateur tennis prize. But Olmedo subsequently was disqualified from the United States clay-court championships in Chicago on July 16 for listless play, after he lost to Abe Segal of South Africa, 6–2, 6–1, 6–0. Then, in the Davis Cup challenge round at Forest Hills, N.Y., Olmedo lost the opening match to Neale Fraser of Australia, 8–6, 6–8, 6–4, 8–6. Barry MacKay defeated Laver, 7–5, 6–4, 6–1, in the second match. Fraser then teamed up with Roy Emerson to check Olmedo and Earl Buchholz, 7–5, 7–5, 6–4, in doubles. Olmedo regained a little prestige and evened the series at 2-all by beating Laver, 9–7, 4–6, 10–8, 12–10, in the fourth match, which lasted 3 hours and 8 minutes—the longest 4-set match in challenge-round history. The Australians won the cup as Fraser beat MacKay, 8–6, 3–6, 6–2, 6–4, in the deciding match that was postponed after 2 sets because of darkness and completed the next day. Fraser then beat Olmedo in the national singles, 6–3, 5–7, 6–2, 6–4, at Forest Hills on September 13.

Olmedo's setbacks halted what had started as a runaway of amateur titles for South Americans. For while Olmedo was piling up honors, Maria Bueno of Brazil was sweeping the women's laurels. She took the final at Wimbledon by beating Darlene Hard of Montebello, Calif., 6–4, 6–3, and won the United States singles title by defeating Christine Truman of England, 6–1, 6–4.

Pancho Gonzales retained his world professional tennis title with a record of 47 victories and 15 losses on the professional tour, to Lew Hoad's 42–20 mark.

Major Amateur Tournaments

Davis Cup—Australia (defeated United States, 3–2, at Forest Hills, N.Y., Aug. 28–31)
Wightman Cup (Women)—United States (defeated Britain, 4–3, at Sewickley, Pa., in tourney ending Aug. 16)
U.S. Outdoor Doubles (Brookline, Mass.; finals, Aug. 23)—Neale Fraser and Roy Emerson, Australia; *women:* Jeanne Arth, St. Paul, and Darlene Hard, Montebello, Calif.
U.S. Outdoor Singles and Mixed Doubles (Forest Hills, N.Y.; finals, Sept. 13–14)—Neale Fraser; *women:* Maria Bueno, Brazil; *mixed doubles:* Mrs. Margaret du Pont, Wilmington, Del., and Neale Fraser
U.S. Clay Court (Chicago; finals, July 20)—Bernard Bartzen, Dallas; *doubles:* Bernard Bartzen and Grant Golden, Evanston, Ill.; *women's singles:* Sally Moore, Bakersfield, Calif.; *women's doubles:* Sandra Reynolds and Renee Schuurman, South Africa
U.S. Men's Indoor (New York; finals, Feb. 23)—Alejandro (Alex) Olmedo, Los Angeles and Peru; *doubles:* Alex Olmedo and Barry MacKay, Dayton, Ohio
U.S. Women's Indoor (Brookline, Mass.; finals, Feb. 27)—Lois Felix, Meriden, Conn.; *doubles:* Lois Felix and Kay Hubbell, Conway, N.H.; *mixed doubles:* Mrs. Mildred Johnson, Boston, and Dr. Donald Manchester, Auburndale, Mass.
Australian National (Adelaide; finals, Jan. 26)—Alex Olmedo; *doubles:* Rod Laver and Bob Mark, Australia; *women's singles:* Mrs. Mary Reitano, Australia; *women's doubles:* Renee Schuurman and Mrs. Mary Reitano; *mixed doubles:* Sandra Reynolds and Bob Mark
Wimbledon (England; finals, July 3–4)—Alex Olmedo; *men's doubles:* Roy Emerson and Neale Fraser; *women's singles:* Maria Bueno; *women's doubles:* Jeanne Arth and Darlene Hard; *mixed doubles:* Darlene Hard and Rod Laver
French International (Paris; finals, May 30–31)—Nicola Pietrangeli, Italy; *men's doubles:* Nicola Pietrangeli and Orlando Sirola, Italy; *women's singles:* Christine Truman, Britain; *women's doubles:* Sandra Reynolds and Renee Schuurman; *mixed doubles:* Yola Ramirez, Mexico, and Billy Knight, Britain

Major Collegiate Champions

NCAA—*Singles:* Whitney Reed, San Jose State; *doubles:* Ron Holmberg and Crawford Henry, Tulane
Eastern Tennis Association—Yale
Atlantic Coast—North Carolina
Southern—George Washington
Southeastern—Tulane
Southwest—Rice
Missouri Valley—Wichita
Western (Big Ten)—Michigan
Big Eight—Oklahoma State
Pacific Coast—U.C.L.A.

Track and Field

Even though 1959 was not an Olympic year, there was considerable international competition, with the United States serving as host. Domestic track and field activities featured an extraordinary sequence of world record-breaking performances, particularly in indoor meets.

The Soviet Union track and field squad made its first trip to the United States, and the results of the visit by the Americans to Moscow the previous year were repeated.

This time the United States increased its winning margin in the men's competition by 1 point, scoring 127 to 108 before a crowd of 54,380 at the July 18–19 meet in Franklin Field, Philadelphia. The American women again lost, by 67 to 40, getting 4 fewer points than in 1958.

In the Pan-American Games, held at Chicago August 27 to September 7, the United States team won 18 of the 22 gold medals in track, with Ray Norton and Lucinda Williams taking 3 apiece—2 each in sprints and 1 each on relay teams.

Earlier in the year, five world records were set on the same day in New York. The marks, made on February 21 at the Amateur Athletic Union's 71st national championships, were for the high jump, mile and three-mile runs, the shot-put, and the 35-pound weight throw. John Thomas of Boston University cleared 7 feet 1¼ inches at Madison Square Garden to become the first person to reach that height, indoors or out; Ron Delany of Villanova lowered his own world indoor mile mark to 4:02.5; Lt. Bill Dellinger of the Air Force set a three-mile record in 13:37; Parry O'Brien of the Southern California Striders surpassed his own shot-put mark with 62 feet 1¾ inches; and Bob Backus of the New York Athletic Club raised the 35-pound weight-throw standard to 66 feet 2¾ inches.

Delany subsequently lowered the mile mark to 4:01.4 while extending to 40 (including 34 one-mile runs) his string of indoor victories over a four-year span. Other indoor records were set by Don Bragg, who pole-vaulted to 15 feet 9½ inches, and by Al Lawrence, who sped two miles in 8:46.8.

O'Brien also surpassed his outdoor record in the shot-put with efforts of 63 feet 2½ inches and 63 feet 4 inches. Another record-breaker was Lt. Al Cantello of the Marines, who sent the javelin 282 feet 3½ inches.

Vasily Kuznetsov of the Soviet Union regained the decathlon record by scoring 8,357 points. Another Russian, Oleg Fedoseyev, bettered the hop, step, and jump mark with 54 feet 9½ inches.

Martin Lauer of Germany clipped the standard for the 110-meter hurdles with a 13.2-second clocking, but his method of starting placed the record under challenge. A Pole, Edmund Piatowski, improved the discus-throw record with a heave of 196 feet 6½ inches. Dan Waern of Sweden reduced his own 1,000-meter run record to 2:17.8.

(See also above, *Cross-Country.*)

USSR-U.S. Track and Field Meet
(Philadelphia, July 18–19)

Men

100 Meters—Ray Norton, U.S. (time, 0:10.3)
200 Meters—Ray Norton, U.S. (0:20.7)
400 Meters—Eddie Southern, U.S. (0:46.2)
800 Meters—Tom Murphy, U.S. (1:48.5)
1,500 Meters—Dyrol Burleson, U.S. (3:49.4)
5,000 Meters—Aleksandr Artynyuk, USSR (14:17.8)
10,000 Meters—Aleksei Desyatchikov, USSR (31:40.6)
3,000-Meter Steeplechase—Semyon Rzhishchin, USSR (8:51.6)
20-Kilometer Walk—Vladimir Golubnichy, USSR (1:38:-20.2)
110-Meter High Hurdles—Hayes Jones, U.S. (0:13.6)
400-Meter Hurdles—Josh Culbreath, U.S. (0:50.5)
400-Meter Relay—U.S. (Bob Poynter, Hayes Jones, Vance Robinson, Ray Norton; 0:39.8)
1,600-Meter Relay—U.S. (Dave Mills, Tom Murphy, Jack Yerman, Eddie Southern; 3:07.0)
High Jump—Robert Shavlakidze, USSR (6 ft. 9 in.)
Broad Jump—Gregory Bell, U.S. (26 ft. 7 in.)
Hop, Step and Jump—Konstantin Tsygankov, USSR (52 ft. 4 in.)
Pole Vault—Don Bragg, U.S. (15 ft. 2¾ in.)
Shot-Put—Parry O'Brien, U.S. (63 ft. 2½ in.; world record)
Discus—Al Oerter, U.S. (188 ft. 9 in.)
Javelin—Al Cantello, U.S. (262 ft. 5 in.)
Hammer Throw—Vasily Rudenkov, USSR (219 ft.)
Decathlon—Vasily Kuznetsov, USSR (8,350 pts.)
Team Scores—U.S., 127 pts.; USSR, 108 pts.

Women

100 Meters—Barbara Jones, U.S. (0:11.7)
200 Meters—Lucinda Williams, U.S. (0:23.4)
800 Meters—Lyudmila Lysenko-Shevtsova, USSR (2:11.3)
80-Meter Hurdles—Galina Bystrova, USSR (0:11.0)
400-Meter Relay—USSR (Vera Krepkina, Valentina Maslovskaya, Nonna Polyakova, Galina Popova; 0:44.8)
High Jump—Taisiya Chenchik, USSR (5 ft. 10 in.)
Broad Jump—Vera Krepkina, USSR (20 ft. 3 in.)
Shot-Put—Tamara Press, USSR (55 ft. 6¾ in.)
Discus—Mme. Nina Ponomareva, USSR (181 ft. 1½ in.)
Javelin—Mme. Birute Kaledene, USSR (181 ft. 8 in.)
Team Scores—USSR, 67 pts.; U.S., 40 pts.

Men's AAU Outdoor Championships
(Boulder, Colo., June 19–20)

100 Meters—Ray Norton, Santa Clara (Calif.) Youth Village (time, 0:10.5)
200 Meters—Ray Norton (0:20.8)
400 Meters—Eddie Southern, Texas (0:46.1)
800 Meters—Tom Murphy, New York A.C. (1:47.9)
1,500 Meters—Dyrol Burleson, Oregon (3:47.5)
5,000 Meters—Bill Dellinger, U.S. Air Force (14:47.6)
10,000 Meters—Max Truex, S. Calif. Striders (31:22.4)
110-Meter High Hurdles—Lee Calhoun, North Carolina College A.A. (0:14.0)
200-Meter Low Hurdles—Charles Tidwell, Kansas (0:22.6)
400-Meter Hurdles—Dick Howard, New Mexico (0:50.7)
3,000-Meter Steeplechase—Phil Coleman, U. of Chicago Track Club (9:19.3)
3,000-Meter Walk—Elliott Denman, New York Pioneer Club (13:52.2)
Pole Vault—Don Bragg, U.S. Army (15 ft. 3 in.)
Hammer Throw—Harold Connolly, S. Calif. Striders (216 ft. 10 in.)
Javelin Throw—Al Cantello, U.S. Marines (246 ft. 9 in.)
Discus Throw—Al Oerter, New York A.C. (186 ft. 5 in.)
High Jump—Charles Dumas, S. Calif. Striders (6 ft. 9 in.)
Shot-Put—Parry O'Brien, S. Calif. Striders (62 ft. 2¼ in.)
Hop, Step, and Jump—Ira Davis, Philadelphia Pioneer Club (50 ft. 6½ in.)
Broad Jump—Gregory Bell, Fort Wayne (Ind.) A.C. (26 ft. 1¼ in.)
56-Pound Weight Throw—Bob Backus, New York A.C. (44 ft. 3½ in.)
Team—Southern California Striders (144 pts.)

Senior Outdoor Relays
(Buffalo, N.Y., August 23)

440 Yards—U. of Chicago Track Club (Ed Houston, Frank Loomos, Willie May, Ward Miller, Jr.; 0:42.5)
Mile—New York Pioneer Club (Glenn Shane, James Phipps, James Grant, Harry Bright; 3:14.6)
2½-Mile Medley—New York A.C. (Thomas Murphy, Brian Condon, Peter Close, Edward Moran; 10:00.4)

Long-Distance Events

Marathon (Yonkers, N.Y., May 24)—John J. Kelley, Boston A.A. (2:21:54.4)
Hour Run (Costa Mesa, Calif., September 7)—Tom Ryan, Culver City (Calif.) A.C. (11 mi. 314 yds.)
15-Kilometer Run (Atlantic City, N.J., October 25)—Alex Breckenridge, U.S. Marines (45:12.0)
20-Kilometer Run (Needham, Mass., July 4)—John J. Kelley (1:04:08.6)
25-Kilometer Run (Schenectady, N.Y., September 20)—John J. Kelley (1:18:00.0)
10-Kilometer Walk (Staten Island, N.Y., May 3)—Bruce MacDonald, New York Pioneer Club (49:42.0)
20-Kilometer Walk (Baltimore, Md., June 14)—Rudolph J. Haluza, New York Pioneer Club (1:32:36.0)
25-Kilometer Walk (Chicago, August 30)—Rudolph J. Haluza (2:14:04.0)
30-Kilometer Walk (Los Angeles, May 17)—Ferenc Sipos, Vancouver Olympic Club (2:46:20.0)
35-Kilometer Walk (West Seattle, July 25)—Ferenc Sipos (3:12:44.4)
40-Kilometer Walk (Asbury Park, N.J., October 18)—Ronald Laird, N.Y. Pioneer Club (3:53:22.5)
50-Kilometer Walk (Pittsburgh, Pa., July 5)—Elliott Denman, N.Y. Pioneer Club (5:07:47.0)

Other Events

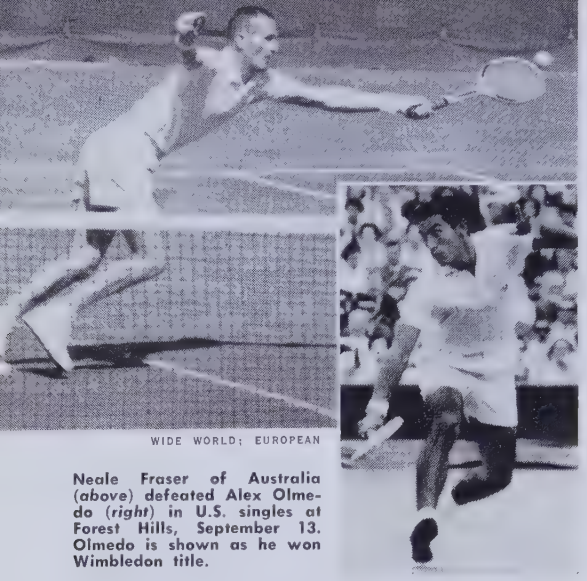
AAU All-Around (College Park, Md., August 9)—Tom Pagani, New York A.C. (7,874 pts.)
AAU Decathlon (Kingsburg, Calif., June 25–26)—Chuan-Kwang Yang, Taiwan (7,549 pts.)
AAU Pentathlon (El Monte, Calif., July 10)—Dixon J. Farmer, Orinda, Calif. (3,196 pts.)
Boston Marathon (Boston, Mass., April 19, 26 mi. 385 yds.)—Eino Oksanen, Finland (2:22:42.0)

Men's AAU Indoor Championships
(Madison Square Garden, New York, N.Y., February 21)

60 Yards—Paul Winder, Morgan State (time, 0:06.1)
60-Yard High Hurdles—Elias Gilbert, Winston-Salem Teachers College (0:07.3)
600 Yards—Josh Culbreath, Philadelphia Pioneer Club (1:11.1)
1,000 Yards—Zbigniew Orywal, Poland (2:12.6)
Mile—Ronald Delany, Villanova (4:02.5; world record)
3 Miles—Bill Dellinger, U.S. Air Force (13:37.0; world record)
Mile Walk—John Humcke, New York A.C. (6:42.2)
1,060-Yard Sprint Medley Relay (440–100–220–300)—Villanova (Ed Collymore, Joe Mannion, James Blackburn, Charles Stead; 1:53.2)
Mile Relay—Morgan State College (Louis Smith, Thomas Anderson, Hosea Smith, Nicholson Ellis; 3:16.6)
2-Mile Relay—Yale (James Stack, Ned Roache, Ed Slowik, Tom Carroll; 7:39.8)
Broad Jump—Mike Herman, New York University (tied at 25 ft. ¾ in. with John Douglas, Bates College; declared winner on basis of next-best jump)
High Jump—John Thomas, Boston University (7 ft. 1¼ in.; world record)
Pole Vault—Don Bragg, Shanahan Catholic Club, Philadelphia (15 ft. 1 in.)
16-Pound Shot-Put—Parry O'Brien, Southern California Striders (62 ft. 1¾ in.; world record)
35-Pound Weight Throw—Bob Backus, New York A.C. (66 ft. 2¾ in.; world record)
Team—New York Athletic Club (21½ pts.)

Women's AAU Outdoor Championships
(Cleveland, Ohio, June 28)

60 Meters—Isabelle Daniels, Tennessee State (time, 0:07.6)



WIDE WORLD; EUROPEAN

Neale Fraser of Australia (*above*) defeated Alex Olmedo (*right*) in U.S. singles at Forest Hills, September 13. Olmedo is shown as he won Wimbledon title.

100 Meters—Wilma Rudolph, Tennessee State (0:12.1)
200 Meters—Isabelle Daniels (0:24.1)
400 Meters—Kimberly Polson, Spartan (Los Angeles) A.C. (0:59.0)
800 Meters—Grace Butcher, Cleveland Magyar A.C. (2:21.2)
80-Meter Hurdles—Shirley Crowder, Tennessee State (0:11.7)
400-Meter Relay—Tennessee State Team "A" (Martha Hudson, Isabelle Daniels, Wilma Rudolph, Lucinda Williams; 0:47.5)
4-Kilogram Shot-Put—Earlene Brown, Spartan A.C. (46 ft. 4¾ in.)
Discus Throw—Earlene Brown (153 ft. 8 in.)
Javelin Throw—Marjorie Larney, Queens (N.Y.) Mercurettes (152 ft. 9½ in.)
Broad Jump—Margaret Matthews, Tennessee State (19 ft. 4½ in.)
High Jump—Lis Josefson, Spartan A.C. (5 ft. 4 in.)
Team—Tennessee State (132 pts.)
Pentathlon (Emporia, Kans., September 26)—Ann Roniger, unatt. (4,075 pts.)

Women's AAU Indoor Championships
(Washington, D.C., January 24)

50 Yards—Wilma Rudolph, Tennessee State (time, 0:06.2)
100 Yards—Martha Hudson, Tennessee State (0:11.4)
220 Yards—Lucinda Williams, Tennessee State (0:26.6)
440 Yards—Lillian Green, New York Police Athletic League (1:03.4)
880 Yards—Harriett Douthitt, Cleveland Recreation Department (2:36.3)
70-Yard Hurdles—Joan Terry, Tennessee State (0:09.7)
440-Yard Relay—New York P.A.L. (Barbara Brown, Linda Wood, Lillian Green, Louise Mead; 0:52.4)
440-Yard Medley Relay—Tennessee State (Wilma Rudolph, Shirley Crowder, Martha Hudson, Lucinda Williams; 0:52.3)
Standing Broad Jump—Joan Terry (8 ft. 11 in.)
Running High Jump—Ann Flynn, German-American A.C. (5 ft. ½ in.)
4-Kilogram Shot-Put—Marjorie Larney, Queens (N.Y.) Mercurettes (39 ft. 7¼ in.)
Basketball Throw—Amelia Wood, Queens (N.Y.) Mercurettes (101 ft. 8½ in.)
Team—Tennessee State University (61½ pts.)

National Collegiate AA Championships
(Lincoln, Nebr., June 12–13)

100 Yards—Charles Tidwell, Kansas (time, 0:09.3)
220 Yards—Ray Norton, San Jose State (0:20.9)
440 Yards—Eddie Southern, Texas (0:46.4)
880 Yards—George Kerr, Illinois (1:47.8)
Mile—Jim Grelle, Oregon (4:03.9)
3 Miles—Paul Whiteley, Emporia State (13:59.1)
3,000-Meter Steeplechase—John Macy, Houston U. (9:19.1)
120-Yard High Hurdles—Hayes Jones, Eastern Michigan (0:13.6)
220-Yard Low Hurdles—Hayes Jones (0:22.5)
400-Meter Hurdles—Dick Howard, New Mexico (0:50.6)
High Jump—Wayne Moss, Oregon State, and Errol Williams, San Jose State (tied at 6 ft. 9¾ in.)
Broad Jump—Ernie Shelby, Kansas (25 ft. 5 in.)
Hop, Step, and Jump—Jack Smyth, Houston U. (49 ft. 7¼ in.)
Pole Vault—Jim Graham, Oklahoma State (15 ft. 2 in.)
Shot-Put—Carl Shine, Pennsylvania (57 ft. 11¾ in.)
Discus Throw—Dick Cochran, Missouri (178 ft.)
Javelin Throw—Bill Alley, Kansas (240 ft. 5½ in.)
Hammer Throw—John Lawlor, Boston U. (207 ft. 5 in.)
Team—Kansas (73 pts.)

Other College Team Champions

Heptagonal Games—*Indoor and outdoor:* Yale
ICAAAA—*Indoor and outdoor:* Penn State
NAIA—Winston-Salem
Middle Atlantic Conference—St. Joseph's and West Chester College (tied)
Atlantic Coast—*Indoor and outdoor:* Maryland
Southern—*Indoor:* V.M.I.; *outdoor:* The Citadel
Southeastern—Louisiana State
Southwest—Texas
Central Collegiate—*Indoor:* Western Michigan; *outdoor:* Kansas
Western (Big Ten)—*Indoor:* Michigan; *outdoor:* Illinois
Big Eight—*Indoor and outdoor:* Kansas
Missouri Valley—Houston
Pacific Coast—Southern California

Volleyball

U.S. Volleyball Association Championships (Des Moines, Iowa, May 6–9)—*Open:* Hollywood (Calif.) Stars; *masters:* Hollywood (Calif.) Comets; *intercollegiate:* George Williams College; *women:* Santa Monica (Calif.) Mariners; *armed forces:* Los Alamitos (Calif.) Naval Air Station

Water Polo

AAU—*Indoor:* Illinois Athletic Club (defeated New York A.C. in final, 11–7); *outdoor:* San Francisco Olympic Club (defeated New York A.C. in final, 8–7)

Water Skiing

World Championships
(Milan, Italy, September 3–7)

Jumping—Buster McCalla, Cypress Gardens, Fla.
Slalom—Charles Stearns, South Bellflower, Calif.
Combined—Charles Stearns
Figure—Philippe Logut, France

Women

Jumping—Nancie Rideout, Cypress Gardens, Fla.
Slalom—Vicki Van Hook, Long Beach, Calif.
Combined—Vicki Van Hook
Figure—Piera Castelvetri, Italy

United States Championships
(Laconia, N.H., August 21–23)

Men's Slalom—Joe Cash, Sarasota, Fla.
Men's Jump—Buster McCalla and Mike Osborn, Cypress Gardens, Fla. (tied)
Men's Tricks—Charles Stearns, South Bellflower, Calif.
Men's Overall—Mike Osborn
Women's Slalom—Nancie Rideout, Cypress Gardens, Fla.
Women's Jump—Nancie Rideout
Women's Tricks—Vickie Vance, North Sacramento, Calif.
Women's Overall—Nancie Rideout

Weightlifting

World Championships
(Warsaw, Poland, September 29–October 4)

Bantamweight—Vladimir Stogov, USSR
Featherweight—Marian Zielinski, Poland
Lightweight—Victor Boushouyev, USSR
Middleweight—Tommy Kono, United States
Light Heavyweight—Rudolf Plukfelder, USSR
Middle Heavyweight—Lewis Martin, Britain
Heavyweight—Jurij Vlasov, USSR
Team—USSR

National AAU Championships
(York, Pa., July 31–August 1)

123-Pound Class—Charles Vinci, Jr., York (Pa.) Barbell Club (700 lbs.)
132-Pound Class—Isaac Berger, York B.C. (740)
148-Pound Class—Paul Goldberg, York B.C. (780)
165-Pound Class—Tommy Kono, York B.C. (905)
181-Pound Class—James George, American College Modern, Akron, Ohio (900)
198-Pound Class—Clyde Emrich, York B.C. (945)
Heavyweight Class—Dave Ashman, York B.C. (1,040)
"Mr. America" Contest—Harry Johnson

Wrestling

National AAU Championships
(Stillwater, Okla., April 15–18)

Freestyle

114½ Pounds—Dick Wilson, Toledo
125½ Pounds—Terrance McCann, Tulsa YMCA
136½ Pounds—Yoshitaka Nishiwaki, Japan
147½ Pounds—Newton Copple, Lincoln, Nebr.
160½ Pounds—Fritz Fivian, Oregon State
174 Pounds—Jim Ferguson, Lansing (Mich.) Recreation Club
191 Pounds—Frank Rosenmayr, San Francisco Olympic Club
Heavyweight—Bill Kerslake, Cleveland
Outstanding Wrestler—Terrance McCann
Team—Cowboy Athletic Club, Oklahoma (31 pts.)

Greco-Roman

114½ Pounds—Dick Wilson, Toledo
125½ Pounds—Masaaki Hatta, Cowboy A.C.
136½ Pounds—Eisuke Kitamara, Kansai University, Japan

147½ Pounds—Ben Northrup, San Francisco Olympic Club
160½ Pounds—Fred Boger, Irving Park, Chicago
174 Pounds—Julius Beno, San Francisco Olympic Club
191 Pounds—Adnan Kaisy, Cowboy A.C.
Heavyweight—Bill Kerslake, Cleveland
Team—Cowboy Athletic Club, Oklahoma (21 pts.)

NATIONAL COLLEGIATE AA CHAMPIONSHIPS
(Iowa City, Iowa, March 27–28)

115 Pounds—Andy Fitch, Yale
123 Pounds—Dave Auble, Cornell
130 Pounds—Stan Abel, Oklahoma
137 Pounds—Larry Hayes, Iowa State
147 Pounds—Ron Gray, Iowa State
157 Pounds—Dick Beattie, Oklahoma State
167 Pounds—Ed Hamer, Lehigh University
177 Pounds—Bill Wright, Minnesota
191 Pounds—Gordon Trapp, Iowa
Heavyweight—Ted Ellis, Oklahoma State
Team—Oklahoma State

YACHTING

NORTH AMERICAN CHAMPIONS

Men's (Mallory Cup)—Harry C. Melges, Jr., Lake Geneva, Wis.
Women's (Adams Trophy)—Mrs. James Mertz, Rye, N.Y.
Junior (Sears Cup)—John Welch, Hudson, Quebec

ONE-DESIGN CLASSES

Star World—Lowell North, San Diego
Star North American—Gary Comer, Chicago
Snipe World—Paul Elvstrom, Denmark
Snipe National—Dick Tillman, Atlanta, Ga.
Lightning International—Herman Nickels, Fenton, Mich.
Comet International—John M. MacCausland, Drexel Hill, Pa.
110 World—Al Frost, Jr., San Diego
Raven National—Al Bartolotti, Detroit
Highlander International—Mark Bratton, Corpus Christi, Texas
International One-Design World—Herman Whiton, Oyster Bay, N.Y.
Thistle National—Jerry Jenkins, Grosse Pointe, Mich.
Flying Dutchman World—Mario Capio, Italy
6-Meter North American—James C. Crang, Toronto
5.5-Meter National—Sewickley Syndicate, Pittsburgh
Luders 16 International—Cyril Cooper, Bermuda
Flying Dutchman North American—Pat and Jack Duane, Delray Beach, Fla.
Atlantic National—Hoyt O. Perry, Jr., Southport, Conn.
Finn Monotype National—Jack Knights, Annapolis, Md.
5–0–5 National—Walter Bowden, San Antonio
210 National—Edwin A. Hills, Hingham, Mass.

INTERNATIONAL

Scandinavian Gold Cup (5.5-meter)—Lasse Thoern, Sweden
King Olav Cup (6-meter)—Magnus Konow, Oyster Bay, N.Y.
International Challenge Cup (canoe)—William Kempner and Alan Emus, England

DISTANCE EVENTS

Annapolis to Newport—H. Irving Pratt's sloop *Caper*, Oyster Bay, N.Y.
Los Angeles to Honolulu—Peter Grant's sloop *Nalu II*, Newport Beach, Calif.
Chicago to Mackinac—W. J. Peacock's yawl *Feather II*, Evanston, Ill.
Port Huron to Mackinac—Wilfred Gmeiner's sloop *Apache*, Grosse Pointe, Mich.
Southern Ocean Racing Conference—Jack Marvin Brown's yawl *Callooh*, New York
Storm Trysail Block Island—Robert N. Bavier, Jr.'s sloop *Memory*, Noroton, Conn.
Fastnet Cup—Sven Hansen's yawl *Anitra*, Sweden
Buenos Aires to Rio de Janeiro—Raul G. Decker's *Tango*, Argentina

INTERCOLLEGIATE

National Dinghy (Morss Trophy)—Harvard (Hanson Robbins and W. G. Saltonstall)
Atlantic Coast Invitation (McMillan Cup)—Princeton (Ross E. Sherbrooke, James Sinclair, William Cox, Jr., George Gardner)

GEORGE MCNICKLE,
Research Assistant, "The Encyclopedia of Sports" (New and Revised Edition).

SPUTNIK SATELLITES. See SPACE FLIGHT.

STAMPS. See PHILATELY; POST OFFICE DEPARTMENT.

STANDARDS, National Bureau of. See NATIONAL BUREAU OF STANDARDS.

STANDARDS OF LIVING (LEVELS OF LIVING). **United States.**—Consumers' purchasing power and real consumption rose strongly to set new per capita records in the first half of 1959, as employment and incomes reached new highs while average prices held steady. The totals changed only slightly in the second half of the year, despite the prolonged steel strike.

Expenditures.—Consumers' real takings of durable goods in the first three quarters of 1959 were 14% higher than the relatively low levels of a year earlier. Consumers' real consumption of nondurables and services, which had moved upward in 1958 despite the recession, rose another 4%. Total real purchases of goods and services in mid-1959 were 5.5% above the prerecession high in the third quarter of 1957. Since population grew about 3% over this period, real per capita consumption advanced some 2.5%.

Consumer outlays in 1959 generally continued to follow in the broad patterns of recent years, with durable goods showing the largest fluctuation, nondurable goods taking a fairly steady share, and services rising in relative importance. (See also RETAIL STORE SALES.) Of every dollar of consumer income in 1958, 40 cents were spent for nondurable and 10 cents on durable goods, and 32 cents on services; 12 cents went to personal taxes, and 6 cents to savings.

Consumer demand for major household goods in 1959 reflected rising incomes, a pick-up in homebuilding, and some of the buying postponed from the recession of 1957–58. Items which were being produced at record rates in mid-1959 included laundry and refrigeration appliances, furniture and floor coverings, water heaters, dishwashers, and food waste disposals. Output also rose for radio and television sets, but remained well under previous peaks. In May 1959, 89% of urban homes, 73% of farm homes, and 86% of rural nonfarm homes had television sets.

Automobile sales increased to 6 million, the highest total since the record of 7.5 million in 1955. The number of privately owned passenger cars rose 1.5 million to exceed 58 million, or one car for every 3 persons. About 70% of all spending units owned one or more cars in early 1959; the proportion of multicar owners rose to 12% from 5% in 1953. (See also AUTOMOBILES.)

John Thomas, 17-year-old Boston University freshman, who cleared the bar at 7 feet 1¼ inches (marker shows nearest inch) in world record leap at Madison Square Garden, Feb. 21, 1959. At the Garden on Feb. 20, 1960, he raised the height to new world record of 7 feet 2 inches.

UPI

The energy value of the per capita food supply in 1959 continued at about 3,200 calories daily, as compared with the estimated requirement of 2,640 calories. Per capita consumption of meat was about 158.5 pounds, some 4% more than in 1958 and 25% above the 1935–39 average; consumption of poultry products also rose strongly over the year. Butter use fell to the lowest annual rate on record, although total use of food fats and oils continued at 46 pounds (fat content) per person.

The U.S. Department of Agriculture estimated that in July 1959, under a low-cost budget meeting recommended nutritional needs, one week's food for a couple with two school children would cost $24.

The rising outlays for services, in real terms, reflected a variety of built-in increases in levels of living. Electricity used per residential consumer averaged 3,366 kilowatt-hours in 1958, more than double the 1948 figure of 1,563, as a result of the greater use of appliances. Expenditures for health and medical care in the fiscal year 1958 totaled $23 billion, of which $17 billion were private outlays; the total in 1958 exceeded 5% of the gross national product, compared with 3.6% in 1928–29.

Changing patterns of leisure activity are shown in the expenditures for participation-type recreation, which have more than doubled since 1947, while admissions to spectator sports have risen only slightly. Fishermen and hunters spent nearly $3 billion, including trip expenses in 1955, according to the U.S. Fish and Wildlife Service. Boating, swimming, and bowling are other expanding mass-participant sports. Some 22 million people visited the national parks in 1959, 5% more than the previous year's record.

Homebuilding activity was at a near-record pace in early 1959 but tapered off after the spring, as the supply of mortgage funds tightened. Some 1,380,000 units were started—slightly under the all-time high of 1950. About 60% of all white and 40% of all nonwhite nonfarm families were homeowners in early 1959, as compared with 53% and 31%, respectively, in 1949; 44% of the owner-occupied homes had no mortgage debt. The median price of the new and existing houses purchased in 1958 was $12,300, and the median debt incurred was $9,300. (See also HOUSING.)

Income.—Personal income rose sharply in 1959 to a record annual rate of $387 billion, 9% above the prerecession peak. The record figure reflected a new employment record—half a million above the earlier high in 1957—increased wage rates, and longer hours. Per capita disposable income averaged $1,891 in 1959, a rise in real terms of about 2.2% from the previous high in 1957. Personal incomes in 1958 were highest on a per capita basis in Connecticut and Delaware, averaging more than double the rates in the lowest-ranking states —Arkansas, South Carolina, and Mississippi.

The average (mean) family personal income, including nonmoney income, of the 55.3 million consumer units in 1959 reached a new record high of $6,470. Their purchasing power, after allowing for federal individual income tax liabilities of about $640 and state and local income taxes of about $40, was some 1½% above the previous peak in 1957. The annual rise in real purchasing power per family has averaged 1¾% since 1947 and 1¼% in the three decades since 1929. The proportion with incomes under $4,000 (in 1958 dollars) was 36% in 1958, as against about 47% in 1947. The families with the lowest incomes were on the average an older group, with larger proportions of nonwhite and female heads, than the low-income families of a decade earlier. (See also INCOME.)

Debt and Savings.—Consumer debt, which moves with demand for durable goods and with the rise in personal incomes, rose sharply throughout 1959. The total outstanding in October 1959 was $6.2 billion, or 14%, higher than a year earlier. Extensions of new instalment debt during October were at a seasonally adjusted rate of $4.2 billion a month, while repayments totaled $3.7 billion—in both cases a record. Repayments constituted about 13% of income after taxes—about the same as in the three previous years, but well above the earlier postwar years. (See also CONSUMER CREDIT.)

Savings, nevertheless, continued high, averaging about 7% of disposable incomes in 1959, as compared with rates of 7.4% to 7.9% in the three previous years and 6.4% in 1955. About 60% of all spending units held liquid assets of less than $500 in early 1959, and about 10% held $5,000 or more—about the same ratios as in earlier postwar years. (See also SAVINGS.)

The net equity of individuals (financial assets less liabilities, excluding corporate securities) rose $16 billion in 1958 to $363 billion. The increase was $2 billion less than the postwar record set in 1957, but well above other postwar years. In addition, individuals owned corporate stocks and bonds with a market value of $377 billion, representing a large increase over the year of $110 billion. Highlights of the 1958 savings picture were a substantial liquidation of United States government issues, a postwar record growth in individuals' savings accounts in banks and savings and loan associations, and record purchases of investment company shares. Mortgage debt rose more than in the year earlier, but other consumer debt did not change.

The Department of Labor in 1959 issued an illustrated book, *How American Buying Habits Change,* which gave a comprehensive description of changes since 1888 in the levels of living of American city workers. Subjects covered included the broadened base of consumption, the increasing emphasis on leisure-time activities and education, the changes in the housewife's job, and the improvements in clothing, diet, and housing.

World Food Production.—World food output rose about 4% in 1958–59, after two years of no increase, exceeding by a fourth the average for the years 1948–49 to 1952–53. In the less-developed regions as a whole, growth in food production has exceeded population growth by about 1% in recent years, but per capita food supplies are only somewhat higher than before World War II. In many of the rice-producing countries of Asia and in parts of Latin America and Africa, production is falling behind or barely keeping up with population growth. Retail food prices rose in 1958 in 70 of the 89 countries for which data exist. (See also AGRICULTURE.)

Canada.—Consumer expenditures rose 5% in 1958 to a new high, but about half of the increase was due to higher prices, particularly for food. The rise in real personal consumption expenditures was exceeded by the growth in population, however, so that real per capita consumption fell slightly for the second successive year. Personal savings, on the other hand, rose to 9% of disposable income, one of the highest peacetime ratios on record.

Disposable personal income rose 7% in 1958, despite employment declines in mining, manufacturing, and forestry. Higher unemployment insurance payments, increased pensions and family allowances, a gain of 3.7% in average weekly wages and salaries, and expanded employment in the service industries were major factors. In the first half of 1959, earnings of factory workers rose

about 2%, while retail prices held steady. Some 163,000 homes were started in 1958, 25,000 more than the previous high in 1955.

Latin America.—Real gross output in Latin America increased some 3% in 1958, about the same as the population rise. Since there was a change in the balance of trade toward increased imports, however, average consumption levels rose about 1%; the increase in 1957 was about 4%. Real per capita income held stationary, for a total rise in the last three years of 2%.

Earlier inflationary pressures, due to monetary policies as well as to rising demand, accelerated in 1958 and early 1959 in Argentina, Brazil, and Chile. Reported changes were not very marked during this period, however, in Mexico, Venezeula, Colombia, Ecuador, and the Central American countries. Wages also rose in many countries, notably Argentina, Chile, Brazil, and Uruguay.

Rapid increases in slum districts, because of an influx of poverty-stricken peasants, and declines in prices of raw materials, have added to the region's social problems. (See also INTER-AMERICAN AFFAIRS.)

Western Europe.—Personal consumption and the construction of dwellings were major supports in the western European economy, which expanded in 1958 at a slower rate than in the two earlier years. Real private consumption rose some 3% in most countries, but dropped in Finland and Norway, and was unchanged in France. Expenditures continued to shift away from textiles and clothing and toward household durable goods; sales of automobiles rose rapidly in most countries.

Prices were stable in 1958 and early 1959, except in Spain and France, where a sharp rise in 1958 was followed by stability throughout the first half of 1959. Wages also held relatively steady in most countries, except France and West Germany, where they rose moderately.

Data on consumer expenditures in 1956 showed that in the less industrialized countries, food, clothing, and shelter, plus beverages and tobacco, took 80% to 90% of total outlays, compared with 75% or less in the others, and 60% in the United States. Supplies of consumers' durable goods were rising rapidly in a number of countries, but were still low relative to the United States. Between 6% and 17% of households with electricity in most industrial countries had refrigerators in 1956 (with the exception of 42% in Sweden), as against 95% in the United States; wide differences also existed for washing machines, radios, and television receivers.

Eastern Europe and USSR.—Per capita real incomes in 1958 were increased only slightly in Hungary, Poland, and Czechoslovakia, after strong advances in the two earlier years. The rates of increase were slowed down markedly in most other countries, apparently to keep a better balance between demand and available supplies than occurred in 1956 and 1957, when consumers' purchasing power rose faster than supplies. Exceptions were Albania, where the average rose faster than in 1957, and Eastern Germany, where wages and social security benefits were increased to offset de-rationing of food and the resultant price increases. In the Soviet Union, real personal income apparently rose about 5%. Since 1952, real wages had gone up some 30% and peasants' real income, 60%.

Per capita demand for foods, especially of higher quality, was still expanding everywhere; price reductions, credit, and other means were used by most countries to divert a larger share of consumers' purchasing to manufactured goods. Food, beverages, and tobacco absorbed half or more of net family expenditure in eastern Europe.

In early 1959, price, wage, and social security changes were introduced in most countries, indicating that a significant increase in personal consumption was planned for 1959, after the 1958 slowdown.

The rate of homebuilding in virtually every country in 1958 was enough for population growth and replacement needs, but there was much deterioration in existing housing in towns. Supplies of consumers' durable goods, except for such items as bicycles and radios, were still very small.

The number of doctors per 10,000 inhabitants, in 1956 and 1957, ranged from 8 in Poland and 12 in Rumania and Bulgaria to 15 in Czechoslovakia and 17 in the Soviet Union. Hospital beds per 10,000 inhabitants were between 40 and 50 in Poland and Rumania, about 70 in Bulgaria, Czechoslovakia, Hungary and the Soviet Union, and 117 in Eastern Germany.

Middle East.—The agrarian reform project in Egypt, which was started in 1952, was almost completed in 1958, affecting 9% of the country's total cultivated area. About 200,000 farming families were estimated to have benefited from the distribution of land. Programs along similar lines were started in Syria and Iraq late in 1958, and distribution of government and crown lands continued in Turkey and Iran.

Per capita consumption in 1958 was barely maintained in Turkey, due to the government's austerity program, and in Syria, as cereal crops were reduced. Consumption was reduced in the Sudan because of the effects of a sharp drop in cotton output. Increases in Israel were in excess of the high rate of population growth.

Cost of living indexes rose considerably in early 1959 in Turkey and Iran, but were holding steady in most other countries in the region.

Asia and the Far East.—Average consumption levels fell in 1958 in the region as a whole, but an improvement was apparently under way in early 1959. Declines were sharpest in India, Indonesia, and Pakistan, and also occurred in Burma and Thailand. Consumption probably rose in Ceylon, Taiwan, the Federation of Malaya, Singapore, Japan, southern Korea, and the Philippines. Reports of extremely large gains for 1958 came from Communist China, but United Nations analysts had not been able to appraise them.

Apparent per capita consumption of cotton cloth—the most important clothing material in Asian countries—rose from 5 meters in 1950 to more than 9 meters in 1956. In 1956 the highest averages were 22 meters in Japan and 13 in the Federation of Malaya; the lowest, 6 meters or less, were reported in Pakistan, the Philippines, South Vietnam and Burma.

Serious social problems in most cities in the region have been aggravated by heavy migration resulting from industrialization, rural population pressures, and social unrest and insecurity. There has been a general lowering of standards and reduction of facilities per capita for the city population, although expansions of planning and social service programs have helped somewhat to ameliorate conditions.

Oceania.—Real domestic consumption expanded in the fiscal year 1957–58 in both Australia and New Zealand, with the gains in Australia exceeding the high rate of population growth. Tax increases in New Zealand reduced the growth trend during late 1958.

Prices in Australia rose 18% between 1953 and mid-1959, while weekly factory earnings for men went up 30%. In New Zealand, prices were up 22% over the same period and men's wages rose 20%.

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STARS. See ASTRONOMY.

STATE DEPARTMENT, U.S. See FOREIGN POLICY OF THE U.S.; UNITED STATES.

STATE GUARD. See NATIONAL GUARD.

STEEL. See IRON AND STEEL.

STEREOPHONIC RECORDINGS. See RECORDS, PHONOGRAPH.

STERLING AREA. See Index entry.

STEVENSON, Adlai Ewing, American political leader: b. Los Angeles, Calif., Feb. 5, 1900. Despite his repeated disavowals of interest in a third presidential candidacy, speculation grew in late 1959 over Stevenson's role in the complex Democratic nomination picture and the possibility that the 1960 national convention would turn to him again, especially in the event of a stalemate. These considerations arose not only from his high ranking among Democratic aspirants in public opinion surveys, but also from the conviction that he might not be disinclined to accept a draft. There were also signs that the ardor which Stevenson had aroused among rank-and-file voters of his party in previous campaigns had not diminished appreciably.

Educated at Princeton University (B.A., 1922), Harvard University Law School, and Northwestern University, Stevenson was admitted to the Illinois bar in 1926 and subsequently served as counsel to various federal agencies and as special assistant to the secretary of the Navy. Named assistant to the secretary of state in 1945, he became in turn senior adviser and alternate delegate of the United States delegation to the U.N. General Assembly in 1946–47.

In his first candidacy for public office, he was elected Democratic governor of Illinois for the 1949–53 term, but before it expired he was chosen as the Democratic candidate in the 1952 presidential elections, despite his reluctance. Although decisively defeated by President Eisenhower in that year's election, he eagerly sought and obtained the Democratic presidential nomination in 1956. Overwhelmingly defeated a second time by President Eisenhower, he announced afterward that he would not again be a candidate for the presidency, and resumed private law practice.

In the years following, Stevenson continued to speak

out on major foreign and domestic issues. In the summer of 1958 he visited several countries of Europe, Asia, and Africa, meeting with a number of world leaders including Soviet Premier Khrushchev. Later in the year, at the administration's request, he spent two weeks helping Secretary of State Dulles and other State Department officials draft a program for the meeting of NATO heads of government in Paris, December 16–18. He declined an invitation to attend the Paris conference, contending that it would place him in a position "without authority and necessarily identified with decisions I might not always agree with and could not publicly oppose."

Rumblings of informal efforts to draft Stevenson for the Democratic presidential nomination began to be heard in the autumn of 1959, but the first widely publicized action came in Wisconsin on November 14. At the state Democratic convention there, the mention of his name touched off an ovation, and a few hours later a Wisconsin for Stevenson Committee was organized. But by February 1960 the rosy hopes of his supporters began to fade, and many party strategists were discounting his chances as a contender. Just before Stevenson embarked on a two-month tour of Latin America, plans for a nationwide draft movement were suddenly abandoned.

Stevenson's position throughout all this maneuvering was to state emphatically his refusal to permit the entry of his name in any presidential primary, and to reiterate his opposition to any draft movement, although he avoided making a positive statement that he would turn down such a draft if it were forthcoming.

The former Illinois governor, in speeches and articles, criticized the administration on a number of foreign and domestic issues in 1959, although he applauded (March 5) the president's firm stand on preserving Allied rights in Berlin. In a speech at McGill University, Montreal, on May 29, Stevenson asserted that the disparity in living standards between Western nations and the underdeveloped regions constituted "the most important and fateful fact in the world today." He warned that this problem would not be solved by individual national efforts, but required rather a concerted international "program of education and basic development which will give the world's masses the opportunity to help themselves. . . ."

On the domestic front, Stevenson proposed on December 8 that new labor legislation be enacted to afford greater recognition of the public welfare in periods of prolonged strikes. He also suggested that the president be given much wider authority than exists under the Taft-Hartley Act to maintain production during negotiations.

Stevenson met in private conversation with Soviet Premier Khrushchev on September 23, during the Soviet leader's visit to a farm in Coon Rapids, Iowa. He reported afterward that the premier's position on East-West issues seemed more flexible than when he had visited him in Moscow the previous summer.

STOCKS AND BONDS. After having scored a 39% rise in 1958, the stock market slowed its tempo in 1959. The advance in average prices from the beginning of the year to the August peak was less than 11%, and the extreme range for the year amounted to less than 15%. After its moderate advance in the first seven months, the market followed an uneven course, ending the year closer to its high, for a net gain of only 8.5%.

For the most part, stocks paralleled the business and profits curve. Industrial activity rose sharply until the steel strike started in July; the Federal Reserve Board's production index, which stood at 143 in January, reached a record of 155 in June. Closing of most steel mills from mid-July until early November had a cumulative ill effect on total production and profits, and likewise weighed on stock prices.

It is a moot question, however, whether the market would have done much better if the strike had been avoided, for prices at their summer peak were high by any yardstick. Industrial issues, for example, were selling at an average of 18.5 times earnings for the preceding 12 months and provided an average yield of only 2.94%. As recently as January 1958 the average price-earnings ratio was 12 to 1 and the yield was more than 4.5%.

Market trends for 1959, as reflected in Standard & Poor's comprehensive index of 500 common stocks (1941–43 = 10), were as follows:

	Date[1]	Industrials	Rails	Utilities	500 stocks
Opening	Jan. 2	59.21	34.74	43.38	55.44
Low	Feb. 9	56.75	31.63	41.65	53.32
High	Aug. 3	65.81	38.32	45.74	61.15
Close	Dec. 31	64.50	33.82	44.74	59.89

[1] Dates are for industrials. Rail and utility highs and lows in some instances occurred on other dates.

While the market generally held within relatively narrow confines during the year, many individual stocks and groups of stocks gave spectacular performances. Among them were electronics shares, reflecting speculative interest in space-age developments; automobile parts, whose greatly increased earnings attracted attention; automobile shares, helped by enthusiasm for the new compact cars; and meatpacking, on a sharp earnings rebound.

Oil shares, on the other hand, continued under persistent pressure as their prospects were dimmed by the world flood of petroleum. Supermarket chains lost considerable ground as it became apparent that their profit margins were shrinking. Sugars reflected adverse developments in Cuba. Sulfur stocks were weighed down by price weakness in the commodity. Small loan shares were squeezed by rising interest rates.

Investor activity was at a high level throughout 1959. The volume of transactions on the New York Stock Exchange totaled 820 million shares, compared with 747 million in 1958. More shares changed hands than in any previous year since 1929, when turnover reached 1,125 million shares.

New stock offerings, while not abnormally large, were considerably greater than in 1958. The total for the first nine months was $1.8 billion, compared with $1.3 billion a year earlier. In addition, secondary distributions, such as sale of Ford stock by the Ford Foundation, came to $575 million, as against $120 million in the first nine months of 1958.

Corporate bond and note offerings, on the other hand, dropped from $7.8 billion in the 1958 nine-month period to $5.1 billion in 1959. Conditions were obviously bettered for stock offerings and worsened for bonds, which were under pressure during most of the year.

The Federal Reserve System (see BANKING) failed to counter the tightening effects of a sharp increase in loan demand, a further drop in the monetary gold stock, and heavy borrowing needs of the federal government.

Net borrowed excess reserves of member banks (the margin by which their borrowings from Federal Reserve banks exceed their excess reserves) were allowed to increase from the neighborhood of $100 million at the beginning of the year to about the $500 million level by late fall, and remained in that area for the rest of the year.

Money rates rose progressively. Average yields on highest-grade corporate bonds advanced from 4.11% at the beginning of the year to 4.61% in December, when new offerings bore returns of more than 5½%. The rate on three-month U.S. Treasury bills rose from about 2.8% at the begin-

ning of the year to more than 4%. The trend reached something of a climax in October, when the Treasury issued a four-year-ten-month note issue on a 5% basis.

(See also SECURITIES AND EXCHANGE COMMISSION.)

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STONE. In the United States, stone is sold in two principal forms—dimension stone, such as building stone and memorials, and crushed stone, which is used for concrete aggregates and road construction. Output of both forms increased in 1958.

PRODUCTION OF STONE IN THE UNITED STATES
(Thousands of short tons)

Category	Dimension stone 1957	Dimension stone 1958	Crushed stone 1957	Crushed stone 1958
Granite	539	621	41,097	31,292
Basalt	61	120	43,737*	43,945
Marble	149	136	1,274	1,269
Limestone	953*	979	382,069*	390,468
Oyster shell	...	...	19,098*	18,916
Sandstone	555	489	15,739	24,484
Slate	120	115	512	523
Miscellaneous	79	60	25,525*	20,118
Total	2,456	2,522	530,967*	532,818

* Revised. (Source: U.S. Bureau of Mines.)

Highway construction created a record demand for stone products in 1958. Output of slate declined for the fourth successive year; four states produced more than 95% of the total.

STRAWBERRIES. See FRUITS.
STRIKES AND WALKOUTS. See Index entry.
SUBMARINES. See Index entry.
SUBVERSIVE ACTIVITIES. See Index entry.

SUDAN (formerly ANGLO-EGYPTIAN SUDAN). The Republic of the Sudan, strategically located in northeast Africa, borders on seven African countries and the Red Sea. With an area of 967,500 square miles, it extends from the southern boundary of Egypt to Kenya, Uganda, and the Belgian Congo on the south, to the Red Sea and Ethiopia (with Eritrea) on the east, and to French Equatorial Africa and Libya on the west. The Nile River traverses its entire length.

Population.—The 1956–57 official census established a population of 10,262,536. The annual rate of growth is estimated to be 3.2%, making the estimated population as of Jan. 1, 1960, 11,279,570. The population is largely concentrated along the Nile rivers, particularly in the centrally located Blue Nile and Khartoum provinces. These two provinces, which include the three towns of Khartoum, Khartoum North, and Omdurman, and the cotton growing Gezira area, account for only 6.5% of the total area, but include 25.1% of the population. The six northern provinces have a population of 7.5 million, which is largely of Arab origin and Moslem. The three southern provinces have a population of 2.8 million and are largely Negroid. The capital city of Khartoum and the two adjoining cities of Khartoum North and Omdurman have a combined population of 245,756. Other important cities are El Obeid (52,372), Wad Medani (47,677), Port Sudan (47,562), Kassala (40,612), and Atbara (36,298) the railway center.

Government.—From Jan. 1, 1956, until November 1958, the Sudan was governed under a transitional constitution providing for a parliamentary system. A coalition Council of Ministers (cabinet) of members of the Umma Party and the People's Democratic Party, under Abdullah Khalil (Umma) as prime minister, took office following elections early in 1958 and served until the army seizure of power in November 1958. Since that time, Sudan has been governed by the Supreme Council of Armed Forces, headed by Lt. Gen. Ibrahim Abboud, which maintains the judicial, legislative, executive, and security powers, and by the Cabinet of Ministers. (See below, *Principal Events, 1959.*)

Religion and Education.—Two thirds of the Sudanese population consists of the northerners, most of whom are Arabic-speaking Moslems. They belong either to the unorthodox Ansari sect or the Khatmia orthodox sect. The people in the southern part of the country are pagans and Christians who speak various central African dialects.

An estimated 6% of the people are literate. Of the adult population, 12% claim to have been to school. There are over 2,000 government-owned schools, 140 private and semiprivate schools, a Khartoum Technical Institute, several teacher-training schools, and Khartoum University. The university has an enrollment of 1,220 students.

Finance.—The budget covering the ordinary costs of running the government for the fiscal year beginning July 1959 includes estimated expenditures of £42.8 million and revenues of £42.9 million. This slight surplus compares with an estimated deficit for the previous year of £4 million, the first deficit since 1932. The monetary unit is the Sudanese pound (equal to U.S.$2.872). (See below, *Economic Development.*)

Transportation and Communication.—Few if any countries of the world are more dependent on railways than is the Sudan, which has no modern roads. As of Dec. 31, 1958, there were 2,485 route miles of single track rail line and 1,500 miles of river steamer routes. All are operated by the government. Thirty-seven airfields of varying size are in operation. The government-owned Sudan Airlines operates scheduled internal, Middle Eastern, and London services. Sixteen foreign airlines maintain scheduled service to the Sudan, including Air France, Alitalia, BOAC, and SAS.

Production.—Cotton, the most important cash crop, accounts for approximately 50% of the total value of exports. The 1958–59 crop of 2,663,361 kantars (1 kantar = 99.05 pounds) was only slightly less than the all-time record established in 1956–57. The area of 854,059 feddans cultivated was the largest ever (1 feddan = 1.038 acres). Of the total cotton crop, 2,427,000 kantars were extra-long staple. All of the crop, plus the carry-over on Jan. 1, 1959, was sold by mid-August, as a result of cash sales at or near the world price levels.

Gum arabic is the second most important crop in the Sudan, which produces from 80 to 90% of the world's needs. The 1958–59 crop is estimated at only 30,000 tons, compared with an average crop of 40,000 tons. Other crops include dura (sorghum), the major food crop, millet, wheat, maize (corn), barley, beans, onions, chilies, groundnuts, sesame, melons, dates, coffee, rice, and tobacco.

Animal husbandry is important. There are an estimated 6,907,000 cattle, 1,000,000 camels, 6,946,000 sheep, and 5,748,000 goats.

Economic Development.—Since 1946 the government has spent £88 million on development programs and has prepared a 1959–60 fiscal year budget for the expenditure of an additional £14 million. The first development program has consisted of two five-year plans.

The Managil extension project started in 1956–57 is designed to add 800,000 feddans of new land in four equal stages to the 1 million feddans now under irrigation in the Gezira area southeast of Khartoum on the Blue Nile. The first two stages have now been completed.

Due to the unfavorable economic conditions prevailing in 1957 and 1958, no new overall program for development was adopted. However, a total of £11.3 million was spent on individual projects and £8.6 was included in the 1959–60 budget for these and new projects, plus £3.6 million for the Managil project and £2.0 million for continuation of projects started under the 1951–56 five-year plan.

The 1959–60 development budget includes two significant items directed toward Sudan's efforts to diversify its agricultural production. Funds are included for experimental production of sugar cane in the area east of the Gezira irrigation scheme on the Blue Nile, about 60 miles from Khartoum, and for the production of coffee in Equatorial and Darfur provinces. Approximately 1,200 feddans of robusta coffee are now being grown by private growers in the Equatorial Province.

Foreign Trade.—Cotton and cotton seed exports in 1958 amounted to £24 million, or 60% of the total exports; gum arabic, 12.5%; peanuts, 8.7%; and sesame, 5.6%. Agricultural exports accounted for 98.9% of total exports. With low industrial production, Sudan imports practically all consumer and industrial products. Cotton piece goods, sugar, tea, coffee, metals, machinery, and vehicles are the major imports. The United Kingdom, India, Germany, and Egypt are the main trading partners, with the United States ranking seventh in importance.

Sudan's foreign trade situation improved throughout 1959 following the January decision to sell cotton at world prices. For the first seven months of 1959, Sudan's exports exceeded imports by £17 million, compared with a trade deficit of over £8 million for the same period in 1958.

Principal Events, 1959.—The most significant developments during the year were the three attempted overthrows in March, May, and November of the government of Lt. Gen. Ibrahim Abboud, who seized control on Nov. 17, 1958; the recovery of the economy following the near economic collapse of 1958; and the signing on November 8 of the Nile water agreement with Egypt.

On March 4, General Abboud dismissed all 12 members of the Supreme Council of the Armed Forces which had ruled Sudan since the November coup. A new 10-member council was appointed the next day. This reorganization in the Supreme Council was forced by three junior field commanders who served an ultimatum on General Abboud and who were included in the new Supreme Council. On May 26, authorities arrested 24 leading members of the outlawed Communist group who were accused of working to undermine the security of the country. This was followed by the arrest on May 31 of 15 army officers after a false telegram brought troops to the outskirts of Khartoum. On June 1 two of the March 5 appointees to the ruling Supreme Council were arrested without a public statement given as to the reason. On November 10 a third attempted coup was unsuccessful. Reports indicate that General Abboud continues to hold control and has even gained strength by his ability to handle the three attempted overthrows of his government.

Following the government's decision in December 1958 that the United States aid agreement should stand, Great Britain agreed on Jan. 5, 1959, to grant Sudan up to £5 million ($14 million) in export credits. On February 17, Yugoslavia agreed to extend credits for financing industrial projects.

An investment guaranty agreement with the United States was signed on March 17. Under this agreement United States investments can be made in the Sudan without the investor assuming many of the financial risks associated with foreign enterprises. The first Sudanese private commercial bank, with a capital of £1 million, was approved on April 4.

In the field of transportation there were three significant developments. In April the railway extension to Nyala in the western province of Darfur was completed, and work was started on the extension south to Wau, which, when completed, will open the south for development. On June 8 the Sudan Airways inaugurated its new Viscount service from Khartoum to London with stops in Cairo, Athens, and Rome. On July 25 Sudan signed a protocol for the construction of two cargo vessels in Yugoslavia.

On November 8 Sudan and Egypt settled an old dispute about the use of the Nile waters by each country, on which agreement was essential prior to the completion of the Aswân High Dam by Egypt and the construction of the Rosières Dam by the Sudan. The agreement, which paves the way for major economic development programs in each country, provides that after the Aswân High Dam is completed Egypt will receive 55.5 billion cubic meters of water and the Sudan will get 18.5 billion, compared with the present division of 48 billion and 4 billion, respectively. Egypt also agreed to pay compensation of $43 million for Sudanese territory flooded by the high dam and for the cost of rehabilitating 60,000 Sudanese living in the area (at Wadi Halfa).

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SUDAN, French. See SOUDAN.

SUDANESE REPUBLIC. See SOUDAN.

SUEZ CANAL. With the return of its "normal" operation and traffic, and the settlement of certain international issues arising out of its nationalization,[1] the Suez Canal has been doing a booming business. (A record total of 17,842 ships used the canal in 1958, as compared with the previous record of 14,666 in 1955.) The United Arab Republic's Suez Canal Authority has shown remarkable ability in dealing with the canal's administrative and technical problems. Considering the difficulties in reopening the canal for traffic after the crisis of 1956, and the relative inexperience of Egyptian pilots, engineers, and administrators, the authority has performed its task to the satisfaction of most interested parties, which are now reconciled to the UAR's undisputed authority over the waterway.

The major problem that remains to be settled is the UAR's exclusion of Israeli shipping. In 1959, all attempts failed to secure passage for Israeli ships or for foreign ships bearing Israeli goods. Several ships were detained and, in some cases, their cargo confiscated. Israel, basing her claim on the U.N. Security Council resolution of 1951 which called for Egypt to lift restrictions, pressed for her right to use the canal, but the UAR was firm in its stand that so long as a state of war exists between Israel and the Arab states, the validity of Israel's claim cannot be admitted. The issue was brought before the U.N. General Assembly when it met in the autumn of 1959. (See also ISRAEL; UNITED NATIONS.)

The deepening and widening of the canal by three United States firms at a cost of $18 million was progressing in 1959 according to schedule. From an average depth of about 45 feet—enough to accommodate 35-foot-draft ships—the canal is being expanded so that large tankers and 37-foot-draft ships may navigate safely. This work, begun early in 1959, was expected to be completed by early 1960, at which time the canal will be opened to ships of up to 46,000 tons.

Present dredging operations are considered to be only the first step in a 10-year project known as the Nasser Plan. When completed, the Nasser Plan, calling for estimated expenditures of $270 million, not only will allow for passage by 47-foot-draft supertankers, but also will provide two-way traffic through the entire length of the canal. Although annual canal earnings total over $110 million, an amply sufficient sum for current operating expenses and enlargement projects, this figure will not meet the proposed expenditures of the Nasser

[1] The most recent settlement, signed between Great Britain and the United Arab Republic on Feb. 28, 1959, provided for the return of Egyptian funds frozen in London since the nationalization of the canal in 1956, and for the resumption of trade between the two countries.

Plan. To carry out this project, the Suez Canal Authority had been negotiating with the International Bank for Reconstruction and Development for an estimated $40 million loan to cover a large part of the authority's foreign exchange needs. Finally, negotiations for the loan of $56,500,000 were concluded and the agreement was signed in Washington on December 21.

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Analyst in Middle Eastern and East European Affairs, The Library of Congress.

SUGAR. Production of sugar beets in the United States in 1959 was estimated at a record 16.7 million short tons, 10% more than in 1958 and about 7½% above the previous record crop of

U.S. PRODUCTION OF SUGAR BEETS AND SUGARCANE
(In thousand short tons)

	Average 1948–57	1958	Prelim. 1959
Sugar beets:			
Ohio	214	309	352
Michigan	718	1,112	1,238
Wisconsin	86	117	111
Minnesota	636	883	900
North Dakota	326	464	475
South Dakota	53	73	80
Nebraska	744	902	992
Kansas	70	123	134
Montana	680	839	896
Idaho	1,387	1,902	1,892
Wyoming	451	596	608
Colorado	1,881	2,372	2,482
Utah	443	429	558
Washington	551	813	782
Oregon	383	521	513
California	3,364	3,628	4,568
Other states	83	100	104
United States	12,070	15,183	16,685
Sugarcane:			
Louisiana	5,659	5,325	6,298
Florida	1,282	1,356	1,884
United States	6,942	6,681	8,182

15.5 million tons produced in 1957. The yield per acre of 18.4 tons was also a record, 0.7 ton above the previous high of 17.7 tons in 1957. Michigan, Nebraska, Kansas, Montana, Idaho, Wyoming, Utah, and California all had record yields per acre.

CENTRIFUGAL SUGAR PRODUCTION, BY MAJOR COUNTRIES[1]
(In thousand short tons, raw value)

	Average 1950–51 to 1954–55	1958–59	Prelim. 1959–60
Argentina	773	1,184	1,203
Australia	1,125	1,525	1,390
Brazil	2,110	3,770	3,562
China (mainland)[2]	293	1,200	1,400
Cuba	6,078	6,577	6,000
Dominican Republic	657	1,020	1,040
France[3]	1,551	1,764	1,225
Germany, West[3]	1,255	2,098	1,650
Hawaii	1,066	975	1,065
India	1,690	2,642	2,900
Indonesia	578	854	885
Italy[3]	828	1,255	1,300
Mexico	900	1,477	1,670
Peru	628	825	850
Philippines	1,190	1,522	1,500
Poland[3]	1,047	1,335	1,215
Puerto Rico	1,228	1,087	1,250
Union of South Africa	689	1,135	1,070
Taiwan	724	1,066	950
U.S.S.R.[3]	3,010	6,900	6,500
United Kingdom[3]	764	899	975
United States (continental):			
Cane	566	578	710
Beet	1,785	2,225	2,350
World:			
Cane	23,728	31,869	32,056
Beet	15,410	23,780	22,453
Total	39,138	55,649	54,509

[1] Centrifugal sugar includes cane and beet sugar produced by the centrifugal process, and is the principal kind used in international trade. The production of each country is credited to the May-April year in which harvesting and sugar production began. [2] Includes both cane and beet sugar. [3] Beet sugar.

Estimated production of sugarcane for sugar and seed was also a record 8.2 million tons in 1959. This was 22% above the small 1958 crop of less than 6.9 million tons and 18% above the 1948–57 average.

About 906,000 acres of sugar beets were harvested in 1959, compared with 889,000 in 1958, and the 10-year (1948–57) average of 769,000. Sugarcane acreage was 316,000 acres, compared with 275,000 in 1958 and 313,000 in 1948–57.

Distribution of sugar for consumption in the continental United States during January–September 1959 was at the record-breaking level of 7 million tons, 4% above the corresponding period of 1958. Per capita consumption of sugar was estimated at 98 pounds in 1959, the same as in 1958.

World production of centrifugal sugar in the May 1959–April 1960 season was not expected to equal the record set a year earlier, according to estimates of the Foreign Agricultural Service of the U.S. Department of Agriculture. The expected total of 54,509,000 short tons, raw value, would be about 2% below the 1958–59 record. Although production of cane sugar was expected to reach a new high of 32,056,000 tons, production of beet sugar, estimated at 22,453,000 tons, would be 6% below the 1958–59 record.

Serious drought in some of the important sugar beet growing areas of central and eastern Europe and in the USSR was the primary cause of the smaller 1959–60 output. This would be the first time in several years that sugar production failed to rise, and the halt probably is only temporary. It will, however, give world consumption an opportunity to catch up with surplus stocks of sugar.

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SUICIDES. See Index entry.

SULFUR. The United States is both the world's largest producer of native sulfur (71% of world production in 1958) and the largest consumer. In 1958, Mexico produced 19%, Japan 2.7%, Greece 2.6%, and a dozen other countries accounted for the remainder. World output declined from 7,300,000 long tons in 1957 to 6,500,000 tons in 1958. In addition to the output of native sulfur, the United States supply was augmented by (1) derivations from domestic and imported pyrite, and (2) byproducts, including natural and industrial gases.

In the first 10 months of 1959, output of native sulfur in the United States was 3,733,622 long

SULFUR IN THE UNITED STATES
(Thousands of long tons)

	1955	1956	1957	1958
Total output	7,026.8	7,818.2	7,003.9	6,141.2
Native sulfur	5,799.9	6,484.3	5,578.5	4,645.6
Pyrite	409.8	431.7	436.0	403.0
Byproduct acid[1]	324.6	348.0	390.4	359.7
Byproduct sulfur	398.8	464.8	510.5	640.1
Byproduct compound[1]	93.7	89.4	88.4	92.4
Exports	1,635.7	1,675.3	1,593.0[2]	1,598.9
Domestic consumption	5,625.4	5,744.3	5,553.7[2]	5,266.0
Stocks	3,301.5	4,055.9	4,422.5	4,441.8

[1] Sulfur content. [2] Revised. (Source: U.S. Bureau of Mines.)

tons. Byproduct sulfur was 539,685 tons. In the same period of 1958, the figures were 3,905,990 and 504,398 tons, respectively.

(See MINERAL PRODUCTION for table showing output by major sulfur-producing countries.)

SULFURIC ACID. See Index entry.

SUMATRA. See INDONESIA.

SUMMERFIELD, Arthur Ellsworth, U.S. postmaster general: b. Pinconning, near Bay City, Mich., March 17, 1899. One of the two remaining members of President Eisenhower's original cabinet, Summerfield ended his seventh year as head of the

Post Office Department with an announcement (December 17) that he would continue to urge an increase in the first-class postage rate from 4 to 5 cents in order to check the department's continuing deficit.

Summerfield went to work at the age of 13, as soon as he finished grammar school. By 30, he was owner of one of the country's largest automobile agencies, in Flint, Mich. Entering politics in 1940, he became a Republican national committeeman in 1944 and was the party's national chairman from July 1952 until he was named to the cabinet in January 1953.

The 1959–60 appropriation for the Post Office Department, as passed by Congress in June, was $3,849 million, $49.7 million less than the president had asked. Although the rate for first-class mail had been raised by 1 cent in August 1958, the department's annual deficit was still estimated at $600 million.

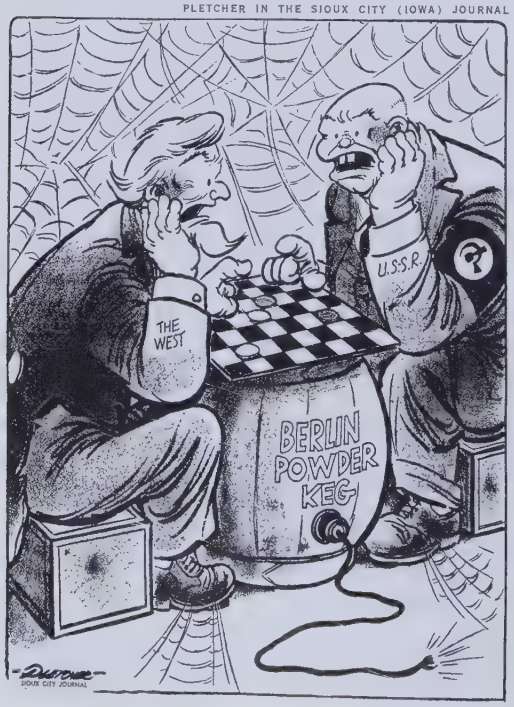
Summerfield also had to deal during the year with broader aspects of budgetary problems as a member (appointed Jan. 31, 1959) of the president's Cabinet Committee on Price Stability for Economic Growth.

(See also PHILATELY.)

SUMMIT CONFERENCE. As a result of intensive preparations made in 1959, the long-heralded, much-discussed summit conference between the leaders of the East and West was scheduled to be held at Paris on May 16, 1960. Convening of the conference constitutes the fruition of arduous efforts made over the past several years by many governments and statesmen to conduct high-level discussions for the purpose of alleviating East-West political conflicts. At the summit meeting, President Eisenhower of the United States, Prime Minister Macmillan of Great Britain, and President de Gaulle of France were expected to discuss with Soviet Premier Khrushchev such important issues as the German question, disarmament measures, and improvement of East-West relations.

"IT'S STILL YOUR YIELD!"

PLETCHER IN THE SIOUX CITY (IOWA) JOURNAL



The date, place, and agenda for the summit conference were proposed by the heads of government of Britain, France, West Germany, and the United States at the so-called Western summit meeting held at Paris in mid-December 1959; and these conditions were subsequently agreed to (with a change in the original date) by the premier of the Soviet Union. The conference, which was originally suggested by the USSR,[1] will be the second such high-level meeting to have been held in recent years, having been preceded by the Geneva conference on July 18–23, 1955, that was attended by the heads of government of the Big Four powers.[2]

Preparations made in 1959 for the summit conference comprised individual contacts between the leaders of the major powers, a conference of foreign ministers of the Big Four at Geneva, and the Western summit meeting at Paris.

East-West Contacts.—The proposal for a summit conference was renewed in 1959 by the Soviet Union in notes of March 2 to Britain, France, and the United States, which declared that the proposed conference should discuss a German peace treaty and the "abnormal situation" in West Berlin, as well as European security and general disarmament. In the same notes, the Soviet government agreed to previous suggestions by the Western powers that a conference of Big Four foreign ministers should be held first. In their replies of March 26, the Western powers declared that the "date, place, and agenda" of a summit conference should be determined at the forthcoming foreign ministers conference (see below).

The leaders of the world's great powers held differing views on the advisability of holding a summit conference in 1959. In general, it appeared early in the year that while Soviet Premier Khrushchev was enthusiastic about such a conference and Prime Minister Macmillan was at least hopeful, President Eisenhower was skeptical in regard to its usefulness, Chancellor Adenauer was reportedly opposed to holding it at all, and President de Gaulle was apparently uninterested.

A beginning toward an improvement in East-West relations leading to the summit was made by Macmillan during his visit to the USSR on Feb. 21–March 3, 1959 (for details, see MACMILLAN). Prospects for holding the summit conference were immeasurably improved by President Eisenhower's separate meetings in August–September with Adenauer, Macmillan, and de Gaulle, and by the Eisenhower-Khrushchev talks in September (for details, see EISENHOWER). The other Western leaders eventually acceded to President de Gaulle's view that a summit conference should be held at a later date, provided that international relations continued to improve in the intervening months and that the Western spokesmen prepared beforehand their "common position" on the issues to be discussed (see DE GAULLE).

During his talks at London with Macmillan in mid-November and at Paris with de Gaulle in early December, Konrad Adenauer (q.v.) reportedly changed his position and agreed that the future of West Berlin could be discussed at the summit conference as part of an over-all approach to the German problem.

[1] The suggestion for such a conference came in separate notes to the NATO countries on Dec. 10–11, 1957, and was repeated by the then Soviet premier, Nikolai A. Bulganin, on Jan. 8, 1958. It was revived by his successor, Nikita S. Khrushchev, on July 19, 1958.

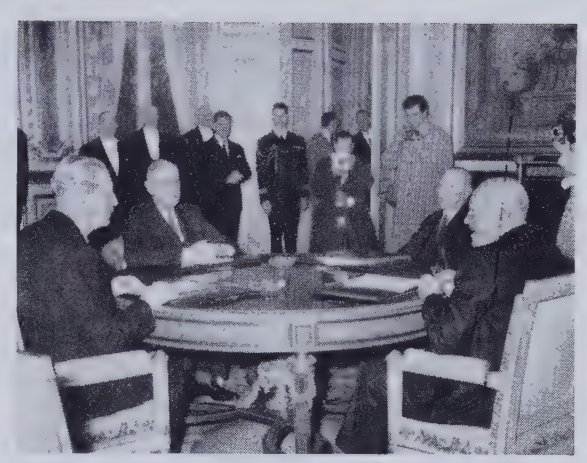
[2] President Dwight D. Eisenhower, United States; Prime Minister Anthony Eden, Britain; Premier Edgar Faure, France; and Premier Nikolai A. Bulganin, USSR.

Foreign Ministers Conference.—The foreign ministers of Britain, France, the Soviet Union, and the United States (Selwyn Lloyd, Couve de Murville, Andrei A. Gromyko, and Christian A. Herter, respectively), together with delegations representing both East and West Germany as observers, met at Geneva on May 11–June 20 and July 13–Aug. 5, 1959, to discuss a settlement of problems relating to Germany, and thereby, in the Soviet view, to prepare for a summit conference. Although the final communiqué issued by the foreign ministers described the discussions as "useful," the conferees failed to agree on any of six points proposed as a basis for solving the East-West dispute over Berlin. However, the conference resulted in agreement on the formation of a new 10-nation Disarmament Committee (see DISARMAMENT).

Proposals advanced at the conference by the East and West on the political future of Germany were rejected by the other side. The Western plan, presented on May 14, provided for the unification through free elections of both Berlin (immediately) and all of Germany (after 2½ years), the negotiation of a peace treaty with an all-German government, and limited European disarmament measures. Soviet proposals, submitted on May 19, listed three alternative methods for solving the Berlin issue: (1) elimination of Western military forces in West Berlin; (2) placement of Soviet troops in the Western garrisons there; or (3) substitution of "neutral forces" under United Nations administration for Western forces in the city. Further Soviet proposals of June 10 providing for a one-year limit on the Western occupation of West Berlin while a proposed all-German committee negotiated on reunification and a peace treaty were termed "wholly unacceptable" by the Western ministers.

Western Summit Meeting.—During their conference at Paris on Dec. 19–21, 1959, President Eisenhower, Prime Minister Macmillan, President de Gaulle, and Chancellor Adenauer decided to invite Premier Khrushchev to a summit conference to be held at Paris beginning April 27, 1960. (The date was later changed, at Khrushchev's request, to May 16, 1960.) The four Western leaders proposed that the topics of discussion at the summit conference should include Germany and Berlin, disarmament, and East-West relations.

The final communiqué on the Western summit meeting stated that the leaders had considered the views of their NATO allies expressed during the meeting of the NATO Council at Paris on Dec. 15–17, 1959 (see NORTH ATLANTIC TREATY ORGANIZATION), and that they reaffirmed the principles as set forth in the NATO Council's declaration of Dec. 16, 1958, which had demanded continued free access by the Western powers to West Berlin and had repudiated the Soviet threat to deny Western occupation rights in that city.



UPI

Preliminary to a full summit conference, Western leaders meet in Paris on December 19 to coordinate their policies. Seated (from left): Prime Minister Macmillan, President de Gaulle, Chancellor Adenauer, and President Eisenhower.

Prime Minister Macmillan's view that a "series" of summit conferences should be held in the future was reflected in President Eisenhower's letter (made public Dec. 21, 1959) to Premier Khrushchev which stated in part that a summit conference should be held "from time to time."

(See also FOREIGN POLICY OF THE U.S.; and separate articles on the countries mentioned herein.)

W. R. F.

SUN. See ASTRONOMY and the Index entry, *Sun.*

SUPREME COURT, U.S. For names of justices, see UNITED STATES—*Government;* for major decisions of the court, see LAW and the Index entry, *Supreme Court, U.S.*

SURGERY. Fibrinolysin in the Treatment of Blood Clots.—Fibrinolysis is the enzymatic process by

General view of the Big Four foreign ministers conference in Geneva shows how the seating argument was solved. Delegations of the four principals (left to right: United States, France, United Kingdom, and Soviet Union) are seated at round table. The two groups from Germany are seated at small tables (West Germany, lower left; East Germany, lower right) as advisers, not as full participants at round table as USSR had demanded. The conference convened at the Palais des Nations on May 11.

WIDE WORLD

which the body normally dissolves and removes the small deposits of freshly clotted blood within its own blood vessels, formed by the constant infliction of minute injuries. Fibrinolysin (or plasmin) is the term usually applied to the substance which causes this dissolution; this or its intermediate (profibrinolysin) is the naturally occurring protein-destroying enzyme of the blood plasma which performs this important "fibrin-splitting," lytic function.

One of the earlier fibrinolytic agents was streptokinase. This material was first demonstrated in 1933, by Drs. W. S. Tillett and R. L. Garner, to occur in filtrates from beta-hemolytic streptococci. In the true sense, streptokinase is not a fibrinolytic agent, since it has no direct action on fibrin, but functions as an activator of the plasma proenzyme, profibrinolysin. By such action streptokinase converts profibrinolysin to the fibrinolytic enzyme fibrinolysin (plasmin).

Another fibrinolytic agent is trypsin, one of the enzymes produced, among other places, in the pancreas. This proteolytic enzyme not only can lyse fibrin directly, but serves also as an activator of profibrinolysin.

Each of these agents has been used therapeutically in man, and each has its faults. There are several antistreptokinase factors in normal human plasma; these limit the intensity of fibrinolytic activity of streptokinase and increase the incidence and risk of allergic or sensitivity reactions. Similarly, there is considerable antitryptic activity in human blood plasma. Doses of trypsin large enough to overcome this inhibitor activity may permit the destruction of the normal protein components in blood, including those necessary for blood coagulation.

Such considerations appear to render these compounds unsuitable or of questionable value in some of the instances when a fibrinolytic compound seems most desirable. Interest has more recently centered on the naturally occurring proteolytic enzyme of plasma (plasmin). Purified human plasminogen (or profibrinolysin, its precursor) can be isolated in a highly purified form from the globulin fraction of human blood plasma. This has been accomplished at the Ortho Research Foundation of Raritan, N.J., as one of the results of a 7-year research program on blood fractions. The profibrinolysin thus obtained is activated to fibrinolysin with streptokinase. The active material is then lyophilized and, in storage at −4°C., will remain active for several months. This fibrinolysin is strongly adsorbed on fibrin, and therefore attacks other proteins to a lesser extent.

In a report from the Department of Medicine at the Georgetown University Medical Center, Dr. K. M. Moser has made use of this effect of human fibrinolysin in the treatment of patients with blood clots in the deep veins of the legs and pelvis from which portions may break off and lodge in the lungs (embolism). When large enough to occlude completely the major lung vessels, such episodes produce sudden death. In recent years the treatment of these vein clots has been with drugs which prevent the further clotting of blood until the original clot has been organized and has grown firmly to the vein wall lining. Thus, while the extension of the thrombus (clot) or its recurrence may be prevented, the original clot remains.

At the time of his report from the District of Columbia General Hospital, Dr. Moser had treated 52 patients suffering from all forms of thrombotic disease with human fibrinolysin. The unit of measurement used in the dosage of this material is an arbitrary one based on the dissolution of 50% of a standard clot, in a test tube, in a given unit of time. The material is administered intravenously in the standard dextrose (glucose) solution over a period of two to four hours. Since the fibrinolytic activity is of relatively short duration, the administration of anticoagulant drugs to prevent the laying down of a new clot at the same site is desirable.

The overall experience with the use of this new drug has shown that marked regression of the signs of deep-vein thrombosis will occur in patients in whom the treatment was begun early after thrombosis occurred.

Bone Repair.—Considerable interest has been shown by a number of investigators and orthopedic surgeons in synthetic or plastic material which might be suitable in bonding broken bones or replacing lost or irreparably damaged segments of bone. Such substances are sometimes called "bone-glue." Ideally such a substance must include low tissue reactivity, must promote (or at least not deter) new bone formation, must adhere readily to bone, must have strength and torsional stability, and above all must be handled easily during operation. To date, these requirements have been almost impossible to attain.

Many types of plastic materials have been used safely for a wide variety of medical purposes, and such materials seemed suitable for the above requirements. Two investigators at the Hahnemann Medical College and Hospital in Philadelphia, Drs. Michael P. Mandarino and Joseph E. Salvatore, undertook research in this field. Of the several possible materials which seemed to approach the ideal requirements, rigid polyurethane foam was the compound of choice. In order to produce a dense, rigid foam a polymer was prepared (polymerization is a process whereby a number of identical molecules are joined together; the product is a polymer of the simple substance) by reacting a trihydroxy resin (resins are brown sticky materials insoluble in water) with a chemical compound called diisocyanate. The polymer thus formed is mixed at the time of operation with a catalyst (a substance which accelerates a chemical reaction, and which usually may be recovered unchanged from that reaction) which liberates carbon dioxide. The carbon dioxide released into the compound produces bubbles which permeate throughout the mixture producing a sponge-like compound. No heat is released in this reaction.

The mixture is applied between the bony surfaces to be bound together, where it rapidly hardens into a foamy, white, porous, immobilizing agent. It is apparent chemically that the polymer bonds to the surface to be held, and during its formation becomes an intimate part of the bone. It is this later property that distinguishes the substance from a glue, an adhesive, or common cement-type bonding.[1]

When this material is used in the human, it requires 20–30 minutes for fixation; complete hardening occurs within 24 hours. During this period the extremity or part is completely immobilized. At the end of this time the torsional stability is such that weight bearing (on a lower extremity) can be initiated.

The porous nature of the hardened plastic permits the ingrowth of tissue cells. Tissue sections taken from experimental animals at varying intervals revealed progressive replacement of the plastic

[1] Polyurethane foam tests as follows: bond strength to bone, 170-190 pounds per square inch; tensile strength, 800 pounds per square inch; compressive strength, 20,000 pounds per square inch with 10% deflection; density, 25–30 pounds per cubic foot; shear strength, 500 pounds per square inch; flexural strength, 1,000–1,200 pounds per square inch.

material by new bone. Polyurethane foam is slowly absorbed so that one fourth to one sixth of the original volume remains at the end of 12 months. The metabolic route and excretion of this material is still under study.

More recently this material has been used in humans by Drs. Mandarino and Salvatore in the repair of broken or diseased bone. In all cases the plastic has been well tolerated and the strength of the repaired part most gratifying.

All that is required, to date, to make this material both welcome and universally acceptable is to complete the studies on its method of dissolution, its possible toxicity, and whether it may contribute to the appearance of tumor in the human patient. To date all such studies have been negative.

Head Injuries.—Increased intracranial pressure may result from edema and swelling of the brain, from hemorrhage into the brain, and from increased intracranial blood pressure due to an injury to the head.[2] Many chemical agents have been tested by injecting intramuscularly hypertonic solutions to reduce intracranial pressure. Among these are sodium sulfate, sodium bicarbonate, magnesium sulfate, sodium arabinate, sorbitol, sucrose, and dextrose. Each is effective in reducing intracranial pressure, but each has some undesirable action that limits or prohibits its use.

As early as 1927, Drs. Frank Fremont-Smith and H. S. Forbes of the Department of Neuropathology, Harvard Medical School, suggested that urea might be a promising hypertonic agent, for in experimental animals the substance produced marked cerebrospinal fluid pressure reductions. Some 20 years later, Lowell Smyth, Gwendolyn Smyth, and Dr. Paul Settlage of the Department of Anatomy, University of Wisconsin, made the same observations on monkeys.

Apparently the suggestion of Fremont-Smith and Forbes was not put to a clinical test until the study in 1956 by Drs. Manucher Javid and Paul Settlage of the Departments of Neurosurgery and Anatomy, University of Wisconsin Medical School. In these early studies, small doses of the chemical were given and its various effects were noted carefully. In every instance there was a consistent drop in cerebrospinal fluid pressure. During the past year, Javid has reported the use of urea in 300 patients. In the experience of other surgeons, including Drs. J. G. Arnold, Jr., and H. S. Bell of the University of Maryland Hospital in Baltimore, these results have been confirmed primarily in patients with tumors of the pituitary gland or diseases of the major arteries of the brain. The drug is useful also in many other brain tumors. In general the effects of the drug are reported as poor by these latter authors in patients with head injuries and increased cerebrospinal fluid pressure due to injury. In these patients it is suggested that injury has altered the blood brain barrier so that the urea gets into the cerebral extracellular spaces and thus neutralizes the osmotic effects of this, or any, hypertonic solution.

Limb Inequalities.—Discrepancy in the length of the legs is a frequent and often a severe debility. Poliomyelitis is by far the most common cause of a short leg, ranging in frequency from 60 to 90 per cent of all cases treated. Disturbance in growth does not become apparent for about one year after the acute phase of polio. Other conditions causing a retardation in growth are infections, tumors, and injury in the actively growing areas of bone.

The treatment of limb inequalities by lengthening the shorter member has never gained wide acceptance; the gain in length, even if none of the inherent complications occur, may not approach the desired amount. Retardation of bone growth in the normal leg in children, and shortening by resection of a segment of bone in the adult, to accomplish the same purpose have been considered simpler, safer, perhaps less time-consuming, and less complicated than leg lengthening. Each has its complications, not the least of which may be delayed or non-union, as well as the long period of non-weight-bearing.

Many methods have been tried to increase or augment the circulation in a shortened limb. The few of these which have been successful have produced insignificant lengthening. The same results have attended attempts to increase oxygen tension. Very recently Drs. Vincent Richards and Raymond Stofer of the Stanford University Department of Surgery have tried a new approach to this problem. These surgeons designed a method to heat directly the growth center of bone (the epiphysis) by delivering an amount of heat sufficient to alter bone temperature, but not general body temperature, and thereby to increase the blood flow in this area.

This has been accomplished by wrapping the large thigh bone (femur) of rats and dogs in several turns of nichrome wire, both ends of which emerge through the skin of the back and are connected to a step-down transformer so that approximately 1.1 volts of alternating current could be delivered to the wrapped bone. This voltage raised bone temperature 1.5° to 2°C. The animals were attached to the current during the daytime only, and were allowed to run freely and play in their cages. At night the terminals were disconnected.

In these experiments the average increase in femur length was 5%, and the average weight increase was 15–20%; the bone increased in circumference as well as length. There was considerable enlargement of both the arterial and venous trees. The heating was carried on for periods ranging from 24 to 95 hours.

The longer heating was carried on, the more likely there was to be a complication from the bone heating. The chief complication was fracture of the shaft of the bone in some animals, but these fractures healed without difficulty. This complication led to an exploration by these same authors of the effects of bone heating on the healing of fractures. Heating resulted in solid bony union and the deposition of a luxurious callus (the exudate deposited about the fragments of a broken bone, accomplishing the work of repair).

This is an ingenious bit of animal experimentation which may well lead to its adoption in the human, particularly in the stimulation of healing of fractures, in the correction of delayed and non-union of broken bones, and possibly in the stimulation of growth of a shortened limb.

(For additional references, see the Index entry, *Surgery.*)

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[2] In addition to the diagnostic import of the phenomenon underlying the signs and symptoms of increased intracranial pressure, certain pathologic (abnormal) conditions are created. The compression of the medulla oblongata (the lowest or most posterior part of the brain) as a consequence of its being wedged into the upper portion of the spinal canal (foramen magnum) has been blamed for death due to respiratory or cardiac arrest. Hemorrhage into the mid-brain and the portion known as the pons is a more common complication and again may result in unconsciousness, coma, and death.

SURINAM (NETHERLANDS GUIANA). An autonomous territory of the Kingdom of the Netherlands, situated on the north coast of South Amer-

ica. Estimated area, 55,144 square miles; pop. (est. 1958), 241,000 (exclusive of some 26,000 bush Negroes and Carib Indians). Paramaribo (103,000) is the capital and chief city. The population is concentrated along the coast and consists mainly of Negroes and descendants of workers from Java and India. Chief languages are Dutch and a lingua franca called Surinam-tongo.

Government.—Surinam has self-rule in internal affairs, with foreign affairs and defense decided by the Council of the Realm at The Hague. A Dutch governor represents the Netherlands crown in Surinam. The States of Surinam (Legislative Council) consists of 21 members elected for 4 years. In the elections of June 25, 1958, the National Party obtained 9 seats, defeating the governing United Front. Premier S. D. Emanuels heads a cabinet which took office on July 5, 1958. The 1958 budget estimated revenue at 63.1 million Surinam guilders; expenditure, 63.8 million (the Surinam guilder equals U.S.$0.53).

Education and Religion.—Schools of all kinds numbered 204 in 1957 (including 135 denominational), with a total enrollment of 49,220. Chief religious groups are Moslems, Hindus, Moravian Brethren, and Roman Catholics. There is full religious liberty.

Transportation and Communications.—Surinam's one railway (Paramaribo-Kabelstation) totals 133 miles. Roads, mostly around Paramaribo, aggregate 520 miles. International airlines operate out of Zandery airport, south of Paramaribo. Passenger cars numbered 2,732 in 1958; telephones, 4,762.

Economy.—Agriculture is the principal occupation. Crops include rice (1958–59 output, 187.5 million pounds of rough rice), sugar, coffee, coconuts, citrus fruits (340,000 boxes in 1958), corn, bananas, and cacao. The thick forests yield timber and balata. Surinam is one of the world's leading producers of bauxite (1958 output, 2,988,000 metric tons). Manufactures are chiefly rum, molasses, plywood products, footwear, soft drinks, and other light items. Tourism is of some importance. Exports (mainly bauxite and rice) totaled 61.17 million guilders in 1958; imports, 71.36 million. Surinam's chief trading partners are the United States and the Netherlands.

In 1959, work was under way on the construction of a 50-mile access road from Paranam to Afobakka, site of the projected Brokopondo hydroelectric project. Construction of the $125 million project by Suralco (Surinam Aluminum Company, a subsidiary of the Aluminum Company of America) was scheduled to begin in 1960. The project will provide power for an aluminum smelter plant to be constructed at Paranam, as well as for an alumina plant to be constructed by 1974. Under the 1957 agreement between the Surinam government and Suralco, the government is responsible for providing land, access roads, and sanitation facilities, and for removing the population and buildings from the reservoir area.

SVALBARD. A Norwegian Arctic territory comprising the Spitsbergen archipelago and several other islands, about 400 miles north of Norway. Chief islands of the Spitsbergen group are West Spitsbergen (14,633 sq. mi.), North East Land, Edge Island, and Barents Island. Svalbard's total area is 24,101 square miles. The territory is administered by a governor residing at Longyearbyen, on West Spitsbergen. The population of Svalbard in 1956–57 consisted of 1,530 Norwegian coal miners working Norwegian mines, and 2,746 Russian miners operating Soviet mining concessions at Isfjord, West Spitsbergen. Norwegian coal output in 1958 totaled 291,600 metric tons; Soviet output, 349,823 in 1956.

SWAZILAND. Swaziland, bounded on the northwest and south by Transvaal Province and on the east by Portuguese territory, is one of three territories in southern Africa not part of the Union of South Africa. Administered by a British high commissioner (see also BASUTOLAND and BECHUANALAND PROTECTORATE), it has an area of 6,705 square miles, of which more than half is reserved for Swazi tribes. The population at the 1956 census was 237,041, including 229,744 Africans, 5,919 Europeans, and 1,378 Eurafricans (including 16 Asians); the population in mid-1958 was estimated at 267,000.

A resident commissioner (B. A. Marwick) representing the high commissioner has headquarters at Mbabane, the capital; the paramount chief (Sobhuza II) and a queen mother share authority in the native reserve. Revenue in 1959–60 was estimated at £1,230,037; expenditure, at £1,501,367. There are 282 schools for Africans, 9 for Europeans, and 4 for Eurafricans; pupil enrollment in 1958 totaled 30,957, comprising 29,210 Africans, 1,224 Europeans, and 523 Eurafricans.

Animal husbandry is the chief industry; livestock in 1958 included 491,679 cattle, 165,354 goats, and 32,127 sheep. Principal agricultural products are maize (corn), cotton, rice, tobacco, peanuts, bananas, citrus, pineapples, and other fruits. Mineral production (valued at £2,150,492 in 1958) comprises asbestos, tin, barites, diaspore, fluorspar, and gold. The forest industry is important; by 1959 pine trees had been planted on 169,000 acres. Exports in 1958 totaled £3,891,513, including asbestos, £2,130,952; slaughter stock, £333,088; seed cotton, £178,029; rice, £225,000; butter, £74,620; and fruit (including canned pineapple), £178,000. There are no railways, but roads aggregate about 1,150 miles and buses connect the territory with the Union of South Africa and Mozambique (Portuguese East Africa).

SWEDEN. Occupying the southern and eastern part of the Scandinavian Peninsula, the European kingdom of Sweden borders Norway on the north and east and Finland on the northeast. With an area of 173,378 square miles, Sweden is slightly larger than California; more than one half of the land portion is covered by forests.

Population.—The population as of Jan. 1, 1959, was estimated at 7,436,000. The major cities include Stockholm, with a population of 804,900 (greater Stockholm, 1,113,100); Göteborg, 397,205; and Malmö, 221,700. Ten other cities have populations of over 50,000.

Government.—Sweden is a constitutional monarchy; the present king, Gustaf VI Adolf, succeeded his father in 1950. The king exercises his powers through responsible ministers in the Council of State and presides at cabinet meetings. Dr. Tage Erlander, premier since 1946, heads a minority government of Social Democrats which took office on June 18, 1958. The Riksdag, or Parliament, is bicameral, with both houses having equal power, and elections to both are on a basis of universal suffrage. The upper house (Första Kammaren) is elected indirectly for 8 years by the county and city councils, and consists of 151 members. After fall local elections in 1958, it contained 79 Social Democrats, 32 Liberals, 22 Center Party members (formerly Agrarians), 16 Conservatives, and 2 Communists. Special elections for the lower house (Andra Kammaren) in 1958 gave the Social Democrats 111 seats; the Center Party, 32; the Liberals, 38; the Conservatives, 45; and the Communists, 5. Elections to the 231-member lower house are held every 4 years.

Education and Religion.—Education has been compulsory in Sweden since 1842. Enrollment in the universities and professional schools exceeds 60,000. Three national universities at Uppsala, Lund, and Göteborg and one private university at Stockholm offer higher degrees. More than 11,000 are enrolled in the adult folk high schools and more than 800,000 in elementary schools.

The Evangelical Lutheran Church is the established church of Sweden. Uppsala is the metropolitan see and its archbishop the titular head of the state church. Freedom of worship for other groups is permitted, and over 370,000 are nonconformists.

Finance.—The budget presented in January 1959 for the fiscal year 1959–60 provided for 12.9 billion kronor of revenues and 13.5 billion kronor of expenditures (1 krona = U.S.$0.193). The major revenues are from excise, income, and corporation taxes, and expenditures go mainly to social welfare (30%, or 3.9 billion kronor), defense (21%, or 2.83 billion kronor), and education (12%, or 1.69 billion kronor). The capital investment fund was

more than 2,266 billion kronor. Heated debate over the budget for the year contested government proposals for increased excise taxes and additional expenditures for social welfare caused by the new pension plan. The government debt had risen to over 19 billion kronor on June 30, 1959.

Transportation and Communication.—The Swedish merchant marine was increased by 305,000 gross tons in the first half of 1959 to a total of more than 3,490,000 tons. Roads total 11,000 miles, and state and private railroads, 10,050 miles. Registered radio sets number more than 2,600,000, and licenses have been issued for over 420,000 television sets. Telephones number over 2,500,000, or one for every three persons.

Labor and Cooperatives.—In proportion to its population, Sweden has the largest free labor organization in the world. Within the Federation of Trades Unions there are over 8,600 locals. The Swedish Cooperative Union had a total membership of over 1.2 million in 1958. A new labor agreement, signed in March, 1959, meant industrial peace for Sweden until 1965, and indicated labor's capacity to assume responsibility since the unions agreed to a wage decrease in view of the industrial and trade recession.

Agriculture and Industry.—With 8,710,000 acres of arable land, the Swedes must cultivate intensively in order to produce large crops, and agriculture is increasingly mechanized. Chief crops, with 1958 production figures in thousands of tons, are: wheat, 613; rye, 178; barley, 669; oats, 927; potatoes, 1,372; beets, 1,729; and hay, 4,200. The dairy industry in 1958 produced 3,347,000 tons of milk, 86,000 tons of butter, and 51,240 tons of cheese; farmers also sold nearly 350,000 tons of meat. Sweden also exports some hay and grain for Denmark's dairy industry.

Forestry, which is partly managed by farmers and partly by large enterprises, is a mainstay of Swedish industry and exports. Over 30% of Sweden's exports are in forest products. In 1958, pulp wood production totaled 4,101,000 metric tons, of which 2,357,235 metric tons were exported. Paper and board production in 1958 was 1,682,000 metric tons, of which 976,788 were exported. Over 820,000 standards of lumber were exported in 1958.

Sweden's iron deposits also serve an important purpose in furnishing metals for the steel industry, which produced 1,300,000 tons of pig iron and 1,686,000 tons of finished steel in 1958. Essential are also the 14,810,000 tons of iron ores exported and the ore furnished to the Swedish machine industry.

Industrial production, other than mining, has a seemingly limitless potential. Wood products, ships, machinery, electrical appliances, telephones, chemical goods, cars, and consumer items pour from Swedish factories. The industrial production index recovered somewhat in the first six months of 1959, when it averaged 124, as compared with 118 in 1958 (1938 = 100). Sweden's national income in 1958 was over 59 billion kronor, an increase of 4% over 1957. Investments also rose by over 1 billion kronor, from 17.3 billion in 1957 to 18.6 billion in 1958. Over 730,000 gross tons of ships were constructed in 1958; 2,304,000 tons of cement were produced; and the electrical and machine industries sent over 1.74 billion kronor of goods to foreign countries. Swedish industry is recovering from the slight recession in 1957–58, and the number of unemployed fell in August 1959 to 15,900, or 1.2% of the registered employed, from 4.3% in January, the highest since 1945.

Foreign Trade.—Sweden's exports in 1958 totaled over 10.8 billion kronor, and her imports, 12.2 billion kronor. The value of the country's exports in the first half of 1959 was 6% above that in January–June 1958, while its imports declined by 5%; exports during this period totaled 5.4 billion kronor, and imports, 5.85 billion. The import surplus, because of increased trade with dollar areas, continued to decrease, while exports showed an increase of about 328 million kronor. The major exports (with 1958 values in billions of kronor) are: minerals (2.58), forest products (3.724), and machinery (3.373). The major imports are animal and vegetable products (1.84), minerals (3.95), hides and skins, rubber, textile materials and products (1.55), and machines (3.819). The major countries from which Sweden imports (with 1958 figures in billions of kronor) are: West Germany (2.885), United Kingdom (1.718), and the United States (1.296); export countries include the United Kingdom (1.766), West Germany (1.537), and Norway (1.135). The United States ranks fifth on the list of countries to which Sweden exports.

WIDE WORLD

Replacing their crowns with miners' helmets, King Olav (left) of Norway and King Gustaf VI Adolf of Sweden enter a Swedish mine on the Norwegian monarch's visit in April.

Principal Events, 1959.—On the issue which in 1958 forced an election—the old-age pension—the Social Democratic government in May 1959 won a victory by a narrow margin of one vote (115 to 114) in the lower house. Heated debate, accompanied by the usual argument over the annual budget, furnished much press comment for the year, as did the cancellation in July of Soviet Premier Khrushchev's planned state visit. However, a trade pact with the Soviet Union signed on Dec. 23, 1958 (effective Jan. 1, 1959—Dec. 31, 1961) permits Sweden to secure needed fuels and to export heavy machinery.

Labor and agricultural agreements in March and April, respectively, ensured industrial peace until 1965. Wages and prices are linked by this agreement to the cost-of-living index, with adjustments at the end of 1959 to reflect both the year's economic improvement over the depressed conditions of the last half of 1958 and the fact that the inflationary trend continues. Free convertibility of currency came into effect in January 1959, and building controls were abolished at the same time.

A visit by King Olav, the Norwegian monarch who thus made his first state trip to Sweden, presented an opportunity for praise of the close cooperation between the two countries. The opening of the highway between Sweden and Trondheim, Norway, and the economic cooperation in that city's port and electricity development further showed the close association of the two countries.

On Nov. 20, 1959, in Stockholm, representatives of the Outer Seven countries—Sweden, Denmark, Norway, Great Britain, Austria, Switzerland, and Portugal—initialed an agreement establishing the European Free Trade Association (q.v.), whose objectives are the gradual abolishment, over a ten-year period from 1960 to 1970, of import tariffs and restrictions between the member coun-

tries. The agreement, which calls for a 20% initial reduction of import tariffs on July 1, 1960, will be presented to the individual parliaments of the seven member countries for ratification in March 1960. (See also TARIFFS.) Sweden played a leading part in discussions leading to the agreement, which held major interest for both government and people because of the importance of foreign trade to the Swedish economy.

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SWEET POTATOES. See VEGETABLES.

SWIMMING. See SPORTS, GAMES, AND SHOWS.

SWITZERLAND. Situated in central Europe and bounded by Germany, Liechtenstein, Austria, Italy, and France, Switzerland is a republican confederation of 19 cantons and 6 half-cantons. Its area is 15,941 square miles; population (est. March 31, 1959), 5,215,000. Principal cities and populations (est. 1957) are: Zurich, 428,200; Basel, 200,500; Geneva, 168,900; Bern (the capital), 161,300; and Lausanne, 118,900. The four national languages are German (spoken by about 74% of the population), French (21%), Italian (4%), and Romansh (1%); the first three are the official languages.

Government.—Legislative power is exercised by the bicameral Federal Assembly. The National Council (Nationalrat) consists of 196 members who are elected every 4 years. Following the national elections of Oct. 25, 1959, the seating of the chief political parties was as follows (with number of seats held prior to the election in parentheses): Socialists, 51 (53); Radical Democrats, 51 (50); Catholic Conservatives, 47 (47); and Peasants, Artisans, and Middle Class (Farmers), 23 (22). The Council of States (Ständerat) has 44 members, 2 from each canton. The federal franchise is limited to male citizens over 21 years of age. The use of the referendum and the initiative is a significant feature of the Swiss legislative system. Executive power is held by a Federal Council of 7 members elected by the Federal Assembly for 4-year terms. The head of the Federal Council acts as president of the confederation; he is chosen annually by the assembly. On Jan. 1, 1960, Max Petitpierre succeeded Paul Chaudet as president.

Education and Religion.—Illiteracy is virtually nonexistent. In 1956, public primary schools enrolled 557,406 pupils; public secondary schools, 125,957. There are numerous commercial, trade, art, technical, and other specialized schools on the secondary level. The 9 institutions of higher learning had a combined enrollment of 17,625 students in 1957. Protestants comprise 58% of the population; Roman Catholics, 41%; and Jews, 0.6%.

Finance.—Budget estimates for 1958 (with final 1957 figures in parentheses) were: current revenue, 2,715 million francs (2,440 million); current expenditure, 2,267 million (2,238 million). The Swiss franc equals U.S.$0.233. About 40% of estimated 1959 expenditure was for defense.

Transportation and Communications.—At the end of 1956, Swiss railways totaled 3,160 miles, of which 97.7% was electrified. The highway network includes 10,615 miles of main roads. Switzerland has a navigable outlet to the North Sea via the Rhine waterway. Swissair, the national airline, and 24 foreign airlines connect Switzerland directly with all major European cities and other foreign points. In 1957 there were 347,000 passenger cars, 65,200 commercial vehicles, 1,308,000 radio receiver licenses, 31,000 TV sets, and 1,385,125 telephones. Switzerland's 120 daily newspapers had a combined circulation of 1,486,000 in 1956.

Economic Conditions.—The economy is dependent on the processing of imported raw materials into finished products for home consumption and export. Principal industrial products are machinery, chemicals, textiles, dyes, and watches, which together account for more than half of the nation's annual export value. Switzerland maintained generally high productive levels in 1958 despite a mild business recession that had particularly adverse effects on the textile, watch manufacturing, and construction industries. However, these industries made rapid recoveries in the first half of 1959.

The Swiss watch industry, which exports 96% of its total output and accounts for about half of the world's watch trade, suffered a decline in export value from 1,303 million francs in 1957 to 1,118 million in 1958. Construction activity showed a decrease from the 18,384 apartments recorded as completed in 1957 to only 12,423 in 1958. The important tourist industry registered 25 million overnight lodgings in hotels and pensions in 1958, or about the same number as in 1957. National income for 1958 was estimated at 28.3 million francs, compared with 27.3 million in 1957. The cost-of-living index (1954 = 100) declined from 108 at the end of 1958 to 104 in mid-1959.

Agriculture.—Livestock raising and dairying are the most important agricultural industries. Estimated dairy output (in million pounds) in 1958 was: milk, 6,440; butter, 1,433; and cheese, 1,587. Crop production in 1958 was generally above that of 1957. Chief crops and estimated 1958 yields were: wheat, 12,270,000 bushels; barley, 3,215,000 bushels; oats, 3,170,000 bushels; potatoes, 1,750,000 short tons (prelim.); and sugar beets, 251,000 short tons (1958–59 prelim.).

Foreign Trade.—Swiss exports in 1958 were valued at 6,649 million francs (down about 1% from 1957); imports, at 7,335 million (down 13%). Machinery and watches account for about 40% of total export value; other major exports include instruments, textiles, and pharmaceuticals. Leading imports are machines, automobiles, coal and other fuels, raw materials, semimanufactured goods, and foods. Switzerland's chief trading partners are West Germany, which in 1958 provided 26.6% of total Swiss imports and received 16.2% of exports; Italy, which supplied 11.9% of imports and took 7.5% of exports; and the United States, which provided 11.4% of imports and purchased 9.9% of exports.

Principal Events, 1959.—In the national elections held on October 25, Swiss voters elected a new National Council very similar in party alignment to the one it replaced. The Socialists lost two seats and the Communists one, and the Radical Democrats, the Liberal Democratic Party, and the Farmers Party each gained one seat. The Radical Democrats and the Socialists, each with 51 seats, emerged with the largest representations in the council. The new cabinet chosen by the Federal Assembly on December 17 comprises two members each from the Socialist, Radical Democrat, and Catholic Conservative parties, and one member of the Farmers Party.

As the result of a national referendum on February 1, Switzerland remained one of the few countries where women are not allowed to vote in federal elections. The all-male electorate voted against enfranchising women by 654,924 votes to 323,306. In a separate referendum held in Vaud on the same day, the electorate decided by a vote of 33,671 to 32,805 to give women the right to vote in cantonal elections. In March the Federal Assembly approved amendments to Vaud's constitution permitting women to vote, and Swiss women voted for the first time in history at a local election in Vaud on April 19. On September 27, the canton of Neuchâtel also approved woman's suffrage in cantonal elections.

A proposal to divide Bern into two separate cantons was defeated by a vote of 80,293 to 22,962 in a cantonal referendum held July 5. In the seven French-speaking districts where the proposal had originated, the vote was 16,354 to 15,163 against division.

The approximately 220 inhabitants of Herbriggen were evacuated from their homes in February because of a massive landslide that threatened to descend on the village from the slopes of nearby

Nadelhorn. By mid-March, however, the million-ton mass of rock, ice, and soil had stabilized itself, and the village was spared destruction.

W. R. F.

SYMINGTON, (William) Stuart, U.S. senator: b. Amherst, Mass., June 26, 1901. A former secretary of the Air Force, he was elected senator from Missouri in 1952 and 1958. Symington was a favorite-son candidate of the Missouri delegation to the 1956 Democratic National Convention, and in 1959 was considered to be a leading unannounced contender for his party's presidential nomination in 1960.

The son of a romance language professor at Amherst College, Stuart Symington traces his ancestry to the ante-bellum South. In his youth his family moved to Baltimore, where he attended a preparatory school. After serving in the Army in World War I as a lieutenant in the field artillery, he was a student at Yale College from 1919 to 1923. In the latter year he joined the Symington Company of Rochester, N.Y., a railroad equipment manufacturing firm owned by his uncle. He became executive vice president in 1927. He subsequently served as president of the Colonial Radio Company in Rochester (1930–35), president of the Rustless Iron and Steel Company in Baltimore (1935–37), and president and chairman of the board of the Emerson Electric Manufacturing Company in St. Louis (1938–45).

In 1945, Symington went to Washington, where he headed the Surplus Property Board (later, the Surplus Property Administration) until 1946, when President Truman appointed him assistant secretary of war for air. In 1947, when the military establishment was united under the Department of Defense, Symington was named first secretary of the Air Force. He resigned in 1950 in protest against the budget reduction of the number of Air Force groups from 70 to 48, but remained in the administration as chairman of the National Security Resources Board (1950–51) and as administrator of the Reconstruction Finance Administration (1951–52).

Symington was elected senator from Missouri in 1952, and was overwhelmingly re-elected in 1958. In the upper house he became identified with the liberal wing on most issues. His major concern continued to be that of maintaining a strong national defense, and he consistently took the administration to task for its efforts to trim the defense budget.

Symington demurred in 1959 about announcing his presidential aspirations, but in April he stated that he would not refuse a draft by the convention. His nationwide speaking tours toward the end of the year gave the impression that he was more interested in the nomination than his public statements would indicate.

Consult Paul I. Wellman, *Stuart Symington: Portrait of a Man With a Mission* (New York 1960).

SYNTHETICS. See Chemistry; Plastics; Rubber; Soap and Synthetic Detergents; Textile Industry.

SYRIA. See United Arab Republic.

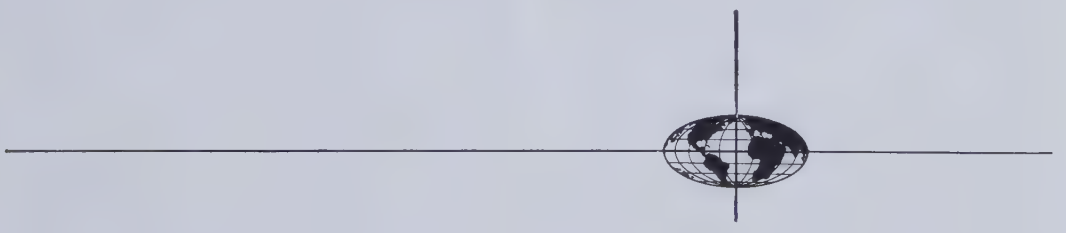

TABLE TENNIS. See Sports, Games, and Shows.

TAFT-HARTLEY ACT. See the Index entry, *Labor Management Relations Act of 1957.*

TAIWAN (Formosa). A province of China and the present seat of the Republic of China (Nationalist), the island of Taiwan lies about 110 miles off the southeast coast of mainland China. Total area, including the Penghu (Pescadores) group and other islands, is 13,885 square miles. Population (est. Dec. 31, 1958): 10,039,000 (including the Penghu, Quemoy, and Matsu islands, and armed forces). Principal cities with populations (est. Dec. 31, 1956): Taipei, the capital (748,510); Kaohsiung, a major port (371,225); Tainan (287,797); and Taichung (249,946).

The Penghu group of 64 islands (area: 49 sq. mi.; est. pop., 83,600) lies about 30 miles off the west coast of Taiwan. Chief industries are fishing, fish processing, and agriculture.

Government.—The Republic of China is governed by a president, the National Assembly, and five councils or yuans which separately exercise executive, legislative, judicial, control, and examination functions. The president of the republic (Chiang Kai-shek, re-elected in 1954) is elected by the National Assembly for a 6-year term, and according to the constitution may serve only two terms. (See below, *The Year 1959 in Taiwan.*) The president of the Executive Yuan (Chen Cheng, appointed in 1958) acts as premier. The Legislative Yuan meets twice yearly, but effective power is concentrated in the executive. The Kuomintang exercises virtual one-party rule under the leadership of Chiang Kai-shek. The so-called mainlanders (those Chinese who fled in 1949 from Communist-controlled mainland China) number about 2 million and hold political power on Taiwan; the native Taiwanese, the majority, play a secondary role.

Taiwan's provincial government is headed by a governor (Gen. Chow Chih-jou, appointed in 1957), who is named by the central government's Executive Yuan. The 21-member Provincial Council is also appointed by the central government; the 66-member Provisional Provincial Assembly is elected for a 3-year term.

The Chinese Nationalist armed forces (about 600,000 men) are equipped with the aid of the United States and are trained under the supervision of the U.S. Military Assistance Advisory Group, commanded by Maj. Gen. Frank S. Bowen, Jr. The U.S. Seventh Fleet has protected Taiwan since 1950, and a mutual defense assistance pact between the United States and the Republic of China has been in effect since 1955.

Education.—About 62% of the population aged six and over was literate in 1955. Primary education is free and compulsory. In 1957 there were 1,597 primary schools (with 1,480,557 pupils); 197 secondary (194,586 pupils); 105 technical (69,823); and 11 teacher-training (10,112). Higher institutions (chief of which is National Taiwan University) numbered 16 and enrolled 22,779 students in 1957.

Finance.—Budget estimates of the central government for the fiscal year 1957–58 were: expenditure, NT$4,644 million (NT$4,226 million in 1956–57); revenue, NT$3,933 million (NT$4,011 million). As of Dec. 31, 1958, the basic official buying rate for the new Taiwan dollar was NT$1 = U.S.$0.0276. Central government expenditure for fiscal 1957–58 was distributed principally as follows: defense, 80%; civil administration, 14.4%; economic services, 3.1%; and social services, 2.4%. United States economic aid to Taiwan was estimated at U.S.$70 million for fiscal 1959. In addition, Nationalist China in 1959 con-

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Hundreds of Nationalist Chinese marines swim in precise drill formation in a watery "parade" reviewed by President Chiang Kai-shek at a major naval base in southern Taiwan.

tracted U.S.$30.1 million in loans from the U.S. Development Loan Fund for economic development.

Transportation and Communications.—Public railways are under provincial control and total 595 miles; in addition, there are 1,718 miles of private railways, most of which are owned by the Taiwan Sugar Corporation. Roads totaled 9,743 miles in 1955. The important Cross-Island Highway connecting Taichung in the west with Lotung and Hualien in the east was scheduled for completion in late 1959. Taiwan is served by four international airlines and one domestic air service. In 1957, passenger cars numbered 5,940; commercial vehicles, 7,750; telephones, 51,513.

Production.—The 23 industries included in Taiwan's current industrial development program are expected to increase their net product by 110% during the second 4-year economic development plan (1957–60). The index of industrial production (1953 = 100) rose from 142 in 1957 to 149 in 1958. National income in 1958 was NT$31,901 million, up 6% from the previous year. There were 17,481 manufacturing establishments with 215,000 workers and a gross sales value of NT$14,897 million in 1957. The chemical, textile, and food processing industries together account for more than half of all manufacturing value. Output in 1958 of cotton yarn (27,483 metric tons) and cotton fabrics (147 million meters) decreased slightly from that in 1957. Estimated production figures for 1958 of other major industrial products are as follows (in thousand metric tons): coal, 3,180 (up 9% over 1957); cement, 1,015.2 (up 68%); steel ingots and casting metal, 106.8 (up 20%); superphosphates, 104.4 (up 11%); ammonium sulfate, 18 (up 15%); and paper, 72 (up 20%). Electricity output in 1958 was 2,880 million kw.-hr. (up 12%); installed capacity in 1957 was 585,000 kw., or nearly double that of 1951.

Agriculture, which accounted for 32.7% of the national income and employed 58% of the labor force in 1957, was expected to increase output by 20% during the 1957–60 plan period. The overall production index for 1957–58 was 145 (1934–38 = 100), as compared with 136 in 1956–57. The rice crop in 1958 was estimated at a record 1.9 million metric tons; sugar, 894,000, a postwar high; pineapples, 124,000, up 25% over 1957; and tea, 14,000. Other crops are sweet potatoes (an important staple), peanuts, bananas, soybeans, jute, citrus fruits, sesame, and vegetables. Forest products include timber, camphor, bamboo, turmeric, cinchona, and rattan.

Foreign Trade.—Exports in 1958 were valued at U.S.$155.8 million; imports (exclusive of foreign aid), U.S.$159.3 million. Imports financed by the U.S. International Cooperation Administration totaled U.S.$66.9 million. Sugar, the main export, accounted for U.S.$80.8 million; rice, U.S.$26.4 million; and tea, U.S.$6.4 million. Chief imports are ores, metals and manufactures, machinery and tools, chemical fertilizers, and crude and fuel oil. Taiwan's principal trading partner is Japan, which took 42% of exports and supplied 40% of imports in 1958.

W. R. F.

The Year 1959 in Taiwan

In 1959 the question of whether President Chiang Kai-shek should be elected for a third term gave rise to extensive debates among Nationalist Chinese in Taiwan and abroad. President Chiang's second term expires in May 1960, and according to the Constitution of Nationalist China, the president may not be elected for a third term. On May 18, 1959, Chiang reiterated a previous statement that he was against any proposal to revise the constitution to permit his re-election to a third term, but declared that he had no intention of giving up his responsibility of fighting the Communists and recovering the Chinese mainland. As Chiang talked in this confusing manner, opinion in Taiwan was divided as to his political future. While a powerful group in Taiwan maintained that Chiang must continue to serve as president, many Nationalist Chinese abroad argued that Chiang should give up the presidency and lead the nation in another capacity. As the year drew to its close, clamor increased for Chiang to continue as president after his second term.

The Tibetan revolt against the Chinese Communists in March 1959 was given full support by Taiwan. In a message broadcast on March 26, President Chiang Kai-shek declared that Tibetans would have the right to decide their own political future when the Communist regime was overthrown, and promised that the Nationalists would make every possible effort to give the Tibetans "continuous and effective aid." However, Nationalist aid was rendered difficult by the fact that the rebels could be reached only by air, and that even this was hardly practicable in view of the great distance between Taiwan and Tibet. After the Dalai Lama appealed to the United Nations for a hearing of the Tibetan question, Dr. T. F. Tsiang, the representative of Nationalist China, declared on September 29 that Free China condemned the Communist atrocities in Tibet and would welcome any proposal to examine them in the U.N. General Assembly. (See also United Nations.)

The Chinese Nationalists showed great concern over Soviet Premier Khrushchev's visit to the United States in September when he posed as a man of peace and pleaded for relaxation of international tensions. Taipei saw deception in Khrushchev's peace gestures, but was confident that the United States would not do anything detrimental to Nationalist China's interests.

On May 28, 1959, the International Olympic Committee yielded to Russian pressure and withdrew recognition from Nationalist China on the ground that it "no longer represents sports in the entire country of China." The action incurred vigorous protest from Taiwan and severe criticism in the United States, but the committee insisted that Nationalist China could be readmitted only if it dropped any reference to China in its name.

The Taiwan Strait remained relatively quiet in 1959, although there were occasional artillery duels between Communist China and the Nationalist-held offshore islands of Matsu and Quemoy. On July 5 an air battle was fought near Matsu between the Communist and the Nationalist forces. Taipei claimed that four Communist jet fighters were shot down and one was crippled so severely that it probably failed to return to its base. Although there was no sign of immediate attack on Taiwan, the Chinese Communists con-

tinued to voice their determination to "liberate" the island. To be prepared for any eventuality, the Nationalists maintained large forces on the offshore islands, and in October they further strengthened their air force with a number of supersonic RF-101 Voodoo jets from the United States.

Taiwan's economy showed a marked stability at the beginning of 1959. There was an increase in industrial output, especially of chemical products, textiles, and machinery. The living standard was high by Asian standards; and clothing, food and housing appeared adequate. But the improved living conditions brought a rapid population growth; the recent rate of population increase was 3.6% a year, as compared with the annual 3% increase in food production. To meet the needs of the growing population, the government initiated in May a 10-year development plan which would involve a total expenditure of $278 million. The program included projects in irrigation, mechanized farming, and fishing, and involved the scheduled construction of many thousands of low-cost houses, the expansion of electrification in rural districts, and a large-scale increase in transportation facilities.

Taiwan's economy suffered a severe setback in early August when flash floods, caused by the heaviest rains in 60 years, hit the central and southern parts of the island. The floods destroyed 15,000 houses and damaged 11,900. The casualty list included 2,000 dead, missing, and injured, and 169,000 homeless. Property loss was estimated at over $85 million. To avoid inflation in the rehabilitation effort, the Nationalist government ordered austerity and strict budget control. The armed forces mobilized thousands of men to assist in the rehabilitation work. By October it was reported that replanting had been completed on 16,783 hectares, or about half of the damaged land.

(See also FAR EAST.)

CHESTER C. TAN,
Assistant Professor of History,
New York University.

TALC. See MINERAL PRODUCTION.
TANGANYIKA. See BRITISH EAST AFRICA.
TANGERINES. See FRUITS.
TANGIER. See MOROCCO.

TARIFFS. In 1959 upward of 20 countries either instituted or were preparing comprehensive revisions of their tariffs. In Central and South America, five countries—El Salvador, Guatemala, Argentina, Colombia, and Venezuela—completed tariff revisions during the year. The two Central American countries, as well as Venezuela, employed the Uniform Customs Nomenclature of Central America (NAUCA), while Argentina and Colombia apparently continued the basic tariff nomenclatures that they had previously used. In general the newly adopted tariffs resulted in higher rates of duty on substantial numbers of items. Colombia and El Salvador employed compound rates of duty (specific plus ad valorem rates) throughout their duty schedules; Guatemala replaced many of its specific duties with ad valorem rates.

In Europe, five countries effected revisions of their tariffs. The new tariffs of Denmark, Norway, Sweden, Italy, and the United Kingdom were all based on the Brussels nomenclature (sponsored by the Customs Union Study Group), largely in anticipation of each country's participation in either the European Common Market (q.v.), the projected Nordic Custom Union of Norway, Denmark, Sweden, and Finland, or the European Free Trade Association (q.v.). The new tariffs did not substantially alter the height of individual rates of duty. The Scandinavian countries, however, largely replaced specific rates with ad valorem duties.

HAMILTON WRIGHT

Shimen Dam, major facility of an $80 million hydroelectric project planned for Taiwan, will be erected beyond this bridge on Takekan Creek in the north part of the island.

In Africa, Tunisia adopted a new tariff, effective in the fall of the year. The nomenclature was based on the Brussels model, and rates of duty were predominantly ad valorem.

During 1959 several countries undertook tariff revision projects or continued projects instituted earlier. Uruguay established a special commission to undertake a revision of its tariff. Yugoslavia approved customs procedures to be effective when a new tariff, in preparation, was completed. Israel was revising its tariff nomenclature to accord with the Brussels model. Lebanon's tariff-revision project, designed to adopt the Brussels nomenclature, was virtually completed by late 1959. Japan and Australia both began comprehensive revisions to modernize their tariff nomenclatures; Australia indicated that it intended to follow the Brussels pattern.

Partial tariff revisions resulting in duty changes on a considerable number of items were effectuated by several countries in 1959. As in recent years, Mexico made many changes in individual rates of duty, the majority resulting in higher levies on imports. Several other countries—the Dominican Republic, Peru, Sudan, Libya, Ghana, and South Africa—increased rates of duty on a substantial group of items. A few countries, including Austria and Ireland, unilaterally reduced rates of duty on a number of items.

Among the more important developments in the field of tariffs in 1959 were activities relating to the European Economic Community, widely known as the European Common Market; the European Free Trade Association (FTA); and similar projects by other groups of countries. Among other matters, the treaty for the European Common Market, designed to achieve ultimately integration of the economies of Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands, called for the gradual reduction of import duties and other restrictions on trade among the six countries and the creation of a common tariff on imports from outside the Common Market area. On Jan. 1, 1959, the six member countries made an initial reduction of 10% in their customs duties on imports from one another; the second reduction, also of 10%, was expected to become effective in July 1960. During the year, experts from the Common Market countries continued work on a common tariff which was expected to be completed early in 1960. Some of the individual rates of duty in the common tariff were fixed by the original treaty; some were to be determined by calculating the arithmetic average of the existing rates

in the tariffs of the countries concerned; and some were to be established by negotiation among the six countries.

Following the breakdown late in 1958 of negotiations for a free-trade area that would encompass most of western Europe, seven countries—Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom (the so-called Outer Seven)—undertook to establish a free-trade area among themselves. A Ministerial Committee composed of representatives of the seven countries met at Stockholm, Sweden, in July and November to negotiate a treaty for establishment of a European Free Trade Association. The Outer Seven completed and initialed the treaty on November 20, and hoped to have it ratified by all countries concerned no later than March 1960. The treaty provided that each of the seven countries would in July 1960 reduce by 20% its import duties on trade from the other member countries, thereby matching the tariff cut planned by the six Common Market countries. Subsequent tariff reductions on trade among themselves would follow the same 10% yearly reduction schedule established by the European Common Market, completely eliminating such import duties by 1970. In contrast to the Common Market, however, the Outer Seven would each maintain their individual tariffs on goods imported from outside the free-trade area, rather than adopt a common tariff.

In Central America, three of the five countries involved in the Central American Trade Treaty (ODECA) had ratified the agreement, thus putting the treaty into force. The treaty, which provides for limited free trade among the countries involved, was binding, however, on only the three ratifying countries—El Salvador, Nicaragua, and Guatemala. By late 1959, Honduras and Costa Rica had not ratified the treaty. In Africa, the four countries that made up former French Equatorial Africa—Chad, Gabon, Congo, and the Central African Republic—announced their intention to form a customs union. Proposals were also made or studies continued during 1959 for customs unions or free trade areas involving various groups of South American and Middle Eastern countries.

General Agreement on Tariffs and Trade.—The activities of the General Agreement on Tariffs and Trade (GATT) during 1959 related chiefly to the 14th and 15th sessions of the contracting parties, which were held in May at Geneva, Switzerland, and in October–November at Tokyo, Japan, respectively. Both meetings were devoted largely to customary items of business, such as complaints regarding violations of GATT obligations and reports from various members on their actions under waivers granted to them. Three matters, however, were of major concern to the contracting parties: (1) consultations with member countries still imposing import restrictions presumably to safeguard their balance of payments; (2) consultations with the six Common Market countries on the possible effects of the Common Market on their joint trade; and (3) discussions of problems affecting international trade between the so-called underdeveloped countries and the industrial trading nations. At the 14th session, the 37 GATT members agreed to hold a major round of tariff negotiations beginning in September 1960. At that conference, negotiations would be held among member countries, between member countries and the Common Market, and between members and countries desiring to accede to GATT. In 1959, Israel and Yugoslavia both joined GATT on a provisional basis; Poland's application to accede to GATT was under consideration.

Work of the U.S. Tariff Commission.—In 1959 the U.S. Tariff Commission conducted a variety of investigations pursuant to public law and executive order; continued its tariff classification study; and answered numerous requests for information from Congress, other government agencies, and the public. As in recent years, the commission's investigatory activities occupied the greater part of its time.

Under Section 7 of the Trade Agreements Extension Act, as amended, the commission had 16 escape-clause investigations pending before it during the first 10 months of 1959. By the end of October, the commission had completed 11 of the 16 investigations, and it had terminated three investigations without formal findings. In three of the completed actions, the commission found that the domestic industry was being seriously injured as a result of increased imports and recommended to the president the imposition of increased import restrictions. In acting on the commission's recommendations, the president imposed a tariff quota on imports of certain stainless-steel table flatware, but decided not to impose increased restrictions on imports of tartaric acid and cream of tartar. In the other eight completed investigations, the commission did not recommend that the existing trade-agreement concession be modified for certain carpets and rugs, scissors and shears, hand-made glassware, calf and kip leather, axes and ax heads, hardwood plywood, mink skins, and fescue seed.

As required by paragraph 1 of Executive Order 10401, the commission in 1959 submitted to the president periodic reports reviewing the escape-clause actions previously taken by the United States on watch movements, bicycles, dried figs, and toweling of flax, hemp, or ramie. In each instance the commission found that continuation of the modified duty under the escape action was necessary to prevent serious injury to the industry involved. Except for the finding on bicycles, on which he had not acted by late 1959, the president concurred in the commission's findings.

Under Section 22 of the Agricultural Adjustment Act, the commission completed three investigations in the first 10 months of 1959 to determine whether imports of certain products were interfering with programs of the U.S. Department of Agriculture. The commission found that no changed circumstances required modification of the existing quota on long-staple cotton, and that a quota should be imposed on imports of rye, rye flour, and rye meal. The president subsequently accepted the findings on long-staple cotton, and imposed a modified quota on imports of rye and rye products. In its investigation of shelled and prepared or preserved almonds, two commissioners found that a fee should be imposed on imports of those articles and two commissioners found that no additional import restrictions were necessary. The president had not acted on the commission's report by the end of October.

By late October 1959, three complaints had been acted on by the Tariff Commission, under Section 337 of the Tariff Act of 1930, with respect to alleged unfair methods of competition and unfair acts in the importation of articles into the United States. A complaint relating to certain map-making instruments was dismissed after preliminary inquiry, and action on two complaints relating to phonograph pickup cartridges, elements, and needles was concluded with a finding that no industry in the United States was being or was likely to be injured by reason of the imports of the articles concerned.

Under Section 332 of the Tariff Act of 1930, the commission in 1959 instituted two investigations pursuant to Senate resolutions and three pursuant to resolutions of the Senate Committee on Finance. Investigations of iron ore and carpet wool for papermakers' felts were completed, and major reports were issued.

On September 14, the president signed a law permitting the duty-free entry of works of art not using conventional art materials (see also PAINTING AND SCULPTURE).

The Customs Simplification Act of 1954 directed the Tariff Commission to make a comprehensive study of the United States tariff schedules and to submit to Congress and the president proposals for their simplification. During 1959 the commission published the final sections of its proposed revised tariff schedules, and held the required public hearings. The commission expected to release its final recommendations in 1960.

(See also CUSTOMS, BUREAU OF.)

JOSEPH E. TALBOT,
Chairman, U.S. Tariff Commission.

TAXATION. Developments of 1959 in the field of taxation in the United States were highlighted by congressional passage of several major tax measures, numerous court decisions and new Treasury rulings, a decline in federal tax collections, and a contrasting increase to record highs in state tax revenues.

Federal Tax Laws.—The Life Insurance Company Income Tax Act of 1959 (P.L. 86–69) established a permanent method of taxing life in-

surance companies for 1958 and thereafter. The new law taxes insurance companies on both their investment income and underwriting profits.

In order to help the highway construction program, Congress enacted a measure (P.L. 86–342) that raised the federal tax on gasoline and other motor fuels from 3 cents to 4 cents a gallon for the 21-month period of Oct. 1, 1959, through June 30, 1961.

An excise tax law tied up some of the loose ends left by the comprehensive excise tax law revision of 1958. The new enactment (P.L. 86–344) covers the stock transfer tax, the retailers' jewelry tax, exemptions from the tax on club dues for payments made for capital improvements, and other excise tax matters.

In the area of personal income taxes, a law was enacted enabling a person with whom a child is placed by an agency for legal adoption to deduct a dependency exemption for the child even though it was not in the taxpayer's home for the entire taxable year, as was previously required.

To restrict state taxation of income from interstate sales, Congress passed a bill (P.L. 86–272) barring any state from taxing in-state earnings of out-of-state firms which maintain no facilities within the state.

Tax Rates.—The corporate normal tax rate of 30% was automatically scheduled to drop to 25% on July 1, 1959, and the excise taxes on certain automobile chassis (generally passenger automobiles), liquor, and cigarettes were to return to their lower pre-Korean War rates by the same date. Once again, on June 30, 1959, President Eisenhower signed a law (P.L. 86–75) postponing all these changes, this time to July 1, 1960. The same act cuts the excise tax on transportation of persons from 10% to 5%, beginning July 1, 1960, and ends the communications tax on general telephone service on the same day.

U.S. Supreme Court Decisions.—Under most financing arrangements for the sale of automobiles and trucks, the finance company withholds a part of the money due the dealer in order to cover losses, repossessions, and other costs, and pays the dealer this withheld amount after certain conditions are met. The lower courts had split on when to tax these withheld reserves as income to dealers who reported on the accrual basis. The U.S. Supreme Court settled the dispute by holding that the crediting by the finance company to the dealer's reserve is immediately taxable to the dealer.

The Supreme Court decided that a businessman may not deduct the cost of fighting proposed legislation, even though enactment would result in his having to go out of business.

The high court also held that contractors who do "strip" mining for owners on leases of coal land are not entitled to depletion deductions if they do not make a capital investment, or acquire an economic interest in the coal in place. (See also LAW.)

Other Court Decisions.—Accident and health policy premiums were held deductible as medical expenses even if the policy covers payments for such injury as loss of time or loss of limb. A resident of Los Angeles who went to a New York physician for a medical check-up was permitted to deduct his traveling expenses to and from New York as a medical expense.

A corporate officer was allowed to deduct as a business expense the cost of reading material dealing with business matters, such as the *Wall Street Journal*, but was not allowed to deduct the cost of periodicals of general interest, such as *Time* magazine. Another corporate executive was barred from deducting unreimbursed travel expenses because it was shown that his firm would have reimbursed him for these outlays if he had so requested.

Strike benefits paid by a union to its striking members solely on the basis of need and without requiring any services to be performed for the union in exchange were held not to be taxable income to the strikers, but the Supreme Court agreed to review this case. A person who paid for special counsel and for advertising in the process of seeking a new job was not allowed to deduct these costs as an expense.

An expensive automobile given to an individual for furnishing a firm with a customer lead was held not to be taxable income to him because the firm intended the car as a gift, not as compensation. Voluntary payments made by a deceased employee's firm to his widow were held to be nontaxable to her, even to the extent that they exceeded $5,000, although a literal reading of the applicable statutory provision might seem to limit the tax-free portion of such payments to only $5,000.

One court allowed a medical doctor to deduct the cost of his own psychoanalysis because it led to a better understanding of how to deal with patients in his own practice. Another court held that doctors could band together in a way which made them taxable as a corporation for federal tax purposes, even though the applicable state law barred the practice of medicine in corporate form.

Treasury Rulings.—Items of merchandise of nominal value, such as turkeys and hams, distributed by an employer to employees at Christmas or other holidays are not taxable income to the recipient if part of a general distribution intended to promote good will among employees. But gifts of cash, gift certificates, or other items readily convertible into cash are income to the employees regardless of the amount involved.

A father may deduct as a business expense the salary he pays to his child for services rendered to the father's business, even if the child uses the salary to pay for his own support.

Termite damage may be deducted as a casualty loss if it occurs within a relatively short period of time. Casualty losses on business property may now be computed in the more favorable manner previously limited to losses on nonbusiness property.

Meals and lodging for employees required to live on the employer's premises were ruled not taxable to the employee whether furnished directly without any charge, or by way of a higher salary from which the employer deducts a charge.

A medical expense deduction will now be allowed for the cost of permanent improvements, such as stair elevators and air conditioners, which are installed on recommendation of a physician for reasons of health, as long as the improvement does not increase the value of the property on which it is installed.

Government Revenue Collections.—Federal tax collections slipped from $79,978,476,000 for the fiscal year 1958 to $79,797,973,000 for the fiscal year 1959. This marked the second year in a row that federal revenues had declined following the all-time high of $80,171,971,000 collected for the fiscal year 1957. A drop of more than $2 billion in corporation income taxes during the fiscal year 1959 was largely offset by an increase of about $2 billion in individual income taxes.

State tax collections continued their unbroken rise to new heights, reaching a peak of $15,831 million for the fiscal year 1959, as against the previous record of $14,919 million for 1958. Sales and gross receipts taxes continued to produce nearly three fifths of the total.

Per capita state taxes ranged from a high of $149.94 in Delaware to a low of $55.60 in Nebraska. The average per capita tax for 49 states went up to $91.70 for the fiscal year 1959, compared with a 48-state average of $88 for 1958.

STATE TAX COLLECTIONS, BY TYPE OF TAX[1]
(Amount in millions)

Tax source	1959[2]	1958	1957	1942
Total collections	$15,831	$14,919	$14,531	$3,903
General sales or gross receipts	3,694	3,507	3,373	632
Motor fuels	3,048	2,919	2,828	940
Alcoholic beverages	599	566	569	257
Tobacco products	680	616	556	130
Insurance	548	455	428	113
Public utilities	364	345	343	100
Motor vehicle licenses	1,381	1,319	1,289	431
Corporation licenses	360	346	408	93
Alcoholic beverages licenses	85	81	81	56
Hunting and fishing licenses	108	100	90	24
Individual income[3]	1,778	1,544	1,563	249
Corporation net income[3]	979	1,018	984	269
Property	565	533	479	264
Death and gift	349	351	338	110
Severance	392	370	338	62
Other	903	848	814	172

[1] Because of rounding, detail does not always add to total. [2] Preliminary. [3] Individual income tax figures include corporation net income tax amounts for from 1 to 3 states in each fiscal year shown. (Source: U.S. Department of Commerce.)

Local tax collections also rose to a new record high of $15,461 million for the calendar year 1958, compared with $14,511 million for the fiscal year 1957. Property taxes accounted for $13,514 million of the total.

Tax Developments in Other Countries.—Argentina raised its individual normal tax rate from 7% to 9% and lifted the top surtax rate from 43% to 45%, but simultaneously increased the nontaxable minimum income and personal deduction. Brazil adopted an individual income tax scaled from 30 cruzeiros per 1,000 on 91,000 to 120,000 cruzeiros, to 500 cruzeiros a 1,000 on more than 3,001,000 cruzeiros.

Canada raised personal income tax rates by 2 percentage points on all income brackets over $3,000 and boosted the basic corporate tax rate from 45% to 47%. It also increased from 2% to 3% the extra tax which is used to finance the old-age pension fund.

Cuba enacted an entirely new tax law with personal income tax rates scaled from 3% to 60%, while the basic business profit tax was set at 40%. The Dominican Republic increased its temporary tax surcharge to 10% so that the scale of rates on business income ranges from 7.7% on the first 3,000 pesos to 33% on taxable income over 50,000 pesos.

Ghana extended the list of activities eligible for its special five-year tax exemption period to include manufacture of glass, milk products, ice, cosmetics, pharmaceutical products, textiles, and signs.

Great Britain lowered its basic income tax rate on companies and individuals from 42½% to 38¾%. Sales taxes on luxury goods such as automobiles were cut from 60% to 50%, while other sales tax rates of 30% and 15% were cut to 25% and 12½%, respectively. Industrial firms were given a new investment allowance of 20% on new plant and equipment and 10% on industrial buildings, in addition to annual depreciation allowances.

Ireland cut the standard rate of income tax payable by companies and individuals to 35%, but made no change in the 10% profits tax. The effective corporate tax rate was therefore reduced from 47½% to 45%. Kuwait made its income tax applicable to foreign firms doing business in the country even if in partnership with a Kuwait firm, which was formerly a basis for exemption from tax.

Liberia increased its 25% corporate income tax rate on incomes over $75,000 to 30% on income between $75,000 and $100,000 and 35% on income over $100,000. Nicaragua revised its income tax schedule, which previously ran from 4% on the first 40,000 córdobas of taxable income to 18% on over 1 million córdobas, so that the upper range became 30% on over 200,000 córdobas. Pakistan sought to induce investment of foreign capital by offering a two-year tax "holiday" for companies in industries based primarily on Pakistani raw materials.

Sweden reduced its corporate income tax rate from 50% to 40% and lowered its entertainment tax from 38% to 33% of the price of a ticket. Venezuela boosted its income tax rate scale, which ran from 1½% to 26%, so that it now starts at 2% and goes to a high of 45%.

LEON GOLD,
Chairman, Tax Department,
Research Institute of America, Inc.

TAYLOR, Robert Lewis, American author: b. Carbondale, Ill., Sept. 24, 1912. Winner of the 1959 Pulitzer Prize for fiction, Taylor attended Southern Illinois University and the University of Illinois, graduating from the latter in 1933. After traveling abroad for a year and serving from 1936 to 1939 as a reporter for the St. Louis *Post-Dispatch,* he joined the staff of *The New Yorker* magazine, principally as a contributor of "Profile" and "Reporter at Large" articles. During World War II, from 1942 to 1946, he served with the U.S. Navy, returning to *The New Yorker* after his tour of duty. Other periodicals to carry the Taylor by-line have included *The Saturday Evening Post, Collier's, Redbook, Life, Esquire,* and *Reader's Digest.*

On May 4, 1959, it was announced that Taylor had been awarded the Pulitzer Prize for his novel, *The Travels of Jaimie McPheeters* (1958). This carefully researched book, picaresque in style, is a fictionalized account of an overland wagon trek to California during the gold rush of 1849. Taylor's other published volumes include *Adrift in a Boneyard* (1947), *Doctor, Lawyer, Merchant, Chief* (1948), *W. C. Fields, His Follies and Fortunes* (1949), *Professor Fodorski* (1950), *The Running Pianist* (1957), *Winston Churchill, An Informal Study in Greatness* (1952), *The Bright Sands* (1954), and *Center Ring: The People of the Circus* (1956).

TEA. World production of tea in 1959 was forecast by the Foreign Agricultural Service of the U.S. Department of Agriculture at 1,671 million pounds (excluding Communist China and the USSR). This was about 1% more than the estimated production of 1,654 million pounds in 1958 and about 24% more than the average of 1950–54. As usual, India and Ceylon were expected to produce about 70% of the total output. Only about 6% of the indicated 1959 production was expected to be produced outside of Asia.

WORLD TEA PRODUCTION*
(1,000 pounds)

	1950–54 (average)	1958 (prelim.)	1959 (forecast)
India	623,552	708,802	715,000
Ceylon	331,821	413,200	420,000
Japan	112,405	164,438	165,000
Indonesia	130,340	153,740	153,200
Pakistan	53,431	54,100	52,000
Taiwan	24,972	35,657	36,000
Kenya	15,094	25,179	26,500
Nyasaland	15,036	23,293	24,000
Mozambique	7,595	15,430	16,000
Argentina	690	5,400	6,000
World	1,344,632	1,654,287	1,671,400

* Excluding Communist China and the USSR.

African production was forecast at 93 million pounds, about 4% more than in 1958, as new plantings were beginning to bear, and output from existing acreage was increasing. African production is soon expected to reach 100 million pounds.

Latin American production was forecast at 10.3 million pounds in 1959, about 11% more than a year earlier. About 60% of Latin American production is in Argentina, where tea is a new industry. Output could increase substantially if modern processing and grading machinery becomes available.

It is expected that a large increase in production will occur in Communist China once the areas reported to have been planted since 1953 come into full bearing. Figures on China's output, however, are not available.

The United States, second only to the United Kingdom as a market for tea, imported about

103.3 million pounds in 1958, and probably imported about the same quantity in 1959. Per capita consumption of tea in the United States has been about 0.6 pounds per year since the mid-1950's.

C. J. Enzler,
Information Specialist, Office of Information, U.S. Department of Agriculture.

TEETH. See Dentistry.

TELEGRAPHY. Telex.—In 1959, Telex, an automatic telegraph exchange service which enables subscribers to dial correspondents and hold instantaneous and direct two-way telegraphic communication, was inaugurated by Western Union between cities in the United States. Already in use between New York City and Canadian cities since 1958, the service was extended from New York to Chicago, San Francisco, and Los Angeles during 1959.

Automation.—Much progress was made in 1959 toward automating and mechanizing telegraph operations, with the result that there is faster, more efficient telegraph service, especially over lines between main telegraph offices and customers' offices, and between main and branch telegraph offices. In addition, many teleprinter tieline customers were connected directly with the national transmission network.

Armed Forces.—Western Union has now completed the installation of a 450,000-mile telegraphic network linking U.S. Air Force stations throughout the world. The system has a capacity of 130 million words a day. Western Union also provided the Strategic Air Command (SAC) with the first nationwide high-speed facsimile network. This network, which links 57 stations of the Air Weather Service, is used to transmit up-to-the-minute weather maps and provide high-altitude weather information to SAC air operation centers.

Private Wire Systems.—The rapid growth of leased private wire systems is indicated by Western Union's revenues from this source. At the end of 1959, private wire revenues were at the rate of about $55 million a year. The 1959 revenues present a marked contrast with those of 1949, when private wire revenues were $8,131,000, or 4% of the total.

Integrated Data Transmission.—An important factor in the increasing demand for private wire systems is the large number of companies which are ordering networks to link electronic data machines with their widespread field organizations. As a result, most systems now being installed are engineered for data processing and management control uses, as well as for administrative messages.

Fully electronic designs are replacing electromechanical designs. For example, ultra-high-speed transmission channels, error-detecting devices, and completely automatic, transistorized switching centers have been developed by Western Union engineers to meet the exacting needs of data systems.

Some of the most advanced developments are employed in a new type of switching center in the private wire systems of the United States Steel Corporation and United Air Lines. Through the use of a "director-translator," which operates like the memory unit of a computer, these systems flash any message to the station or stations indicated by the routing code on the "common-language" tape. Each destination is represented by a small card with a special combination of electrical connections. When the code address of a message arrives, electrical impulses race through the card cabinet and instantly select the correct card. This in turn signals a rotary switch in the center, which then selects the circuit over which the message flashes to its destination.

(See also Electrical Developments; Federal Communications Commission; Public Utilities.)

George P. Oslin,
Publicity Director, Western Union Telegraph Company.

TELEPHONE. At the beginning of 1959 there were about 124,800,000 telephones in service throughout the world, a gain of 7 million since January 1958. Most of these were in North America and Europe, and more than half were in the United States alone. Countries having one million or more telephones in service were: Argentina, 1,223,509; Australia, 1,998,704; Belgium, 1,036,305; Canada, 5,122,519; France, 3,703,578; German Democratic Republic (East Germany), 1,175,131; Federated Republic of Germany (West Germany), 5,090,102; Italy, 3,182,455; Japan, 4,334,602; Netherlands, 1,402,155; Spain, 1,490,151; Sweden, 2,526,424; Switzerland, 1,475,003; USSR, 3,700,000 (est.); United Kingdom, 7,525,000; and United States, 66,645,000.

TELEPHONES BY CONTINENTAL AREAS
(As of Jan. 1, 1959—partly estimated)

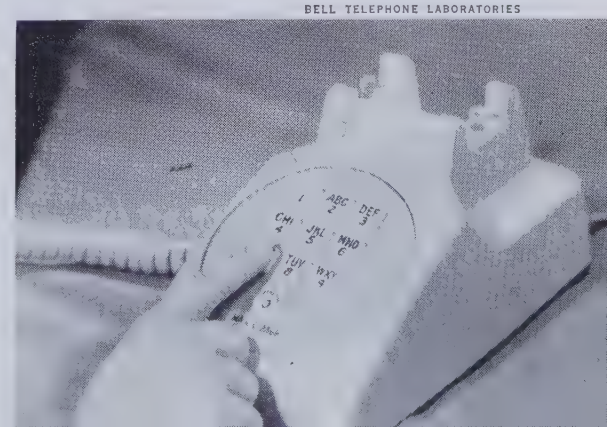
Area	Number	Per cent of world total	Per 100 population
North America	71,803,700	57.6	37.2
Central America	910,800	0.7	1.4
South America	2,999,600	2.4	2.2
Europe	37,593,900	30.1	6.6
Africa	1,768,600	1.4	0.7
Asia	6,855,500	5.5	0.4
Oceania	2,867,900	2.3	18.2
World	124,800,000	100.0	4.3

United States Service.—During 1959 a telephone user in the United States, including Alaska, could reach more than 97% of the world's telephones. About 94% of the telephones in the United States were dial-operated, and about 15 million customers could dial their own long-distance calls across the country. Approximately 4,500,000 additional customers could dial their long-distance calls to a more limited extent. About three fourths of all telephones in the United States could be reached by such "direct distance dialing" by the end of 1959. The total investment in telephone plant and equipment in the United States exceeded $25 billion in 1959.

Ocean Cables.—A second transatlantic telephone cable system was placed in service in September 1959, the first such system connecting North America with continental Europe. The previous (1956) transatlantic telephone cable system connected North America with Britain, and additional

Experimental model of the telephone of the future, which will feature push buttons rather than a conventional dial.

BELL TELEPHONE LABORATORIES



cable systems connect the mainland United States with Cuba, Alaska, and Hawaii. Another undersea cable system, between the United States and Puerto Rico—the deepest in the world—is scheduled for service early in 1960.

New Services.—During 1959 the products of modern electronics—particularly transistors and related miniature devices—continued to be introduced into the telephone industry at an accelerated pace. A compact transistorized amplifier for so-called "exchange trunks" between telephone offices was placed in production. Under development was a pulse code modulation system—equipment allowing several telephone conversations to be carried over a single pair of wires between central offices. Transistors and many other new electronic devices played an important part in building the Bell System's first electronic telephone switching system, scheduled to be placed on trial in 1960 at Morris, Ill.

Among new instruments under test or development during 1959 were a telephone set having push buttons in place of the conventional dial, a new lightweight telephone set, pocket radio receivers for signaling telephone calls, and automatic dialers. "Dataphone" service and other systems for transmitting business data at high speeds became a more important part of communications service during the year.

To test new designs for undersea telephone cables, facilities for simulating ocean environments and cable-laying operations were set up on land by Bell Telephone Laboratories, the research and development unit of the Bell System. Another product of research was an improved, electronic artificial larynx to aid people who have lost the power of speech.

Space Communications.—In cooperation with the National Aeronautics and Space Administration (q.v.), the Bell System started work on a series of experiments in which balloon-type satellites are to act as "mirrors" for reflecting radio signals over very long distances. The equipment was designed to "bounce" radio signals from aluminum-coated spheres, 100 feet in diameter, which are scheduled to be placed in orbit in 1960.

Defense.—The growing network of bypass routes around major cities was a continuing, important contribution to defense during 1959. Also during the year the Western Electric Company, manufacturing and supply unit of the Bell System, continued extension of the Distant Early Warning (DEW) Line and of the Ballistic Missile Early Warning System (BMEWS) for detecting and reporting attack by ballistic missiles. Also under development and test were the Nike-Zeus system, designed to intercept and destroy intercontinental ballistic missiles, and an accurate guidance system intended for use with the Titan intercontinental ballistic missile.

(See also ELECTRICAL DEVELOPMENTS; FEDERAL COMMUNICATIONS COMMISSION; PUBLIC UTILITIES.)

M. P. COSGROVE,
Public Relations Manager,
American Telephone and Telegraph Company.

TELEVISION. See RADIO AND TELEVISION.

TENNESSEE. South Central state, United States; admitted to the Union, June 1, 1796. The "Volunteer State" ranks 34th in area and 17th in population among the 50 states.

Area and Population.—Area: 42,244 square miles (land, 41,794; inland water, 447), divided into 95 counties. Population: (1950) 3,291,718; (est., July 1, 1958) 3,468,000. Urban places with populations above 10,000 (as estimated by the state Department of Public Health for July 1, 1959) are:

Bristol	19,330	Kingsport	24,350
Chattanooga	133,703	Knoxville	136,969
Clarksville	20,330	Memphis	466,299
Cleveland	13,765	Morristown	17,615
Columbia	11,218	Murfreesboro	16,342
Dyersburg	11,672	Nashville	180,694
Elizabethton	12,824	Oak Ridge	30,229
Jackson	35,641	Tullahoma	11,618*
Johnson City	30,206		

* Special census, 1958.

Executive.—Chief state officers in 1959:
Governor: Buford Ellington (Democrat)
Lieutenant Governor: William D. Baird
Secretary of State: Joe C. Carr
Treasurer: Ramon T. Davis
Attorney General: George F. McCanless
Comptroller of the Treasury: William A. Snodgrass
Commissioner of Education: Joe Morgan

Constitution and Judiciary.—The present constitution went into effect in 1870. The Supreme Court comprises five justices; chief justice in 1959 was Albert B. Neil.

Legislature.—The Tennessee General Assembly comprises a 33-member Senate (in 1959, 28 Democrats and 5 Republicans) and a 99-member House of Representatives (82 Democrats and 17 Republicans), which meet in odd-numbered years commencing the first Monday in January.

Fiscal legislation for the 1959–61 biennium authorized expenditures which included $531 million for state government operations; $259 million for spending under the General Education Act, including $8.5 million for increases in elementary and secondary school teachers' salaries; and $320 million for highway construction and maintenance. The personal property tax was removed, and the tax on machinery installed in new or expanded industries was lowered to 1%.

Other legislation created a Department of Conservation and Commerce; set up a commission for planning observance of the 100th anniversary of the Civil War; made provision for General Sessions courts in counties where they are not already functioning; provided for uniform jury selection; authorized establishment of private development credit corporations and industrial parks; and approved a compact with Alabama and Mississippi to promote the Tennessee-Tombigbee Waterway. (See also below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $465,825,609.13 comprised $282,781,158.95 from state tax sources, $152,549,188.59 from the federal government, and $30,495,261.59 from other sources. Tax revenue consisted of $98,324,818.58 from a 3% general sales tax, $4,805,652.08 from individual income taxes, $16,482,134.29 from corporate income taxes, $72,542,956.82 from motor fuel taxes, $561,490.71 from licensing, and $90,064,106.47 from other sources. Expenditures of $443,254,086.15 comprised $122,255,179.72 for education, $72,155,687.34 for health, welfare, and safety, $132,029,989.97 for highways, and $116,813,229.12 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $114,179,500.

Banking.—As of June 10, 1959, the state's 75 national banks had $2,224,093,000 in assets, $1,409,957,000 in demand deposits, and $615,291,000 in time deposits. The 219 state banks had assets (including all public funds) of $986,454,361.84, demand deposits of $527,342,329.17, and time deposits of $363,565,409.34.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. National Education Association estimates for the 1959–60 school year indicated operating expenditures for the state's public elementary and secondary schools at $156 million ($211.50 per pupil). Estimated revenue comprised $73 million from local school districts, $94.5 million from the state, and $8 million from the federal government. Capital outlays for construction and improvements amounted to $30.5 million, and teachers' salaries averaged $3,775 (high school, $4,100; elementary, $3,650).

In the 1959–60 school year there were an estimated 625,700 pupils in public elementary schools served by 19,165 teachers, and 184,800 public secondary school pupils with 7,200 teachers. Enrollment in colleges and universities (1958–59) totaled 56,910.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal, state, and county funds (excluding institutional costs) totaled $49,760,683, including $27,432,010 for the aged, $17,274,389 for dependent children, and $3,501,064 for the permanently and totally disabled. A monthly average of 144,672 persons received public assistance.

Labor Force.—In 1959 the state's labor force totaled 1,340,000 persons, including 215,000 agricultural workers. Nonagricultural employment in June numbered 874,300, above both the 836,100 figure of the previous June and the 849,900 average for 1958. Of nonfarm employees in June 1959, 34.4% were employed in manufacturing, 21.6% in trade, and 16.6% in government. Insured unemployment of 30,800 in July 1959 was well below the 55,350 total of the previous July.

Manufacturing.—The state's 4,100 manufacturing plants in 1958 employed an average of 287,200 persons who received $800 million in wages. Value added by manufacture (1957) totaled $2,126,529,000, and outlays for new plant and equipment amounted to $218,700,000. Production workers averaged $72.51 for an average workweek of 41.2 hours in August 1959.

MAJOR TENNESSEE MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Chemicals and products	42,149	$226,013	$559,116
Food and kindred products	28,359	107,715	240,806
Textile mill products	30,996	87,213	154,151
Primary metal industries	14,418	64,926	144,073
Fabricated metal products	20,797	81,485	135,126
Pulp, paper, and products	9,328	43,163	114,405
Apparel and related products	32,818	73,243	107,669
Transportation equipment	6,412	29,055	86,881
Printing and publishing	11,193	47,886	79,494
Leather and leather goods	12,182	33,510	72,496

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Tennessee was 27th among the states in the value of its mineral output, with 0.76% of the national total. It was first in output of ball clay (64% of domestic output), dimension marble, pyrites, and, for the first time, in zinc production; second in phosphate rock; and third in fullers' earth (8% of national total).

TENNESSEE MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	8,375,000	$ 26,408,900
Clays	935,000	4,210,000
Coal	6,785,000	25,969,000
Copper	9,109	4,791,000
Manganese ore	5,935	452,000
Phosphate rock (long tons)	1,903,000	13,041,000
Sand and gravel	5,612,000	6,671,000
Stone[1]	16,850,000	26,814,000
Zinc	59,130	12,062,000
Other minerals	...	6,932,000
Total	...	$124,928,000[2]

[1] Excludes certain stone, value of which is included in "Other minerals." [2] Total adjusted to eliminate duplications in value of clay and limestone, and excludes values for processed minerals. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 totaled $288,177,000, compared with $278,474,000 for the corresponding period of 1958. For the full year 1958, income comprised $272,049,000 from livestock and livestock products, $216,720,000 from crops, and $26,221,000 from government payments. Principal income sources in 1958 were: cattle, $90,135,000; dairy products, $74,943,000; cotton lint, $74,633,000; and tobacco, $66,276,000.

The state had 203,000 farms in 1958. Total acreage (1954) of 17,654,000 included 4,861,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,753,000 cattle, 1,182,000 hogs, and 7,580,000 chickens (excluding commercial broilers). Some 278,000 family and hired workers were engaged in farming during the week of Nov. 22–29, 1959.

TENNESSEE CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	327	690	450
Corn (1,000 bu.)	55,944	59,748	67,635
Cotton lint (1,000 bales)	572	419	665
Cottonseed (1,000 tons)	229	178	272
Hay (1,000 tons)	1,769	2,178	1,978
Oats (1,000 bu.)	5,719	4,500	5,166
Potatoes (1,000 cwt.)	1,037*	660	910
Sorghum sirup (1,000 gal.)	412	630	420
Soybeans (1,000 bu.)	3,554	6,486	7,132
Strawberries (1,000 lb.)	22,837*	31,500	20,020
Sweet potatoes (1,000 cwt.)	708*	504	700
Tobacco (1,000 lb.)	138,283	121,554	127,783
Wheat (1,000 bu.)	4,046	2,660	3,720

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $130,395,471. Approximately 125 miles of construction were completed on new location, and 2,750 miles of existing highways were improved.

Highways and roads on Dec. 31, 1958, totaled 73,661 miles (69,062 surfaced). Registered *motor vehicles* numbered 1,159,540 on June 30, 1959, including 928,380 passenger cars. There were (1959) 27 *railroads* operating 3,442.63 line miles; 11 regularly scheduled *airlines;* and 59 *airports and airfields* (32 commercial and municipal, 2 military, and 25 private).

Communications media (1959) included 107 AM and 7 FM *radio stations;* 15 *television stations,* including one educational station; 29 daily *newspapers* (circulation, 1,030,298) and 127 other newspapers (267,167); and (January 1) 253,900 business and 749,200 residential *telephones.*

Principal Events, 1959.—The legislature in its biennial session, well controlled by Gov. Buford Ellington, avoided any increase in taxation and enacted the governor's programs for governmental reorganization, education (with provision for a very small increase in teachers' salaries), and highways. It rejected milk control and municipal local option liquor bills and all of the school segregation proposals except the executive-sponsored measure giving local school boards sole authority to enforce the compulsory attendance laws. It also refused to reapportion legislative representation, unchanged since 1901, with the result that a suit was filed in federal court to force action. A panel of three federal judges decided in December that it did not have jurisdiction. The case will be appealed to the U.S. Supreme Court.

After a one-year postponement, Memphis State University was successfully integrated in the fall, with eight Negro students being registered early to avoid the possibility of violence. Also integrated was a public school at Smyrna, which admitted 16 children of Negro soldiers at Sewart Air Force Base. The third grade of Nashville public schools was integrated without incident, and the U.S. Supreme Court refused to hear an appeal by the NAACP that the year-at-a-time plan of the city was too slow. A suit in federal court to require integration of Knoxville schools failed because of changes in the personnel of the school board. A new suit was filed in December.

The second conviction, in 1958, of John Kasper for contempt of court in fighting school integration at Clinton in 1956, was upheld by the U.S. Court of Appeals, and the U.S. Supreme Court refused to review the case. After his release from federal prison in December, Kasper faced another six-month sentence by a Tennessee criminal court—upheld by the state Supreme Court in July—growing out of his interference with school integration in Nashville in 1957.

A report of the U.S. Civil Rights Commission (see CIVIL LIBERTIES) in September claimed that Negroes were being prevented from voting in Fayette and Haywood counties.

TENNESSEE VALLEY AUTHORITY

Many beautiful lakes, like this one on Tennessee's Ocoee River, were formed by dams of the extensive TVA system to provide unsurpassed recreational facilities in addition to flood control, power production, and navigation benefits.

The limited constitutional convention which met in Nashville in July rejected two of the three amendments considered—proposals to reduce the voting age to 18 years and to increase the term of office of county sheriffs to four years. It approved an amendment to increase to four years the term of county trustees, and this measure will be submitted to the voters in November 1960.

Labor violence in the coal mining region of southeastern Kentucky and Anderson and Campbell counties in Tennessee, necessitated the use of Tennessee state troopers in May at Jellico and led to damage suits against the United Mine Workers.

In April the Atomic Energy Commission selected Oak Ridge as the site for a $30 million reactor project. On May 5 the inhabitants of Oak Ridge voted overwhelmingly in favor of incorporation of their city. The U.S. Senate on July 23 confirmed the appointment of ex-Congressman Brooks Hays of Arkansas as a director of the Tennessee Valley Authority (q.v.). In July, Congress finally passed a self-financing bill for TVA.

The recovery from recession, which began in late 1958, continued at a rapid pace in 1959, with new records being established in most areas of the state's economy. Total nonagricultural employment averaged over 20,000 persons per month higher than in 1958, with the greatest gain occurring in manufacturing employment, which showed an average monthly gain of 4.4%. Industrial activity reached new peaks, with the lumber and furniture and the chemical industries surpassing previous records. Primary and fabricated metals industries operated at near-peak production, affected only slightly by the prolonged steel strike. New records were set in home building, with surprising strength in business outlays for new construction and expansion. The federal and state highway programs aided the economy. General optimism was reflected in an all-time record level of retail sales, which increased 12.5% over 1958, with even higher percentage gains in heavy consumer goods such as automobiles and appliances. The agricultural picture was not so bright, owing to a slight general decline in prices of agricultural produce, with sizable declines in meat products, poultry, and eggs.

Principal Events by: STANLEY J. FOLMSBEE, *Professor of History, University of Tennessee.*

TENNESSEE VALLEY AUTHORITY. In August 1959, Congress amended the Tennessee Valley Authority Act of 1933 to authorize the issuance of up to $750 million of electric revenue bonds to finance additional generating capacity. The first plant to be built with bond proceeds will be at Paradise, Ky., on the Green River. Initially, it will have a single turbogenerator of 600,000 kilowatts capacity, the largest ever to be built.

The amendment limited the TVA's geographic expansion to no more than five miles from the periphery of its present 80,000-square-mile service area, and set a maximum limit of 2,000 additional square miles, of which no more than 500 square miles may be in one state. It also stipulated that TVA pay to the U.S. Treasury over a period of 54 years $1 billion of the present investment of appropriated funds (amounting to $1.2 billion). The TVA is also required to pay a return on the investment equal to the average interest rate on marketable Treasury obligations.

All additions to the power system started since 1953 have been financed from power revenues. The TVA has also paid $250 million of power revenues to the Treasury. At the close of the fiscal year 1959, the power assets exceeded $1.7 billion, or $0.5 billion more than the Treasury investment of $1.2 billion. The installed capacity of the system amounted to 11,434,000 kw. at the end of the year 1959, with an additional 1,883,000 kw. under construction to meet growing power requirements through 1962. The new projects included 500,000-kw. generating units at Widows Creek and Colbert steam plants, and additional hydroelectric capacity at Wilson and Wheeler dams.

At Wilson Dam the TVA placed in operation a new large lock with a single lift of 100 feet, thus removing a major bottleneck for growing traffic on the waterway. The new lock, which has a chamber 600 feet long and 110 feet wide, will reduce average locking time for tows from four hours to an hour or less. The two original small locks in tandem are to be modified and retained as auxiliaries.

In the fiscal year 1959, TVA sold 57.2 billion kw.-hr., about half of which was used by the Atomic Energy Commission and other federal installations. Power revenues were $237.5 million, and net income was $50.8 million. Locally owned municipal and cooperative distributors bought 17.7 billion kw.-hr. for distribution to nearly 1.4 million customers. Average annual household use of power in the calendar year 1959 exceeded 8,100 kw.-hr. per customer, or well over double the national average.

Traffic on the Tennessee waterway amounted to 2.1 billion ton-miles in 1958, with savings to shippers estimated at $24 million. During the first ten months of 1959, the traffic ran slightly higher than in the comparable period of 1958. TVA submitted to Congress a report, *A Program for Reducing the National Flood Damage Potential,* based on its experience of several years in working with local communities to aid them in avoiding flood damage.

About 240,000 tons of a variety of nitrogen, phosphate, and combination fertilizers were distributed from the TVA's Fertilizer-Munitions Development Center at Muscle Shoals, Ala., for use in educational programs in about three quarters of the states. The value of recreational improvements along and on the TVA lakes increased by $10 million to $82.3 million by the end of 1958.

The TVA's Board of Directors at the end of 1959 consisted of Brig. Gen. Herbert D. Vogel (Ret.), chairman; Arnold R. Jones; and Brooks Hays, former congressman from Arkansas, who was appointed on May 21, 1959.

KENNETH R. KENNEDY, *TVA Information Staff.*

TENNIS. See SPORTS, GAMES, AND SHOWS.

TERRESTRIAL MAGNETISM AND ELECTRICITY. See Index entry.

TEXAS. Southwestern state, United States; admitted to the Union, Dec. 29, 1845. The "Lone Star State" ranks second in area and sixth in population among the 50 states.

Area and Population.—Area: 267,339 square miles (land, 263,513; inland water, 3,826), divided into 254 counties. Population: (1950) 7,711,194; (est., July 1, 1958) 9,324,000. Urban places with populations above 15,000 in 1950 (unless another date is given) are:

Abilene	45,570	Lubbock	71,747
Alice	16,449	Lufkin	15,135
Amarillo	74,246	McAllen	20,067
Austin (*capital*)	132,459	Marshall	22,327
Baytown	22,983	Midland	21,713
Beaumont	94,014	Odessa	29,495
Big Spring	17,286	Orange	21,174
Borger	18,059	Pampa	16,583
Brownsville	36,066	Paris	21,643
Brownwood	20,181	Pasadena	22,483
Bryan	18,102	Port Arthur	57,530
Corpus Christi	108,287	San Angelo	52,093
Corsicana	19,211	San Antonio	408,442
Dallas	434,462	Sherman	20,150
Denison	17,504	Temple	25,467
Denton	21,372	Texarkana	24,753
El Paso	130,485	Texas City	16,620
Fort Worth	278,778	Tyler	38,968
Galveston	66,568	University Park	24,275
Harlingen	23,229	Victoria	16,126
Houston	711,000*	Waco	84,706
Kingsville	16,898	West University Place	17,074
Laredo	51,910	Wichita Falls	68,042
Longview	24,502		

* Est. Jan. 1, 1956.

Executive.—Chief state officers in 1959:
Governor: Price Daniel (Democrat)
Lieutenant Governor: Ben Ramsey
Secretary of State: Zollie Steakley
Treasurer: Jesse James
Attorney General: Will Wilson
Auditor: C. H. Cavness
Commissioner of Education: J. W. Edgar

Constitution and Judiciary.—The present constitution went into effect in 1876. The highest criminal court, the Court of Criminal Appeals, comprises three justices; chief justice in 1959 was W. A. Morrison. The Supreme Court, the state's highest court in civil cases, comprises nine justices; chief justice in 1959 was John E. Hickman.

Legislature.—The Texas Legislature, comprising a 31-member Senate and a 150-member House of Representatives, met in 1959 from January 13 to August 6 for a regular and three special sessions.

The legislature in 1959 appropriated approximately $2.4 billion for the 1959–61 biennium, including $938 million for education, $803 million for highways, and $401 million for public welfare. Tax rates were increased on corporation franchises, cigarettes (to 8 cents a pack), and radio and television sets. New levies included a special tax on natural gas.

Other legislation changed the date on which the first state primary is held to the first Saturday in May and that of the second primary to the first Saturday in June, and provided that a candidate's name may appear on the ballot for president or vice president of the United States and for a statewide elective office.

Educational measures provided for establishment in Bexar County (San Antonio) of the South Texas Medical School as a branch of the University of Texas, and raised teachers' salaries in state universities and colleges.

Other legislation created a state Development Board, District courts, and Family Relations courts; authorized lump-sum settlements of Workmen's Compensation claims; placed time and parental-consent limitations on the issuance of marriage licenses to males under 21 and females under 18, and forbade health inspections of private residences without court or occupant permission. (See also below, *Principal Events, 1959.*)

Finance.—State revenue of $1,019,293,976.51 in the 1957–58 fiscal year comprised $657,236,672.01 from tax sources, $252,800,983.88 from the federal government, and $109,256,320.62 from other sources. Tax revenue consisted of $169,910,804.07 from motor fuels, $76,270,192.40 from licensing, and $411,055,675.54 from other sources. Spending of $1,027,389,546 comprised $379,850,159.80 for education $198,041,393.76 for health, welfare, and safety, $312,119,359.32 for highways, and $137,378,633.12 for other purposes. Long-term indebtedness on Aug. 31, 1958, amounted to $171,941,686.68.

Banking.—As of June 10, 1959, the state's 461 national banks had $9,234,975,000 in assets, $6,502,852,000 in demand deposits, and $1,818,376,000 in time deposits. The 499 state banks (Dec. 31, 1958) had assets of $2,662,270,164.52, demand deposits of $1,965,345,034.29, and time deposits of $484,128,685.93.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. The National Education Association estimated state operating expenditures for public elementary and secondary schools in the 1958–59 school year to be $521,375,000 ($299.54 per pupil). Estimated revenue comprised $286,299,000 from local school districts, $292,178,000 from the state, and $29 million from the federal government. Capital outlays approximated $145 million. Teachers' salaries (1957–58) averaged $4,390.

WIDE WORLD

Smoke billows from the hold of the tanker *Virginia*, after it and two barges exploded in Houston harbor, November 8.

TEXAS SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–6)	3,767	45,330	1,187,864
Public junior high (7–9)	487	7,519	427,728
Public senior high (10–12)	1,443	17,878	280,625
Public junior colleges	2	246	6,068[1]
State teachers colleges	6	606	14,528[1]
State colleges and universities	10	2,931	60,339[1]
Total college enrollment	...	...	175,854[1,2]

[1] 1958–59 school year. [2] Includes enrollment for the three college units listed separately above.

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from state and federal funds (excluding institutional costs) totaled $166,502,541, including $138,281,993 for the aged, $21,034,445 for dependent children, and $4,301,419 for the needy blind. A monthly average of 341,351 persons received assistance.

Labor Force.—The state's labor force totaled 3,625,800 persons on Aug. 31, 1959, including 470,700 agricultural workers. Nonagricultural employment edged up slightly to 2,993,700 from 2,934,400 a year earlier and exceeded the 2,964,500 average for the 12 intervening months. Principal sources of nonfarm employment in August 1959 were trade (26.4%), service industries (17.7%), manufacturing (16.9%), and government (13.7%). Unemployment on Aug. 31, 1959, dropped to 152,900 from 184,700 on the same date in 1958.

Manufacturing.—In the first half of 1959 there were 10,474 manufacturing establishments in the state employing an average of 503,400 persons. Total wages earned (1957) amounted to $2,233,737,000, and in August 1959, production workers averaged $89.69 for an average workweek of 42.1 hours. Value added by manufacture totaled $5,039,313,000, and outlays for new plant and equipment (1957) totaled $811,828,000.

Mining.—In 1958 Texas was first among the states in the value of its mineral output, with 24.44% of the national total, although the 1958 value of $4,038,656,000 marked a decline from the 1957 figure of $4,484,538,000 (revised). The state ranked first in the output of asphalt, carbon black,

MAJOR TEXAS MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Chemicals and products	39,587	$231,493	$1,068,053
Petroleum and coal products	43,280	277,548	758,191
Food and kindred products	69,524	257,170	663,019
Transportation equipment	75,842	407,968	527,413
Nonelectrical machinery	45,961	242,672	503,651
Primary metal industries	28,902	152,694	339,915
Printing and publishing	26,022	112,411	207,374
Fabricated metal products	23,093	107,471	183,288
Stone, clay, glass products	15,626	61,053	168,167
Apparel and related products	32,933	81,700	130,561

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

helium (produced in federal plants at Amarillo and Exell), natural gas, flake graphite (only producer), and Frasch sulfur; second in aluminum capacity and in the output of bromine, cement, and stone; and third in bentonite (9% of national output), gypsum, bituminous limestone, and salt.

TEXAS MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Cement (bbl.)	25,875,000	$ 79,756,000
Clays[1]	3,720,000	5,424,000
Gypsum	1,240,000	4,120,000
Helium (1,000 cu. ft.)	294,452	4,807,000
Iron ore, usable (long tons)	...[2]	...[2]
Lime	691,000	7,146,000
Natural gas (1,000 cu. ft.)	5,178,073,000[3]	517,807,000[3]
Natural gasoline (bbl.)	68,371,167	204,501,000
Petroleum (bbl.)	940,706,000[3]	2,873,988,000[3]
Petroleum gases (bbl.)	90,156,548	151,896,000
Salt, common	3,843,000	15,115,000
Sand and gravel	32,871,000	30,808,000
Stone	36,076,000	40,912,000
Sulfur, Frasch (long tons)	2,616,000	61,621,000
Other minerals	...	50,903,000
Total	...	$4,038,656,000[4]

[1] Excludes certain clays; value of which is included in "Other minerals." [2] Figure withheld to protect individual company's confidential data. [3] Preliminary. [4] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The fish and shellfish catch in the year ending Aug. 31, 1959 totaled 170,464,893 pounds (up 42,723,140 pounds over 1957–58) valued at $25,564,181. The principal species was shrimp (66,332,722 pounds valued at $23,216,453).

Agriculture.—Cash farm income for the first nine months of 1959 dropped to $1,360,230,000 from $1,458,304,000 for the corresponding period of 1958. For the full year 1958, income comprised $929,587,000 from livestock and livestock products, $1,443,033,000 from crops, and $122,188,000 from government payments. Principal income sources in 1958 were: cotton lint, $690,045,000; cattle, $547,879,000; sorghum grain, $288,566,000; and dairy products, $137,270,000.

There were 292,000 farms in the state in 1958.

TEXAS CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Broomcorn (tons)	7,300	6,900	5,600
Corn (1,000 bu.)	41,073	42,973	42,728
Cotton lint (1,000 bales)	3,956	4,308	4,500
Cottonseed (1,000 tons)	1,646	1,816	1,888
Cowpeas (1,000 bu.)	540	450	408
Flaxseed (1,000 bu.)	753	336	357
Grapefruit (1,000 boxes)	3,800	4,200	5,800
Hay (1,000 tons)	1,753	2,487	2,340
Oats (1,000 bu.)	24,373	53,130	26,473
Oranges (1,000 boxes)	1,676	2,300	3,200
Peaches (1,000 bu.)	625	1,100	1,100
Pecans (1,000 lb.)	35,040	26,000	23,000
Potatoes (1,000 cwt.)	1,513*	2,285	2,562
Rice (1,000 bags)	13,013	11,370	13,136
Sorghum grain (1,000 bu.)	113,524	273,066	277,666
Sweet potatoes (1,000 cwt.)	1,351*	1,210	1,495
Wheat (1,000 bu.)	35,358	73,040	59,850

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Total acreage (1954) of 145,813,000 included 24,885,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 8,510,000 cattle, 1,226,000 hogs, 5,170,000 sheep, and 17,196,000 chickens (excluding commercial broilers). Some 427,000 family and hired workers were engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $328,921,586, and 1,566 miles of new construction were completed.

Highways and roads on Sept. 1, 1959, totaled 60,372 miles (52,206 surfaced). Registered *motor vehicles* numbered 4,728,905 on Aug. 31, 1959, including 3,416,432 passenger cars. There were (1958) 38 *railroads* operating 15,022.79 line miles; (1959) 11 regularly scheduled *airlines;* and (1959) 1,263 *airports and airfields* (665 commercial and municipal, 37 military, and 550 private, in addition to which there were 11 seaplane and heliport installations).

Communications media (1958) included 233 AM and 19 FM *radio stations;* 41 *television stations;* (1959) 105 daily *newspapers* and 536 other newspapers; and (Jan. 1, 1959) 958,700 business and 2,132,000 residential *telephones.*

Principal Events, 1959.—Economic activity in Texas increased substantially during 1959. By September 1959, the index of Texas business activity computed by the Bureau of Business Research at The University of Texas was 11% above the index value for September 1958. This increase in statewide business activity was attributable not only to general economic expansion nationally, but also to some improvement in the special position of the Texas petroleum industry. Over the first 10 months of 1959, the number of active rotary drilling rigs in Texas increased by 7%, compared with the corresponding period in 1958, while total footage drilled in the state expanded by 6%. The national steel strike had only minor effects on Texas economic activity in 1959.

A marathon session of the Texas Legislature, which included three special sessions, lasted from January 13 through August 6. The major legislative difficulty was a basic disagreement as to how the state's mounting public expenditures should be financed. Texas has neither a state general sales tax nor a state income tax, and recent legislatures have been hard pressed to devise revenue bills adequate for current expenditures. Legislative advocates of a sales tax were unable to generate enough support for their measure, and the final tax bill was a compromise which contained many, but not all, of Gov. Price Daniel's recommended taxes. Observers generally agreed that the 1959 session had featured the longest and hardest fight over any tax bill in Texas history. It was also apparent that many of the same contentious issues would have to be faced when the time came again to write state tax and expenditure bills.

The 56th Texas Legislature took no action on Governor Daniel's recommendation of an increase in the salaries of public school teachers. Also, the legislature failed to act on the proposals of the Hale-Aiken Committee of 24, which were designed to improve public school education in Texas. Late in the second special session, a compromise beach bill was passed, which was drafted to assure the public the right to use state-owned beaches along the Gulf of Mexico from the low-tide mark back to the vegetation line. The historic right to beaches had been jeopardized as a result of Texas Supreme Court decisions in June and December 1958, which redefined the boundary between public and private property along the gulf. While the legislature's action served to stop the fencing of beaches previously open to the public, it seemed likely that the beach bill would be tested in the courts. (See also above, *Legislature.*)

Another, even more celebrated, controversy over the ownership of gulf lands continued in 1959. Late in the year, attorneys for five coastal states (Texas, Louisiana, Mississippi, Alabama, and Florida) concluded their arguments before the U.S. Supreme Court, claiming state title to lands 10½ miles offshore. The case was an outgrowth of the Submerged Lands Act of 1953, which had been designed to settle the tidelands dispute. This bill recognized the coastal states' title to their "historic boundaries" but failed to define them.

In October the Dallas Museum of Contemporary Arts moved to permanent quarters in a new building. In the same city the Kalita Humphreys Theater opened in December. The only public theater designed by the late Frank Lloyd Wright (q.v.), it will house a permanent repertory company.

Texas public schools carried out no new racial desegregation of consequence in the fall of 1959. Antidesegregation laws passed by the Texas Legislature in 1957 had not yet been tested in the courts and served effectively to restrain local school boards from integration. Dallas and Houston school boards were still under federal court order to integrate.

Principal Events by: JOHN E. HODGES,
Associate Professor of Economics,
The Rice Institute.

TEXTILE INDUSTRY. Fiber Consumption.—United States consumption of cotton, wool, silk, and the man-made fibers during 1958 was at the low level of 5,981 million pounds, a decline of 3% from 1957. During the first half of 1959, consumption of these fibers increased to an annual rate of 6,878 million pounds, the highest level since 1942.

Consumption of raw cotton during January–June 1959 was at an annual rate of 4,354 million pounds, or 10% more than in the full year 1958. The 1959 annual rate of wool usage, based on the first half of the year, was 462 million pounds, a substantial increase of 33½% above 1958 and the largest indicated annual total since 1953. Raw silk consumption, at 3 million pounds in the first half of 1958, held at the same low rate of recent years.

The annual rate of man-made fiber consumption in the first half of 1959 was 2,056 million pounds, or 22% over the full year 1958. Within this 1959 man-made fiber total, all of the fiber categories showed increases over 1958. The 1959 annual rate of rayon and acetate yarn consumption for textile uses was estimated at 420 million pounds (up 8% over 1958); rayon yarn consumed in tires and related uses, 316 million (up 24%); rayon and acetate staple + tow, 564 million (up 21%); noncellulosic man-made fiber consumption, 606 million (up 29%); and textile glass fiber usage, 150 million (up 39%). These figures indicated the probability of new annual records for both the noncellulosic and textile glass fibers.

Cotton continues to be the most important textile fiber in terms of poundage, accounting for 63½% of the total fiber used in the first half of 1959, compared with 66% in 1958. During the first half of 1959, raw wool consumption represented 6½% of the four-fiber total, compared with 6% in 1958. The 1959 share of total fiber usage represented by the man-made fibers in the first six months of 1959 was 30%, compared with 28% a year earlier.

Broad Woven Goods Production.—Production of broad woven goods in the United States during the first half of 1959 was at an annual rate of 12,350 million linear yards, 6% over 1958 when 11,627 million yards were produced. The annual rate of cotton goods output was 9,540 million yards, up 6½% from 1958.

For man-made fiber fabrics (including a small yardage of silk goods), the 1959 rate of production —at 2,500 million yards—was 5% above the 1958 level. The 1959 annual rate of woolen and worsted fabric production was 310 million yards, 15% above 1958.

Tire Cord and Fabric Production.—Based on six-months data, the 1959 annual rate of tire cord and fabric production was indicated at 430 million pounds, a notable increase of 22½% over 1958. By fiber, nylon comprised 28% of the tire cord and fabric produced in the first half of 1959, compared with 71% for rayon and 1% for cotton. The respective figures for 1958 were nylon, 27%; rayon, 71%; and cotton, 2%. It should be noted that the new "Super 2" or higher strength rayon cord produced in recent years requires less poundage of yarn in a given tire.

Prices.—During the first nine months of 1959, there were divergent trends in textile fiber prices. Over that period, the average price of 1-inch middling raw cotton was 33.8 cents a pound, down slightly from the 1958 annual average of 34.7 cents. The 1958 annual average price of raw wool (scoured basis, at Boston) was $1.19 per pound; from a low point of $1.08 in February–March 1959, the price rose to $1.32 in August and dropped slightly to $1.31 in September. The resulting average for the first nine months of 1959 was $1.20.

The price of rayon staple, which had declined to 29 cents per pound in March 1957, was increased in late August that year to 31 cents and remained at that level until early April 1959 when it increased to 33 cents. The 150-denier rayon filament yarn, which sold at 76 cents per pound in the latter part of 1958, was raised to 79 cents in February 1959 and was increased again to 82 cents in June 1959. The 150-denier acetate filament yarn price held at 79 cents in both years.

Employment and Wages.—The total number of persons employed in United States knitting and weaving mills, as well as in the manufacture of apparel and other finished textile products, aver-

SELECTED U.S. TEXTILE STATISTICS

	Year 1956	Year 1957	Year 1958	1st half 1959
Fiber Consumption:	(Millions of pounds)			
Raw cotton	4,332	4,044	3,942	2,177
Raw wool, total[1]	450	379	346	231
Apparel class	306	251	228	145
Carpet class	144	128	118	86
Raw silk	8	6	5	3
Man-made fibers[2]	1,685	1,739	1,688	1,028
Rayon + acetate yarn	727	686	644	368
"Textile" uses	382	375	389	210
Tires and related uses	345	311	255	158
Rayon + acetate staple + tow	474	491	465	282
Noncellulosic fibers[3]	390	471	471	303
Textile glass fibers	94	91	108	75
Total fibers	6,475	6,168	5,981	3,439
Broad Woven Fabric Output:[4]	(Millions of linear yards)			
Cotton fabrics	10,317	9,534	8,973	4,770
Man-made fiber fabrics[5]	2,290	2,289	2,384	1,250
Woolen and worsted fabrics[6]	324	294	270	156
Total broad woven goods	12,931	12,117	11,627	6,176
Tire Cord and Fabric:[7]	(Millions of pounds)			
Cotton (except chafer)	11	9	7	2
Nylon	59	87	96	60
Rayon	334	313	248	153
Total tire cord and fabric	404	409	351	215

[1] Scoured basis. [2] U.S. producers' domestic shipments plus imports for consumption. [3] Includes nylon (polyamide), Saran (polyvinylidene chloride), acrylic and acrylic type, polyester, polyethylene, polypropylene, polystyrene, polyvinyl acetate, polyvinyl chloride, protein, tetrafluoroethylene, and miscellaneous fibers. [4] Except tire fabric. [5] Including nominal yardage of silk fabrics. [6] Excluding carpets, rugs, and felts. [7] Excluding chafer fabric.

aged 1,877,000 during 1958. In the first half of 1959, the average monthly employment increased to 1,932,000.

The average weekly gross earnings of textile mill products employees during the first half of 1959 was $62.95, compared with $58.22 in 1958 and $58.41 in 1957. For the apparel cutting and related trades, weekly wages averaged $55.55, $53.51, and $53.80 in the same order.

Imports and Exports.—The United States is normally a net exporter of textile fibers and manufactures, the large export balance in raw cotton, cotton textiles, noncellulosic man-made fibers, and man-made fiber textile products usually being offset to a lesser degree by substantial imports of raw wool, wool textiles, and rayon staple. But for the first time in many years, due largely to the notable drop in raw cotton exports, there was a net import balance in the first half of 1959 for all textile fibers and products at an annual rate of $180 million, based on a projected value of imports at $1,159 million and exports at $979 million.

Per Capita Fiber Consumption.—United States civilian per capita consumption of cotton, wool, and the man-made fibers in the first half of 1959 was at an annual rate of 35.7 pounds, an increase of 4.6 pounds, or 15%, over the 31.1 pounds consumed during 1958. The projected 1959 wool usage was 3.2 pounds, an increase of 0.8 pounds. Cotton, at 21.8 pounds, was up 2.2 pounds from 1958. Man-made fiber consumption, at an annual rate of 10.7 pounds, was up 1.6 pounds from 1958. (The per capita data is based on the mill consumption of the fibers, minus exports and plus imports of fabricated products, divided by the civilian population.)

Flax and Linen.—The United States obtains most of its raw flax, linen fabrics, and finished linen products from abroad since it grows only limited quantities of flax. Imports of raw flax and flax yarns (including hackled and not-hackled fiber, noils, tow, yarns, and thread) totaled 16.1 million pounds in 1958, up 58% over the 10.2 million pounds imported in 1957.

Added to this fiber poundage are the imports of linen and chiefly-linen fabrics, totaling 13.1 million pounds in 1958, a small decline from the 13.9 million pounds of 1957. Finally, 1958 imports of the principal linen manufactures included 1,860 thousand dozen handkerchiefs (down 11% from 1957), 287 thousand dozen towels (up 12%), and 352 thousand dozen napkins (down 7%).

Canadian Textile Developments.—Canada's textile manufacturing industry experienced a decline in 1958 similar to those which occurred in such major textile producing countries as the United States and the United Kingdom. Shipments of cotton fabrics totaled 244 million yards, down 20 million yards, or 8%, from 1957; wool fabric output was 15.5 million yards, down 9%; and man-made fiber fabric shipments totaled 76 million yards, a decrease of 10 million yards from 1957. As for the man-made fiber producing industry in Canada, rayon and acetate yarn and staple output totaled 66.5 million pounds, down 10% from 1957; and noncellulosic fiber production (nylon, Orlon acrylic fiber, Terylene polyester fiber, and Saran) was virtually unchanged from the 1957 output of 21.6 million pounds.

The Canadian textile industry, which employed 76,600 persons in 1958, is considerably smaller from the standpoint of manpower than it was in 1949 when about 90,000 persons were employed. The current number of mills is about 700, compared with more than 800 in 1949. Over the past decade, the industry has undertaken an extensive mill modernization program; since 1946, nearly $700 million has been spent on capital and repair expenditures. Such expenditures totaled $53.2 million in 1958, but were expected to decline to $42.8 million in 1959.

The Canadian mills' share of domestic fabric markets has declined from nearly 70% ten years ago to only about 50% in 1958 because of steadily increasing imports, especially from the United States, Japan, and the United Kingdom. Thus, Canadian cotton fabric shipments accounted for only about 45% of the total Canadian market in 1958; wool fabric shipments comprised 52% of the total; and man-made fiber fabric shipments were at an all-time low of 68% of the total market.

(See also CHEMISTRY; PLASTICS; and the Index entry, *Textile Industry.*)

STANLEY B. HUNT,
President, Textile Economics Bureau, Inc.

THAILAND (formerly SIAM). A kingdom of Southeast Asia, bordered by Laos, Cambodia, Burma, and Malaya. Estimated area, 198,500 square miles; pop. (est. July 1, 1959), 21,881,000. Bangkok (est. 1956, 1,208,865) is the capital and principal city. The majority of Thai are small-scale farmers; a Chinese minority of about 3 million is important in trade and the professions.

Government.—Thailand has been a constitutional monarchy since 1932 (King Phumiphon Adundet, b. 1927, ascended the throne in 1950). The decline of royal power, however, has not meant the rise of democratic government. Since World War II, authoritarian regimes headed by strong men or military cliques have succeeded one another by violent or bloodless coups, ruling with a show of constitutionalism or scrapping the constitutions entirely. On Oct. 20, 1958, Field Marshal Sarit Thanarat ousted the government he himself had put in power, abrogated the constitution, and banned all political parties other than his own Revolutionary Party. King Phumiphon proclaimed an interim constitution on Jan. 28, 1959, vesting virtually absolute power in the premier. A Constituent Assembly of 240 members (mostly military men) was appointed by royal decree on February 4 to draft a new constitution and serve as an interim legislature. The assembly unanimously elected Marshal Sarit as premier on February 9.

Education and Religion.—About 48% of the population over 15 years of age was illiterate in 1947. In 1957, primary schools had 3,195,586 pupils; secondary, 377,473; technical, 63,176; and teacher-training, 10,670. The 5 higher institutions (chief of which is Chulalongkorn University) had 28,662 students in 1956. Buddhism is the chief religion, and many schools are conducted by Buddhist monasteries. There are small Moslem and Christian minorities.

Finance.—The budget for 1959 approved by the Constituent Assembly estimated expenditure at 7,287 million baht; revenue, 5,950 million. The anticipated deficit of 1,337 million baht was to be financed by internal loans. (The baht had an average value of U.S.$0.048 in 1958.) United States assistance to Thailand under the foreign aid program totaled about $163 million in the period 1951–58; the estimate for 1959 was $25 million.

Transportation and Communications.—Inland waterways provide an important means of transport. The Royal State Railways, radiating out from Bangkok, had a total length of 2,170 miles in 1958. Roads open to traffic aggregated about 4,625 miles in 1956; a road construction program begun in 1955 aims to raise the total to 6,830 miles. Bangkok is a major Far East terminus of several international airlines. On Aug. 24, 1959, Thai Airways (the domestic line) and the Scandinavian Airlines System agreed to cooperate in the formation of Thai Airways International, to operate international services from Thailand. Passenger cars numbered 33,773 in 1958; telephones, 13,920 (1957); television receivers, 30,000.

Production.—Agriculture provides the livelihood for about 80% of the population, contributes nearly half the national income, and supplies the bulk of exports. Cultivation is mainly on a small-scale, family basis; traditional methods of tillage prevail, with the water buffalo playing an important role. Output of rice, the chief food staple and export, totaled 7.1 million metric tons of paddy in 1958–59, well above the drought-reduced yield of 5.7 million in 1957–58. Secondary crops and estimated yields in 1958 were: maize, 138,500 short tons; peanuts, 131,000 (unshelled); tobacco, 71,500; copra, 214,200; sugar, 76,000 (1957–58); soybeans, 26,500; sesame seed, 18,400; and castor beans, 31,400. The important rubber crop, grown mainly on small holdings in the south, yielded a record 139,700 metric tons for export in 1958. Teak, yang, sticklac, seedlac, shellac, gutta percha, and bamboo are obtained from Thailand's thick forests.

Manufacturing contributes less than 15% of total output value, but is of growing importance. Chief industries are rice- and sugar-milling, rubber goods, sawmill products, textiles, tobacco products, paper and plywood, and building materials. Production of tin concentrates, Thailand's chief mineral, totaled 7,800 metric tons in 1958, a considerable reduction from 1957 because of the lower International Tin Agreement quota. Tungsten ore, lead ore, antimony, lignite, and other minerals are

mined in small quantities. Electric power generating capacity amounted to 186,485 kw. in 1957, far below needs. Construction of the large-scale Yanhee hydroelectric project (financed by the International Bank for Reconstruction and Development), as well as smaller projects, is under way to expand generating capacity, increase irrigated area, and serve other needs. Other phases of Thailand's development program include expansion and modernization of transport and communications, improvement of the quality of crops, and stimulation of industrial growth through preferential treatment accorded certain favored industries.

Foreign Trade.—Exports in 1958 totaled 7,540 million baht (down 14% from 1957); imports, 8,012 million (down 5%). Principal exports were rice (1,132,000 metric tons; 2,976 million baht), rubber (139,700; 1,327 million), tin (about 7,000; 254 million), teak, lac, and tungsten; principal imports: heavy equipment and other manufactured goods, fuels and lubricants, and food products. The United States, chief customer for Thailand's rubber, took 18% of total exports in 1958 and provided 17% of imports. Other important trading partners are Japan, Malaya and Singapore, Hong Kong, Britain, and Indonesia.

Principal Events, 1959.—Field Marshal Sarit Thanarat, the strong man of Thailand, who had dissolved the National Assembly and abrogated the constitution in October 1958 when opposition elements became too vocal, maintained his rule in 1959 under an interim constitution proclaimed by King Phumiphon on January 28. The continuing authoritarian and military character of the regime was indicated in the appointment on February 4, by royal decree, of a 240-member Constituent Assembly dominated by the military. Sarit was unanimously elected premier by the assembly on February 9. His cabinet, announced on February 10, included Gen. Thanom Kittikachorn (premier in 1958) as deputy premier and minister of defense, and Thanat Khoman (former ambassador to the United States) as foreign minister, succeeding Prince Wan Waithayakon, who became a deputy premier.

The Sarit government took steps in 1959 to strengthen the economy, which was suffering from a decline in export income due mainly to lower rice sales. The list of favored industries granted preferential treatment under the Industrial Promotion Act of 1954 was extended, and special efforts were made to attract foreign investment capital by permitting free repatriation of earnings, according a temporary tax exemption, and other measures. In March, Thailand obtained a $20 million loan from the U.S. Development Loan Fund for the expansion of electric power facilities in the Bangkok-Thonburi area. Construction began during the year of a joint Thailand-Japanese galvanized iron factory, and in the fall a contract was signed with a Japanese firm for the construction of an oil refinery at Bangkok with a daily capacity of 5,000 barrels. An agreement was reached in July with an American firm for the establishment of a chemical and pharmaceutical plant near Bangkok.

Diplomatic relations with neighboring Cambodia (q.v.), severed late in 1958 because of a border dispute, were resumed on Feb. 20, 1959, following mediation by Baron Johan Beck-Friss, special representative of the United Nations secretary general. Malayan Prime Minister Dato Abdul Razak conferred with Premier Sarit during a four-day state visit to Thailand beginning on June 28, and it was agreed that the two governments would continue their cooperative action against Malayan Communist guerrillas in the border area.

M. J. G.

THEATER. During 1959 there was reasonably high quality in New York theater presentations, but fewer plays were produced than in earlier years. Contributing to the decrease in the number of productions was the scarcity of available Broadway-area playhouses, due to high taxation, competition for real estate locations, and the increasing length of runs of hit plays and musicals. Important in the latter factor is the success that theater party agents have had in selling out houses, in part or *in toto,* despite adverse critical reviews and public apathy at the box office. (From September through December 1959, theater parties accounted for $7 million in ticket sales.)

On Jan. 1, 1959, there were 30 attractions on Broadway, exclusive of the Old Vic from London. At the time, plays running in New York City, on Broadway and off, included such hits from former seasons as *My Fair Lady, The Music Man, The Threepenny Opera, Two for the Seesaw, Flower Drum Song, La Plume de Ma Tante, The Boy Friend, The Marriage-Go-Round, The Pleasure of His Company, The World of Suzie Wong, A Touch of the Poet, The Dark at the Top of the Stairs, Say, Darling, Bells Are Ringing, Look Homeward, Angel, Jamaica,* and *Sunrise at Campobello.*

The New York newspaper deliverers' strike late in 1958 affected the opening of new plays because it cut theater advertising and critical notices. For example, William Carlos Williams' *Many Loves,* scheduled to open in December at off-Broadway's Living Theatre, New York's only true repertory theater, did not officially open until January 13, after playing 24 preview performances. Dr. Williams' play, regarded as avant-garde, was well received and survived 216 performances in repertory, closing on November 17.

On Broadway, January's most distinguished offering was *Rashomon,* as fashioned by Hollywood scenarists Fay and Michael Kanin from the Japanese tales of Ryunosuke Akutagawa. The play, however, was less successful than the production, which was beautifully staged by Peter Glenville and had Oliver Messel's costumes and sets and Jo Mielziner's lighting. Akim Tamiroff, Oscar Homolka, Rod Steiger, and Claire Bloom acted superbly. Also in January, veteran playwrights and librettists Howard Lindsay and Russel Crouse celebrated a quarter-century of collaboration by contributing *Tall Story,* a comedy about campus athletics and politics, with a faint echo of *The Male Animal.* The event also marked Mr. Lindsay's 50th year in the theater.

Opening in February, *Redhead,* a musical set in a London waxwork museum, was treated with critical sniffs by the reviewers, but became a solid hit as a result of Gwen Verdon's superb dancing. Later, Norman Corwin's *The Rivalry,* a "dramatization" of the Lincoln-Douglas debates, and starring Richard Boone, Nancy Kelly, and Martin Gabel, lost a pack of money for its producers, Cheryl Crawford and Joel Schenker. Leonard Spigelgass wrote *A Majority of One,* a sentimental comedy about a Japanese gentleman and a Jewish-American widow. The play became a smash hit, due largely to the perceptive direction of Dore Schary and the superb acting of Gertrude Berg and Cedric Hardwicke.

In March, Noel Coward really came a cropper with *Look After Lulu,* his adaptation of Georges Feydeau's 19th-century French farce, *Occupe-toi d'Amélie.* With *Juno,* Joseph Stein proved, perhaps

FRIEDMAN-ABELES; MARTHA HOLMES; ARTHUR CANTOR

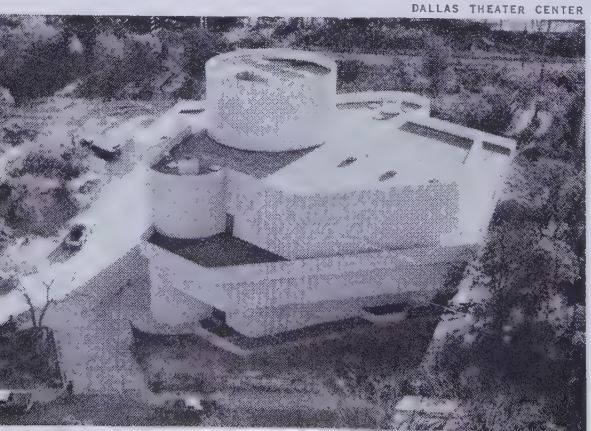
Winners of Antoinette Perry awards for the 1958–59 theater season were: (upper left) Gertrude Berg in *A Majority of One;* (lower left) Jason Robards, Jr., in *The Disenchanted;* (right) dancer Gwen Verdon in the musical *Redhead.*

forever, that Sean O'Casey's great, sardonic comedy, *Juno and the Paycock,* cannot be made into a musical. In the title role, the beloved Shirley Booth demonstrated that to err is human. Tennessee Williams ran up his score for hits with his poetic, vicious, decadent melodrama, *Sweet Bird of Youth,* which provided an acting holiday for Geraldine Page, Paul Newman, and Sidney Blackmer. The New York Drama Critics Circle Award went to Lorraine Hansberry, a brilliant young Negro playwright, who was the first woman of her race to achieve a Broadway production. Miss Hansberry's play, *A Raisin in the Sun,* while not the best of the 1958–59 season, was a poignant drama that achieved success through the fine acting of Sidney Poitier, Claudia McNeil, and Ruby Dee. *First Impressions,* a musical version of Jane Austen's *Pride and Prejudice,* was impressively miscast and was greeted tepidly by press and public.

Kataki, opening and closing in April, was a promising first-play by Shimon Wincelberg; however, Mr. Wincelberg struck himself out by writing a two-character play in which only one of the characters spoke English. His effort, about a Japanese and an American soldier on a Pacific island, was admirably acted by Sessue Hayakawa and

The only public theater designed by Frank Lloyd Wright, Dallas' Kalita Humphreys Theater opened on Dec. 27, 1959.

DALLAS THEATER CENTER



Ben Piazza. An off-Broadway production of *Kataki* in December seemed less likely to achieve success than its Broadway predecessor. *Destry Rides Again,* a musical based on the old-time film hit, was less than perfect but was continuing at the end of the year as a result of Dolores Gray's singing, Andy Griffith's acting, and Michael Kidd's direction and choreography.

On May 11 the theater spotlight turned to the off-Broadway Phoenix Theatre, where *Once Upon a Mattress* opened. This musical satire, based on the fairy tale, *The Princess and the Pea,* was later moved to the on-Broadway stage of the Alvin Theatre. The imaginative production, with book by Jay Thompson, Marshall Barer, and Dean Fuller, music by Mary Rodgers, and lyrics by Mr. Barer, was brought to life by the exuberant acting of Carol Burnett and the superb direction of George Abbott. The final hit of the 1958–59 season was *Gypsy,* starring the redoubtable Ethel Merman, who gave the greatest *acting* performance of her career. Based on Gypsy Rose Lee's memoirs, *Gypsy* was produced by David Merrick and Leland Hayward.

The fall season opened on Sept. 17, 1959, with the rarely seen Shakespeare comedy, *Much Ado About Nothing,* directed by John Gielgud for the Producers Theatre. The bright, realistic sets and costumes were designed after those by Mariano Andreu for the original English production. Gielgud and Margaret Leighton, superb comedians as Benedick and Beatrice, had the able support of Micheál MacLiammóir, George Rose, Malcolm Keen, David King-Wood, and Hurd Hatfield. Later in September, the Frenchman Yves Montand, in a one-man revue entitled *An Evening with Yves Montand,* proved to be such an excellent actor, singer, and dancer that his original limited engagement of three weeks was doubled because of packed and enthusiastic houses.

The late-starting season had its first American offering on Broadway on October 1, with *The Gang's All Here* by Jerome Lawrence and Robert E. Lee. This thinly disguised satire on President Harding and the Teapot Dome scandals, though well-acted and occasionally amusing, failed to attain the stature of the authors' *Inherit the Wind,* produced several seasons earlier. Because its downtown theater was occupied, the Phoenix Theatre group opened its fall season on Broadway, with Eugene O'Neill's *The Great God Brown.* Fritz Weaver, Nan Martin, and Gerry Jedd were outstanding in the cast expertly directed by Stuart Vaughan. Michael Flanders and Donald Swann, in *At the Drop of a Hat,* transported this two-man musical show from London with conspicuous success. *Chéri,* Anita Loos' adaptation of two short novels by Colette, was over-directed, over-produced, and over-decorated, although the production was brightened by the acting of Horst Buchholz and Lili Darvas. Kim Stanley in the leading role was hopelessly miscast.

In *Golden Fleecing,* which also opened in October, playwright Lorenzo Semple, Jr., showed a nice feeling for comedy with this farce about a group of American sailors who use an IBM machine to devise a method for breaking the bank of a gambling casino. A superb all-star revival of Shaw's *Heartbreak House,* directed by Harold Clurman, included Maurice Evans, Pamela Brown, and Diana Wynyard in its cast. William Gibson, author of *Two for the Seesaw,* provided *The Miracle Worker,* a splendid drama about Helen Keller as a child, and her teacher-companion, Annie Sullivan. The play, beautifully acted by Anne Bancroft and Patty Duke, was also beautifully directed by Arthur Penn. Julie Harris returned to Broad-

FRIEDMAN-ABELES; JIM PROCTOR; ARTHUR CANTOR

(*Left*) Paul Newman as an unscrupulous hustler, and Geraldine Page as an aging actress, in Tennessee Williams' *Sweet Bird of Youth*. (*Center*) Sidney Poitier and Claudia McNeil were seen in Lorraine Hansberry's drama, *A Raisin in the Sun*. (*Right*) *The Miracle Worker*, William Gibson's account of the early education of Helen Keller, with Anne Bancroft (l.) and Patty Duke.

way in a slick little comedy, *The Warm Peninsula* by Joe Masteroff. Robert Bolt's *Flowering Cherry*, imported from London with Wendy Hiller and Eric Portman as the stars, fell flat on its face. *Take Me Along*, a musical version of O'Neill's *Ah, Wilderness!*, was a smash hit. Jackie Gleason, Walter Pidgeon, Eileen Herlie, and Robert Morse had the leading roles.

The Sound of Music by Rodgers and Hammerstein, Lindsay and Crouse, opened in November with a huge advance sale. This musical, based on the book, *The Trapp Family Singers*, starred Mary Martin. Another musical in November, *Fiorello!*, about the career of New York's beloved Mayor La Guardia, was one of the season's bright spots. Tom Bosley was superb in the title role, and George Abbott's direction was his greatest in 40 years in show business. Paddy Chayefsky wrote a touching Jewish comedy, *The Tenth Man*, splendidly staged by Tyrone Guthrie. William Inge's *A Loss of Roses* was poorly written and performed.

In December another play from London, *Five Finger Exercise* by Peter Shaffer, with Jessica Tandy and Roland Culver, was a welcome hit. *Silent Night, Lonely Night*, a touching drama about loneliness, starred Henry Fonda and Barbara Bel Geddes. Morton Da Costa (book), Harold Arlen (music), and Johnny Mercer (lyrics) turned Edna Ferber's *Saratoga Trunk* into a large, beautiful, old-fashioned musical, *Saratoga*. Howard Keel and Carol Lawrence were the stars. Rex Harrison and Roddy McDowall triumphed in Jean Anouilh's delightful comedy, *The Fighting Cock*. The last major offering of the year was Saul Levitt's drama, *The Andersonville Trial*, with George C. Scott, Albert Dekker, and Herbert Berghof.

The New York Theater in 1959

The following list of New York theater productions in the calendar year 1959 is in three parts. The first part is an alphabetical list of the Broadway openings during the year; the second part is a selected list of the more important off-Broadway productions, notable as the work of new authors, interesting revivals, or experimental theater; and the third part is a list of Broadway productions which opened in earlier years and closed in 1959.

The Broadway Theater

(The following productions were presented on Broadway during the calendar year 1959. Where only the opening date is given, the production was continuing at the end of the year.)

Andersonville Trial, The, a play by Saul Levitt; with Albert Dekker, George C. Scott, and Herbert Berghof; December 29.

At the Drop of a Hat, a musical revue; lyrics by Michael Flanders; music by Donald Swann; with Messrs. Flanders and Swann; October 8.

Chéri, a play by Anita Loos, adapted from the novels, *Chéri* and *The Last of Chéri*, by Colette; with Kim Stanley, Horst Buchholz, and Lili Darvas; October 12–November 28.

Desert Incident, A, a play by Pearl S. Buck; with Shepperd

Two of musical comedy's leading stars appeared in major Broadway productions in 1959. (*Left*) Ethel Merman was seen in Gypsy, a musical biography of the early years of Gypsy Rose Lee, and based on her memoirs. (*Right*) Mary Martin led the cast of *The Sound of Music*, an adaptation by Richard Rodgers and Oscar Hammerstein 2d of *The Story of the Trapp Family Singers*.

FRIEDMAN-ABELES; TONI FRISSELL

Strudwick, Cameron Prud'homme, Sylvia Daneel, and Paul Roebling; March 24–29.

Destry Rides Again, a musical with book by Leonard Gershe, based on a story by Max Brand; music and lyrics by Harold Rome; with Dolores Gray and Andy Griffith; April 23.

Epitaph for George Dillon, a return engagement of the play by John Osborne and Anthony Creighton; with Eileen Herlie and Robert Stephens; January 12–February 21.

Evening with Yves Montand, An, a program of songs; with M. Montand; September 22–November 1 (limited engagement).

Fighting Cock, The, a play by Jean Anouilh, translated from the French by Lucienne Hill; with Rex Harrison, Arthur Treacher, and Roddy McDowall; December 8.

Fiorello!, a musical with book by Jerome Weidman and George Abbott; music by Jerry Bock; lyrics by Sheldon Harnick; with Tom Bosley, Patricia Wilson, Pat Stanley, Ellen Hanley, and Howard Da Silva; November 23.

First Impressions, a musical based on the novel *Pride and Prejudice,* by Jane Austen, and on the play of the same name by Helen Jerome; book by Abe Burrows; music and lyrics by Robert Goldman, Glenn Paxton, and George Weiss; with Hermione Gingold, Farley Granger, and Polly Bergen; March 19–May 30.

Five Finger Exercise, a play by Peter Shaffer; with Jessica Tandy and Roland Culver; December 2.

Flowering Cherry, a play by Robert Bolt; with Eric Portman and Wendy Hiller; October 21–24.

Gang's All Here, The, a play by Jerome Lawrence and Robert E. Lee; with Melvyn Douglas, E. G. Marshall, Bert Wheeler, and Paul McGrath; October 1.

Girls Against the Boys, The, a revue with sketches and lyrics by Arnold B. Horwitt; music by Richard Lewine and Albert Hague; with Bert Lahr and Nancy Walker; November 2–14.

God and Kate Murphy, a play by Kieran Tunney and John Synge; with Fay Compton; February 26–March 7.

Golden Fleecing, a play by Lorenzo Semple, Jr.; with Tom Poston; October 15–December 26.

Goodbye Charlie, a play by George Axelrod; with Lauren Bacall, Sydney Chaplin, and Sarah Marshall; December 16.

Great God Brown, The, a revival of the play by Eugene O'Neill; with Fritz Weaver, Nan Martin, and Robert Lansing; October 6–November 1.

Gypsy, a musical suggested by the autobiography of Gypsy Rose Lee; book by Arthur Laurents; music by Jule Styne; lyrics by Stephen Sondheim; with Ethel Merman, Sandra Church, and Jack Klugman; May 21.

Happy Town, a musical with book adapted by Max Hampton; music by Gordon Duffy and Paul Nassau; lyrics by Harry M. Haldane and Mr. Nassau; with Tom Williams, Robbi Palmer, Connie Greco, and Judy Keirn; October 7–10.

Heartbreak House, a revival of the play by George Bernard Shaw; with Maurice Evans, Pamela Brown, Sam Levene, Diana Wynyard, Alan Webb, Diane Cilento, and Dennis Price; October 18.

Highest Tree, The, a play by Dore Schary; with Kenneth MacKenna, Diana Douglas, Howard St. John, and William Prince; November 4–21.

Jolly's Progress, a play by Lonnie Coleman, adapted from his novel, *Adam's Way;* with Eartha Kitt and Wendell Corey; December 5–12.

Juno, a musical based on the play, *Juno and the Paycock,* by Sean O'Casey; book by Joseph Stein; music and lyrics by Marc Blitzstein; with Shirley Booth and Melvyn Douglas; March 9–21.

Kataki, a play by Shimon Wincelberg; with Sessue Hayakawa and Ben Piazza; April 9–25.

Legend of Lizzie, The, a play by Reginald Lawrence; with Douglass Montgomery and Anne Meacham; February 9–10.

Look After Lulu, a play by Noel Coward, based on the play, *Occupe-toi d'Amélie,* by Georges Feydeau; with Tammy Grimes, Roddy McDowall, George Baker, and Kurt Kasznar; March 3–April 4.

Loss of Roses, A, a play by William Inge; with Betty Field, Carol Haney, and Warren Beatty; November 28–December 19.

Lute Song, a revivial of the musical based on the Chinese play, *Pi-Pa-Ki;* book by Sidney Howard and Will Irwin; music by Raymond Scott; lyrics by Bernard Hanighen; with Dolly Haas, Clarence Derwent, Estelle Winwood, Leueen MacGrath, and Shai-K-Ophir; March 12–22 (limited engagement).

Majority of One, A, a play by Leonard Spigelgass; with Gertrude Berg and Cedric Hardwicke; February 16.

Mark Twain Tonight!, readings from the works of Mark Twain; with Hal Holbrook; April 6–September 6 (limited engagement).

Masquerade, a play by Sigmund Miller; with Donald Cook and Cloris Leachman; March 16 (one performance).

Miracle Worker, The, a play by William Gibson; with Anne Bancroft, Patricia Neal, Patty Duke, and Torin Thatcher; October 19.

Moonbirds, a play by Marcel Aymé, adapted by John Pauker; with Michael Horden and Wally Cox; October 9–10.

Most Happy Fella, The, a revival of the musical, with book, lyrics, and music by Frank Loesser; with Norman Atkins, Paula Stewart, and Art Lund; February 10–22 (limited engagement).

Much Ado About Nothing, a revival of the comedy by William Shakespeare; with John Gielgud, Margaret Leighton, Hurd Hatfield, and Micheál MacLiammóir; September 17–November 7 (limited engagement).

Nervous Set, The, a musical based on the novel by Jay Landesman; book by Mr. Landesman and Theodore J. Flicker; music by Tommy Wolf; lyrics by Fran Landesman; with Tani Seitz, Larry Hagman, Richard Hayes, and Gerald Hiken; May 12–30.

Only in America, a play by Jerome Lawrence and Robert E. Lee, based on Harry Golden's book of the same name; with Nehemiah Persoff, Shepperd Strudwick, and Enid Markey; November 19–December 12.

Party with Betty Comden and Adolph Green, A, a return engagement of the revue with Miss Comden and Mr. Green; April 16–May 23.

Raisin in the Sun, A, a play by Lorraine Hansberry; with Sidney Poitier and Claudia McNeil; March 11.

Rashomon, a play by Fay and Michael Kanin, based on the stories of Ryunosuke Akutagawa; with Claire Bloom, Rod Steiger, Oscar Homolka, and Akim Tamiroff; January 27–June 13.

Redhead, a musical with book by Herbert and Dorothy Fields, Sidney Sheldon, and David Shaw; music by Albert Hague; lyrics by Miss Fields; with Gwen Verdon; February 5.

Requiem for a Nun, a play by Ruth Ford and William Faulkner, based on his novel of the same name; with Miss Ford and Zachary Scott; January 30–March 7.

Rivalry, The, a play by Norman Corwin; with Nancy Kelly, Richard Boone, and Martin Gabel; February 7–April 18.

Saratoga, a musical based on the novel, *Saratoga Trunk,* by Edna Ferber; book by Morton Da Costa; music by Harold Arlen; lyrics by Johnny Mercer; with Howard Keel and Carol Lawrence; December 7.

Say, Darling, a revival of the comedy by Richard Bissell, Abe Burrows, and Marian Bissell; music by Jule Styne; lyrics by Betty Comden and Adolph Green; with Robert Morse, Mindy Carson, David Atkinson, and Orson Bean; February 25–March 8 (limited engagement).

Silent Night, Lonely Night, a play by Robert Anderson; with Henry Fonda and Barbara Bel Geddes; December 3.

Sound of Music, The, a musical suggested by Maria von Trapp's autobiography, *The Trapp Family Singers;* book by Howard Lindsay and Russel Crouse; music by Richard Rodgers; lyrics by Oscar Hammerstein II; with Mary Martin, Theodore Bikel, Patricia Neway, and Kurt Kasznar; November 16.

Sweet Bird of Youth, a play by Tennessee Williams; with Geraldine Page, Paul Newman, and Sidney Blackmer; March 10.

Take Me Along, a musical based on the play, *Ah, Wilderness!,* by Eugene O'Neill; book by Joseph Stein and Robert Russell; music and lyrics by Bob Merrill; with Jackie Gleason, Walter Pidgeon, Eileen Herlie, Robert Morse, and Una Merkel; October 22.

Tall Story, a play by Howard Lindsay and Russel Crouse, suggested by Howard Nemerov's novel, *The Homecoming Game;* with Hans Conried, Robert Elston, and Nina Wilcox; January 29–May 2.

Tenth Man, The, a play by Paddy Chayefsky; with Donald Harron, Jacob Ben-Ami, George Voskovec, and Arnold Marlé; November 5.

Triple Play, a program of one-act plays: *Bedtime Story* and *A Pound on Demand* by Sean O'Casey, *Portrait of a Madonna* by Tennessee Williams, and *On the Harmful Effects of Tobacco* by Anton Chekhov; with Hume Cronyn and Jessica Tandy; April 15–May 16.

Warm Peninsula, The, a play by Joe Masteroff; with Julie Harris, June Havoc, and Farley Granger; October 20.

IMPORTANT OFF-BROADWAY PRODUCTIONS

All the King's Men, a new version of the play by Robert Penn Warren; with Clifton James; October 16–November 28.

Beaux' Stratagem, The, a revival of the comedy by George Farquhar; with David King-Wood, June Havoc, Patricia Falkenhain, and Robert Blackburn; February 24–March 7 (limited engagement).

Connection, The, a play by Jack Gelber; with Leonard Hicks, Ira Lewis, Warren Finnerty, and John McCurry; July 15 (in repertory).

Deirdre of the Sorrows, a play by J. M. Synge; with Salome Jens; October 14–December 6.

Dinny and the Witches, a play by William Gibson; with Bill Heyer; December 9.

Little Mary Sunshine, a musical with book, lyrics, and music by Rick Besoyan; with William Graham and Eileen Brennan; November 18.

L'Otage, a revival of the play by Paul Claudel; with Hélène Sauveneix and Jacques François; October 26 and November 2 (limited engagement of two performances).

Lysistrata, the comedy by Aristophanes, in a new translation by Dudley Fitts; music by David Amram; with Donald Madden, Nan Martin, and Gerry Jedd; November 24–December 13 (limited engagement).

Many Loves, a comedy in verse by William Carlos Williams; with William Callan and Judith Malina; January 13–November 17 (in repertory).

Marching Song, a play by John Whiting; with Kevin McCarthy, Roger Plowden, and Brooke Hayward; December 28.

Once Upon a Mattress, a musical with book by Jay Thompson, Marshall Barer, and Dean Fuller; music by Mary Rodgers: lyrics by Mr. Barer; with Carol Burnett, Jack Gilford, and Matt Mattox; May 11 (transferred to Broadway).

Our Town, a revival of the play by Thornton Wilder; with John Beal; March 23.

Pictures in the Hallway, a reading of Paul Shyre's adaptation of the second volume of Sean O'Casey's autobiography; with Mildred Dunnock, Donald Madden, Gerry Jedd, and Eric Berry; December 27 (limited engagement).

Three Sisters, The, a revival of the play by Anton Chekhov, translated by Stark Young; with Kathleen Widdoes, Carol Gustafson, and Barbara Ames; September 21.

Time of Vengeance, a play by Ugo Betti, adapted by Charles Wasserman; with Charles Gregory, Lou Gilbert, Carole Couche, and Merriman Gatch; December 10.

Tonight We Improvise, a play by Luigi Pirandello, translated by Claude Fredericks; with Judith Malina, Alan Ansara, Sala Staw, and Bennes Mardenn; November 6 (in repertory).

U.S.A, a play by John Dos Passos and Paul Shyre, based on Mr. Dos Passos' novel of the same name; with William Windom, Peggy McCay, Laurence Hugo, Joan Tetzel, William Redfield, and Sada Thompson; October 28.

CLOSINGS OF BROADWAY PRESENTATIONS FROM PREVIOUS YEARS

Ages of Man (limited engagement from Dec. 28, 1958 to January 31).
Bells Are Ringing (Nov. 29, 1956 to March 7).
Dark at the Top of the Stairs, The (Dec. 5, 1957 to January 17).
Disenchanted, The (Dec. 3, 1958 to May 16).
Gazebo, The (Dec. 12, 1958 to June 20).
Girls in 509, The (Oct. 15, 1958 to January 24).
Goldilocks (Oct. 11, 1958 to February 28).
Jamaica (Oct. 31, 1957 to April 11).
J.B. (Dec. 11, 1958 to October 24).
Look Homeward, Angel (Nov. 28, 1957 to April 4).
Make a Million (Oct. 23, 1958 to July 18).
Once More, with Feeling (Oct. 21, 1958 to June 6).
Party with Betty Comden and Adolph Green, A (Dec. 23, 1958 to January 24).
Pleasure of His Company, The (Oct. 22, 1958 to November 21).
Say, Darling (April 3, 1958 to January 17).
Sunrise at Campobello (Jan. 30, 1958 to May 30).
Third Best Sport (Dec. 30, 1958 to March 7).
Touch of the Poet, A (Oct. 2, 1958 to June 13).
Two for the Seesaw (Jan. 16, 1958 to October 31).
West Side Story (Sept. 26, 1957 to June 27).
Whoop-Up (Dec. 22, 1958 to February 7).

GEORGE FREEDLEY,
Curator, Theatre Collection,
The New York Public Library.

THERMONUCLEAR RESEARCH. See ATOMIC ENERGY.

TIBET. An autonomous region of the Chinese People's Republic, Tibet comprises a lofty plateau among massive mountain barriers in central Asia. Its area is estimated at 580,000 square miles, although its boundaries are not entirely defined. The population, according to the Chinese census of 1953 for "the Tibet region and Ch'ang-tu area," was given as 1,273,969. Other estimates have placed the population at 3 to 4 million. Chief cities are Lhasa, the capital (est. 20,000), Shigatse, and Gyangtse.

Government.—Tibet's theocratic government and largely feudal society has undergone profound changes since the country's occupation in 1950 by Chinese Communist forces and the Sino-Tibetan agreement of 1951 providing for Chinese control of Tibetan defense and foreign affairs and for Tibetan autonomy in internal affairs. In 1956 the Chinese Communists set up a Preparatory Committee for the Tibetan Autonomous Region, which was headed by Tibet's theoretically supreme spiritual and temporal authorities, the Dalai Lama and the Panchen Lama, respectively. The committee's appointed task of introducing vital reforms was postponed in 1957 for another six years. Tibet was nominally governed by the Dalai Lama and a council of his advisers, assisted by a cabinet and a national assembly, until March 1959, when a popular rebellion against Chinese Communist rule was suppressed and the Panchen Lama was made nominal ruler of the region (see below, *Principal Events*). However, real authority in 1959 was exercised by Chinese Communist military and civil officials.

UPI

After their revolt failed in March, Tibetans file out of the Dalai Lama's palace in Lhasa to surrender to Chinese.

Economy.—Most Tibetans are peasant cultivators, nomads, or handicraftsmen; about one sixth of the population consists of Lamaist priests. Crops grown on the lower Himalayan slopes include barley, fruits, wheat, pulses, and vegetables. Livestock raising yields wool, felt, yak's hair and hides, butter, cheese, and dried meat. External trade, formerly mainly with India, has recently been diverted largely to China, Tibetan exports being chiefly wool, yak hides, and borax. There is a modern hydroelectric plant at Lhasa and a thermal power plant at Shigatse. Lhasa and Shigatse also have telephone networks. The Chinese Communists have constructed highways into Tibet from Tsinghai, West Szechuan, and Sinkiang, and they operate a Lhasa-Peking air service.

WIDE WORLD; UPI

The Dalai Lama (l.), who fled to India in March, was replaced by the Panchen Lama (r.) as titular ruler of Tibet.

Principal Events, 1959.—Open rebellion by the Tibetans against Chinese Communist rule broke out at Lhasa in mid-March. The immediate cause of the uprising was apparently a widespread report that the Dalai Lama was to be arrested by the Chinese Communists. Followers of the Dalai Lama held mass demonstrations in the streets of the capital, and their protests against Chinese rule

Tibetan abbot (on pony) flees to India after the Chinese Communists forcibly put down the Tibetan revolt in March.

UPI

precipitated the rebellion. A declaration which renounced the Sino-Tibetan agreement of 1951, proclaimed Tibetan independence, and called for the withdrawal of Chinese forces was signed by Tibetan leaders, including the members of the cabinet, and delivered to the Chinese Communists. Severe fighting between poorly equipped Tibetan insurgents and numerically superior Chinese troops flared in Lhasa on March 17 and went on for several days. The Chinese Communists reported on March 27 that the rebellion had been suppressed, with over 2,000 Tibetans being killed and 4,000 captured, but admitted that the revolt had spread to eastern Tibet, where Khamba tribesmen were leading the uprising.

On March 28, Communist China ordered the dissolution of Tibet's local government, which China held responsible for the rebellion, and placed the region under direct Chinese control by transferring administrative authority to the Preparatory Committee for the Tibetan Autonomous Region. The Dalai Lama, who left Lhasa on March 17 and was said by the Chinese Communists to have been abducted by the rebels, was replaced as head of the committee by the Panchen Lama, long regarded as amenable to Chinese influence. Peking radio reported on April 23 that rebellious groups operating in southern Tibet had been dispersed and that the Chinese Army was mopping up the scattered rebel remnants.

The Dalai Lama and a party of 80 crossed the Tibetan-Indian border on March 31 after a 300-mile journey, and were granted political asylum in India. On April 18 the Dalai Lama issued a statement declaring that he had left his country of his own free will, that the Chinese Communists had violated the Sino-Tibetan agreement of 1951 by not respecting Tibetan autonomy, and that the preparatory committee which he had headed was not permitted any real authority. He established his permanent residence in exile at Mussoorie, India, on April 21. He further accused (June 20) the Chinese Communists of genocide—attempting to exterminate the Tibetan race, culture, and religion by persecuting the people, confiscating property, plundering monasteries, and executing prominent Tibetans. He also declared that he and his advisers constituted the true government of Tibet and would continue to act as such in India. However, India later announced that it would not recognize this "separate" government. On November 24, Indian Prime Minister Nehru reported that 13,756 Tibetan refugees had fled to India since the beginning of the uprising. (See also INDIA.)

At a meeting in Lhasa on June 28 of the Preparatory Committee for the Tibetan Autonomous Region, Vice Chairman Chang Kuo-hua disclosed that a new reform program for Tibet would be implemented to abolish serfdom and redistribute land. At the same plenary session, the Panchen Lama charged that the Tibetan rebellion had resulted from a plot by "imperialists and foreign interventionists," and he said that the Tibetan question was a "domestic affair of China," brooking no foreign interference.

An appeal to the United Nations by the Dalai Lama on September 9, requesting that body's "immediate intervention" in Tibet because of China's "inhuman treatment and crimes" against his people, was not acted on. Instead, the U.N. General Assembly approved on October 21 a resolution which "deplored" the recent events in Tibet (see UNITED NATIONS).

(See also CHINA; FAR EAST.)

W. R. F.

TIMOR. See PORTUGUESE TERRITORIES.

TIN. The United States does not mine any tin ore and therefore must depend on imports for its supply. According to data compiled by the U.S. Bureau of Mines, imports of tin concentrates increased from 94 long tons in 1957 to 5,440 tons in 1958, while imports of tin metal declined from 56,158 tons in 1957 to 41,149 tons in 1958. Figures on smelter production in 1958 were withheld to avoid disclosing confidential data regarding the output of individual companies. Consumption declined by 12% to 72,585 long tons in 1958 (47,998 tons of primary and 24,587 tons of secondary tin) from 82,507 tons in 1957 (54,429 tons of primary and 28,078 tons of secondary). World consumption of tin also decreased, but it still exceeded production. The United States is the leading producer and consumer of tinplate, and in 1958 required about 50% of the world consumption of tin for tinplate. Nearly 90% of tinplate is used for making cans. Six countries operating under the International Tin Agreement supplied about 69% of the world total.

In the first nine months of 1959, tin consumption was 59,485 long tons (35,850 primary, and 23,635 secondary), compared with 53,750 tons in the first nine months of 1958. Imports of metallic tin in the first nine months of 1959 were 33,890 long tons, or 14% more than the 29,690 tons in the 1958 period. Receipts of tin concentrates for the first nine months of 1959 were 9,870 tons, against 5,210 in the 1958 period.

(See MINERAL PRODUCTION for table showing output of major producing countries; and for further references, see the Index entry, *Tin.*)

TITANIUM. In 1958 both production and consumption of titanium sponge metal in the United States declined, according to the U.S. Bureau of Mines. Moreover, coupled with termination of purchases under government contracts with producers, there was a close balance between supply and demand for the metal at the end of the year. Sponge production dropped sharply to 4,585 short tons in 1958 from 17,249 tons in 1957.

Rutile output declined 31% in 1958 to 7,406 tons, and ilmenite output declined 26% to 563,338 tons (these are the principal ores of titanium). The United States continued as the world's leading producer and consumer of ilmenite concentrates, and was also the chief consumer of rutile. United States imports of ilmenite concentrates totaled 384,144 tons in 1958, a decrease of 24% from 1957. India supplied 212,000 tons, and Australia, for the first time, supplied 22,736 tons. Imports of rutile were 36,563 tons, a decline of 57% from 1957. Practically all was supplied by Australia. Imports of titanium metal in 1958 were 2,073 tons (valued at $6.3 million), of which Japan supplied 2,071 short tons, and the United Kingdom, 2 tons. In the first nine months of 1959, output of titanium sponge metal in the United States was 3,378 tons and imports for consumption were 1,402 tons.

World output of rutile in 1958 declined to 102,750 tons, and world output of ilmenite declined to 1,710,000 tons. (See also CHEMISTRY.)

TOBACCO. World production of tobacco increased slightly in 1959, according to preliminary estimates of the Foreign Agricultural Service of the U.S. Department of Agriculture. Production was estimated at 8,469 million pounds, 1% above the 1958 output of 8,354 million, but about 2% below the 1957 total of 8,657 million pounds. The increase over 1958 was accounted for by larger output in the United States, India, the Federation of Rhodesia and Nyasaland, and Turkey. Gains in

these countries more than counterbalanced declines in Canada, Brazil, Japan, and the USSR.

Tobacco acreage harvested in 1959 was 9,430,000 acres, compared with 9,313,000 in 1958, 9,485,000 in 1957, and an average of 8,730,000 in 1950–54. Increases in the United States, Asia, and Africa more than offset a decrease in Europe.

TOBACCO PRODUCTION BY MAJOR COUNTRIES
(1,000 pounds, farm-sales weight)

	1950–54 (Average)	1958 (Prelim.)	1959 (Prelim.)
Brazil	268,919	307,983	273,536
Canada	147,552	197,302	155,824
China, Communist	1,396,000	1,693,000	1,700,000
France	119,009	106,493	112,655
Greece	128,308	185,947	167,351
India	568,516	530,640	588,880
Indonesia	145,322	152,117	147,708
Italy	160,146	179,168	184,822
Japan	219,495	305,621	286,382
Pakistan	170,320	218,000	216,000
Rhodesia-Nyasaland	145,952	193,764	231,083
Turkey	215,796	228,379	279,885
USSR	482,000	500,000	465,000
United States	2,184,036	1,736,204	1,799,965
World	7,811,216	8,354,136	8,469,103

United States exports of unmanufactured tobacco in the calendar year 1959 were estimated at about 465 million pounds export weight, equivalent to approximately 520 million pounds farm-sales weight, and about 4% below both 1958 exports and the 1948–57 average. In the year ended June 30, 1959, 40 million pounds of tobacco—8½% of total exports—were shipped under Public Law 480 programs. United States tobacco is meeting increased competition in world markets from expanded production abroad.

Cigarette output in the United States reached a new high of 485 billion in 1959, 3% more than the 470 billion of 1958. Domestic consumption was estimated at about 450 billion, also a record, and 3% above 1958. The number of cigarette smokers in the United States is estimated at 58 million—35 million men and 23 million women, comprising 58% of the male and 36% of the female population 15 years of age and over.

Consumption of cigars and cigarillos produced in United States manufacturing plants was about 6.9 billion—7% above 1958. Unit output was the highest since 1923.

C. J. Enzler,
Information Specialist, Office of Information, U.S. Department of Agriculture.

TOBAGO. See West Indies Federation.

TOGOLAND, British. See Ghana.

TOGOLAND, French. See French Togoland.

TOILET PREPARATIONS. See Cosmetics, Perfume, and Toilet Preparations.

TOMATOES. See Vegetables.

TONGA or **FRIENDLY ISLANDS.** A self-governing Polynesian kingdom under British protection, the group (area, 270 square miles) comprises some 150 islands situated east of Fiji in the southwestern Pacific. The 1956 census population was 56,838 (including 55,156 Tongans and 277 Europeans), of which about half inhabit Tongatabu, on which is Nukualofa, the capital (pop., 5,500). Other main island groups are Haabai and Vavau, which contains the ports of entry, Nukualofa and Neiafu. Outlying islands include Niuafoo, Tafahi, and Niuatobutabu. The natives are Christian (principally Wesleyans, who numbered 28,177 in 1957).

Responsibility in respect of the Tonga Islands as a British-protected state rests with the governor of Fiji (Sir Kenneth P. Maddocks). The ruler is Queen Salote Tupou (acceded April 5, 1918); government is headed by the heir apparent (Prince Tungi) as premier, and comprises a Privy Council, cabinet, and Legislative Assembly, consisting of 7 ministers, 7 nobles, 7 representatives elected triennially, and a speaker. A new treaty of friendship (signed Aug. 26, 1958) between Tonga and the United Kingdom increased both local autonomy and the native government's powers in some aspects of external affairs.

Government revenue (in sterling) for 1956–57 was £731,634, and expenditure, £613,122. The Tonga and Australian pound have the same exchange value. Education, medical attendance, and dental treatment are free. In 1957, Tonga had 73 government and 75 denominational primary schools (with a combined enrollment of 12,852 pupils); and 2 government and 12 mission secondary schools (aggregate enrollment, 2,963 students).

Total imports in 1957 were valued at T£1,840,721; exports totaled T£2,106,770, of which copra accounted for T£1,869,356, and bananas, T£176,466. Roads on Tongatabu aggregate about 60 miles (metaled), and on Vavau, 18 miles.

TORONTO. Situated on the north shore of Lake Ontario, Toronto is the capital of the Province of Ontario, the second largest city in Canada, and one of the country's two largest centers of commerce, finance, and industry. The city proper has an area of 35 square miles, a population estimated in 1959 at 658,420 (1956 census, 667,706), and a general assessment value of $1,747,048,713.

The executive government is vested in an elected mayor (Nathan Phillips, 1958–60) and a Board of Control composed of the mayor and four controllers elected at large. The legislative body is the Council, composed of the Board of Control and 18 aldermen elected by the nine city wards.

Metropolitan Toronto is composed of 13 autonomous municipalities, the largest of which (with the exception of the city of Toronto), is North York, with a population of 200,185 (1959 est.). Metropolitan Toronto has an area of 245 square miles, a total population of 1,429,207 (1959 est.), and a general assessment value of nearly $3.5 billion.

A Council of 24 elected members and an appointed chairman (F. G. Gardiner in 1959) governs Metropolitan Toronto. The Council is composed of the heads of council of each suburban municipality, the two senior Toronto councillors, and the senior aldermen of the nine Toronto wards. There is also a Metropolitan Planning Board and a Metropolitan Police Commission. Public transportation in the metropolitan area is provided by the Toronto Transit Commission, which operates surface, underground, and ferry services.

Much new construction was undertaken in 1959, including the $58 million expansion program of the University of Toronto, designed to accommodate an anticipated enrollment of 23,000 students by 1968 (present student body, approximately 14,000). Plans for the opening of the new York University College have been concluded, with classes to begin in the autumn of 1960. Plans were well advanced for the construction of the new City Hall, of radically unorthodox design; and construction of the O'Keefe Center for the performing arts neared completion. In February the Royal York Hotel completed a $14 million expansion to regain its position as the Commonwealth's largest hotel (1,600 rooms). A $20 million Cities Service Company refinery on the outskirts of Toronto was dedicated on May 26.

Transportation remained in the forefront of the city's problems in 1959. Several steps were taken to open new freeways to expedite automobile traffic converging on the city's business district, and preliminary work on the Bloor-University subway was begun. In the labor field, one of the most serious problems of the year resulted from the decision of the federal government to cancel con-

tracts for the Canadian jet aircraft, Avro Arrow, displacing more than 12,000 workers.

Queen Elizabeth II and Prince Philip visited Toronto on June 29–30, during the celebration of the city's 125th anniversary. On September 14, paintings insured for $640,000 were stolen from the Toronto Art Gallery; they were recovered, somewhat damaged, on October 5.

The most important event of the year was the opening of the St. Lawrence Seaway (q.v.) on June 26. This inland waterway, which allows ocean-going vessels to enter the Great Lakes, has greatly stimulated Toronto's potential as a port. Plans for expanded harbor facilities are under consideration.

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TOURISM. Foreign Travel by U.S. Residents.—The annual survey of foreign travel conducted by the Office of Business Economics, Department of Commerce, which is based on questionnaire returns, shows that United States residents made 1,398,000 trips to overseas countries in 1958 and spent $2,140 million, or about 10% over the amount spent in 1957. The 1958 figure includes $1,460 million spent in foreign countries and $680 million paid for transportation between the United States and foreign areas visited. United States carriers received $360 million, with $320 million going to foreign ships and planes. There has been a rapid growth in cruise travel where an average of 75% of the total outlays of travelers is spent for fares and shipboard expenses.

EXPENDITURES BY U.S. RESIDENTS FOR TRAVEL IN FOREIGN COUNTRIES*
(In millions of dollars)

Area	1955	1956	1957	1958
Canada	306	316	340	323
Mexico	255	279	305	319
Europe and Mediterranean	430	473	483	560
West Indies and Central America	107	134	153	156
South America	22	29	37	37
Other overseas areas	33	44	54	65
Total	1,153	1,275	1,372	1,460

* Excludes travel by military personnel and other government employees stationed abroad, their dependents and United States citizens residing abroad, but includes shore expenditures of cruise travelers. (Source: Office of Business Economics, U.S. Department of Commerce.)

During 1958 the Passport Office of the Department of State issued and renewed 676,898 passports, an increase of 15.5% over 1957. In the order of rank, New York, New Jersey, Florida, and California residents requested more passport facilities per hundred thousand of population than the national average.

Travel to U.S. from Abroad.—Expenditures by foreigners in the United States rose in 1958 to $825 million. In addition, foreigners paid $89 million in fares to United States ships and planes for transportation between the United States and foreign countries of residence. Canadian visitors spent $425 million in 1958; Mexicans, about $144 million; and visitors from overseas countries, $256 million. Travel expenditures by Europeans declined slightly to $86 million. Residents of the West Indies, Central America, and South America spent $125 million, or about 10% more than in 1957. Receipts from travelers from other overseas countries, principally the Far East, amounted to $45 million, an increase of 20% over 1957.

Domestic Travel in the U.S.—It is estimated that about $26 billion was spent by Americans for business and pleasure travel in the United States in 1958.

Major Developments in International Travel.—President Eisenhower issued a proclamation on Sept. 27, 1958, calling upon government, business, labor, agriculture, and civic groups, as well as the American people, to observe 1960 as "Visit U.S.A. Year," and to take steps to mark the year with exhibits, ceremonies, and other appropriate activities. A committee, representing a cross-section of American business, labor, agriculture, and industry leaders, was appointed on May 26, 1959, by the secretary of commerce to coordinate the activities of the government and private business in carrying out President Eisenhower's proclamation inviting foreign visitors to the United States in 1960.

Regulations effective March 21, 1959, now provide that an automobile rented while abroad by an American resident may be brought into the United States without payment of duty for a period not to exceed 30 days. Recrossings of the border incidental to the trip are also permitted.

The Transport and Communications Commission of the United Nations adopted a resolution in May 1959 recommending that the U.N. Economic and Social Council bring up to date technical studies on international travel and tourism and then convene a world consultative conference on these subjects.

(See also Customs, Bureau of.)

Ruth T. Blond,
Office of International Travel, U.S. Department of Commerce.

TOWN PLANNING. See City Planning.

TOY INDUSTRY. World toy production advanced about 6.1% in 1959, as compared with 1958, but the gain was short of that of the record year 1956. Consolidations, mergers, and a mortality common to the industry reduced the number of manufacturers in the United States to approximately 1,800, but the nation continued to lead all others in the total number of plants. Modern methods of manufacturing failed to reduce employment, and the total number of workers engaged in toy manufacturing in 1959 climbed by about 3,000 to 73,000.

Wage advances brought the annual payroll in the United States to about $270 million. Plants remained concentrated in the Northeastern, Middle Atlantic, Midwestern, and Pacific Coast areas, with a continuing growth evident in Ohio and Illinois.

Japan continued to pace world toymakers in terms of exports, with the United States second and West Germany third. Exports of toys from the United States exceeded $15 million in value, with Canada and South America the best markets. Japan and West Germany were, however, making serious inroads in both these markets.

Despite the huge United States production for internal consumption, toy imports into the nation rose by about 25% over 1958 levels. Again, Japanese imports were the largest, accounting for about 85% of all toy imports, or about 16% more than in 1958.

Retail toy sales in the United States rose from $1.5 billion to $1.65 billion. Average expenditures per family were about $40, compared with $34 in 1958. Advance orders indicated that Christmas toy sales in 1959 would exceed $1 billion.

The year was also significant as the centennial of the founding of the first English-speaking kindergarten in the United States and of the 100th year of operations of the Milton Bradley Company, whose founder, Milton Bradley, is regarded by some authorities as the father of the American kindergarten. The Milton Bradley Company, the world's largest manufacturer of educational games and materials, continued in 1959 to be the nation's third-oldest toy manufacturer, ranking behind

Bachmann Bros. (1833) and Kirchhof Patent Company (1852).

E. M. MANNING,
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TRACK AND FIELD. See SPORTS, GAMES, AND SHOWS.

TRADE. See INTERNATIONAL TRADE and the section on *Foreign Trade* in articles on countries.

TRADEMARKS. See PATENTS AND TRADEMARKS.

TRAFFIC. See Index entry.

TRANQUILIZING DRUGS. See Index entry.

TRANSJORDAN. See JORDAN.

TRANSPORTATION. See Index entry.

TRAVEL. See TOURISM.

TREASURY DEPARTMENT, U.S. Receipts of the United States government for the fiscal year 1959 were slightly greater and expenditures slightly smaller than had been estimated in the January budget. Net budget receipts, according to preliminary figures, amounted to $68,158,142,030 ($69,116,717,311 in the fiscal year ending June 30, 1958); expenditures amounted to $80,698,842,169 ($71,936,171,353 in 1958). The resulting budget deficit of $12,540,700,139 was $330 million less than the deficit estimated in January.

The cash balance of the Treasury Department at the close of the 1959 fiscal year was $5,350,391,763. The balance at the end of the 1958 fiscal year was $9,749,102,977.

Table 1—BUDGET RECEIPTS AND EXPENDITURES, FISCAL YEARS 1959–58

(In millions)

Description	1959 (actual)	1958 (actual)
Receipts by source		
Individual income taxes	$40,730	$38,569
Corporation income taxes	18,092	20,533
Excise taxes (net)	8,592	8,698
All other receipts and customs (net)	5,678	5,750
Total	73,092	73,550
Refunds of receipts (—)	— 4,934	— 4,433
Net budget receipts	68,158	69,117
Expenditures by major agency		
Legislative branch and the judiciary	165	143
Executive Office of the President	56	75
Funds appropriated to the president:		
Mutual Security Program	3,836	3,611
Other	253	470
Independent offices:		
Atomic Energy Commission	2,546	2,268
Federal Aviation Agency	441	277
Veterans Administration	5,232	5,098
Other	1,106	917
General Services Administration	360	425
Housing and Home Finance Agency	1,149	199
Department of Agriculture	7,112	4,875
Department of Commerce	382	327
Department of Defense:		
Military functions	41,217	39,062
Civil functions	807	733
Department of Health, Education, and Welfare	3,092	2,645
Department of the Interior	751	666
Department of Justice	250	229
Department of Labor	1,016	567
Post Office Department	773	674
Department of State	268	206
Treasury Department:		
Interest on the public debt	7,607	7,607
Other	2,248[1]	839
District of Columbia	31	25
Allowance for contingencies	...	...
Budget expenditures	80,699	71,936
Budget deficit	12,541	2,819

[1] Includes $1,375 million payment to International Monetary Fund.

Public Debt.—On June 30, 1959, the total public debt subject to statutory limitation was $284,398,474,090, as compared with $276,013,439,621. During the 1959 fiscal year, interest payments on the public debt amounted to $7,607,360,542, as compared with $7,606,774,061 in the previous fiscal year. The computed average interest rate on the debt was 2.867% on June 30, 1959, as against 2.638% at the close of the 1958 fiscal year.

Federal Government Receipts from and Payments to the Public.—The total flow of money between the public and the federal government (indicated in Table 2) is sometimes referred to as "the consolidated cash budget." To derive the totals shown for receipts and payments, transactions of the trust funds are consolidated with budget transactions. Transactions between the two types of funds, such as interest paid by the Treasury to trust funds, are eliminated. Certain other noncash transactions are also eliminated in the consolidation. For example, interest which accrues on savings bonds is counted as a budget expenditure at the time of accrual. Since the interest is not paid in cash until the bond is redeemed, the consolidation eliminates the interest accruals and includes the interest paid on bonds which are redeemed.

The figures for federal receipts from and payments to the public are not the same as those for Treasury cash deposits and withdrawals as presented in the *Daily Treasury Statement*. For example, transactions from various agency accounts with commercial banks are not included in Treasury cash deposits and withdrawals, but are reflected in the figures shown in Table 2.

Table 2—FEDERAL GOVERNMENT RECEIPTS FROM AND PAYMENTS TO THE PUBLIC, FISCAL YEARS 1958 AND 1959

(In millions)

Description	1959 (actual)	1958 (actual)
Budget receipts	$68,158	$69,083
Trust fund receipts	17,067	16,326
Deduct:		
Intragovernmental transactions	3,651	3,495
Seigniorage on silver	44	59
Total receipts from the public	81,530	81,855
Budget expenditures	80,699	71,897
Trust fund expenditures	18,535	16,081
Government-sponsored enterprise expenditures (net)	1,171	— 627
Deduct:		
Intragovernmental transactions	3,651	3,495
Excess of interest accruals over payments, etc.	2,217	528
Total payments to the public	94,537	83,328
Excess of payments over receipts (—)	— 13,007	— 1,472

Note: A detailed reconciliation of the differences between the budget totals, federal government receipts from and payments to the public, and Treasury cash deposits and withdrawals is available on request from the Bureau of the Budget.

Savings Bonds.—In September 1959 the Treasury announced an increase in the rate on Series E and H savings bonds to 3¾% instead of the previous 3¼%. On Series E bonds the rate increase is accomplished by reducing the term of the bond to 7 years 9 months. Series H bonds mature in 10 years.

All Series E and H savings bonds purchased on June 1, 1959, and after, earn the new rate of 3¾% if held to maturity. All outstanding E and H bonds purchased prior to June 1, 1959, now earn at least ½% more for the period from June 1, 1959, to maturity. Bonds previously earning 3¼% or 3% for their full maturity periods now earn ½% more. Those which earned 2.9% will earn 6/10% more. The increase is on a graduated scale starting with the next full interest period beginning on June 1, 1959, or after. There is no retroactive increase in interest rates for periods prior to June 1, 1959.

Sales of Series E and H savings bonds during the first nine months of 1959 amounted to $3,253 million. Accumulation of interest during the period on outstanding E bonds amounted to $878 million. During the same period in 1958, sales were $3,616 million and accumulation of interest amounted to $885 million. Redemptions of both matured and unmatured E and H bonds during the nine-month period totaled $4,180 million, which included interest payments of $709 million to bondholders. This amount compares with redemptions of $3,693 million, including interest payments of $496 million, within the same period of 1958. Series E and H bonds outstanding as of Sept. 30, 1959, amounted to $42,540 million. About 55% of the $28 billion of Series E bonds which reach maturity after May 1951 are still held by the owners who have earned $1,872 million in additional interest under the automatic extension option. The value of all series of savings bonds outstanding on Sept. 30, 1959, was $50,012 million.

Money in Circulation.—Coins and currency in circulation outside the U.S. Treasury Department amounted to $31,972,676,466 as of Aug. 31, 1959, representing a per capita circulation of $179.96.

TREASURY INFORMATION SERVICE.

TREATIES. See INTERNATIONAL LAW and the Index entry, *Treaties, International.*

TRINIDAD AND TOBAGO. See WEST INDIES FEDERATION.

TROPICAL MEDICINE. See Index entry.

TRUCIAL OMAN. See ARABIA.

TRUCK CROPS. See VEGETABLES.

TRUCK TRANSPORTATION. See MOTOR TRANSPORTATION.

TRUST TERRITORY OF THE PACIFIC ISLANDS. See PACIFIC ISLANDS.

TRUSTEESHIP (U.N.). See Index entry.

TUBERCULOSIS. Tuberculosis continues to take its toll of mankind with relatively high morbidity and mortality rates. In 1958 there were 12,070 deaths from this disease reported in the United States.[1] U.S. Public Health Service data indicate that for 1958 the provisional mortality rate was 7.0 per 100,000 population. There were 65,848 new cases reported and 72,303 tuberculous patients hospitalized in federal and nonfederal hospitals. Tuberculosis control programs are still being maintained by the various state health departments, and the federal government continues to maintain surveillance of the overall problem.

Epidemiology.—State and local health departments have increased the use of tuberculin skin tests to detect cases of tuberculosis. The number of X-ray chest surveys, however, appears to be declining.

The recognition of "atypical mycobacteria" as agents responsible for human pulmonary disease resembling tuberculosis continues to increase in significance. These organisms have been classified as "photochromogens," "scotochromogens," and "nonchromogens," depending on their growth characteristics. The former two types of organisms have been shown to be responsible for human disease, whereas the last type appears to be saprophytic. Considerable resistance to treatment with ordinary tuberculostatic agents has been observed, the scotochromogen organisms appearing to be most drug resistant. Scotochromogen organisms have also been found in specimens in patients not having pulmonary disease.

Tuberculin made from one of these atypical mycobacteria (Battey) has been shown to produce skin reactions in a large segment of the population residing in the southeastern United States. This observation is of great importance since it helps explain the high incidence of weak tuberculin reactors previously observed in this area.

Prevention.—BCG continues to be employed as a vaccine for prevention of tuberculosis in many parts of the world. In the United States, however, its use is being reserved for special individuals who have unduly hazardous familial or occupational contact. Efforts to produce a vaccine from chemical fractions of BCG and other tubercle bacilli are being continued.

Treatment.—Chemotherapy continues to provide the most reliable means of treatment of pulmonary and nonpulmonary forms of tuberculosis. Drug therapy has produced the interesting finding of reduction or elimination of bacteria in body specimens, although at times, attested to by chest X-rays, producing no change in the cavities. Patients who exhibit cavity closure have been shown to maintain their therapeutic success over longer periods of time than those who have residual cavities. For this reason removal of the affected portion of the lung by surgery continues to be an important adjunct to the treatment of pulmonary tuberculosis.

Data from the VA-Armed Forces Cooperative Study indicate that the combination of isoniazid and/or streptomycin and para-aminosalicylic acid (PAS) seems to be the most effective standard treatment regimen. Other drugs such as cycloserine, pyrazinamide, streptovaricin, and kanamycin are ordinarily reserved for use in patients who do not respond well to a standard treatment regimen.

It has been demonstrated that a significant number of patients convert isoniazid in the body to a biologically inactive form. In such patients it is thought important to increase the dosage of isoniazid to offset this loss. The level of biologically inactive isoniazid in the serum requred for optimum therapeutic effect still remains to be determined.

The use of adrenal steroids as an adjunct to chemotherapy of pulmonary tuberculosis has received increasing attention, particularly for those patients who exhibit overwhelming toxemia and prostration due to severe disease. Indiscriminate use of adrenal steroids, however, has been shown to lead to some untoward effects.

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TUNGSTEN. U.S. Bureau of Mines figures on domestic mine production of tungsten and concentrates in 1958 had to be withheld to avoid disclosing confidential data regarding the output of individual companies. However, the bureau noted that domestic production of tungsten concentrate fell far below that of 1957, and only two producers were active during the last half of 1958. Also there was lower industrial consumption, reduction of imports, and virtual completion of the United States government purchase program in 1958. Imports of tungsten ores and concentrates for consumption were 3,271 tons in 1958, compared with 7,009 tons in 1957; total consumption was 2,660 tons (4,272 in 1957). In the first seven months of 1959, imports for consumption were 1,798 tons, and consumption of concentrates totaled 2,706 tons.

World production of tungsten ore and concentrates (60% WO_3), in 1958 was estimated at 63,500 short tons, compared with 75,000 tons in 1957. In most countries outside the Communist bloc, output was curtailed greatly. (See MINERAL PRODUCTION for table showing output of major producing countries.)

TUNISIA. A republic on the Mediterranean coast of Africa, bordered by Algeria and Libya. Area, 48,332 square miles; pop. (est. 1959), 3,880,000, predominantly Arabic-speaking Moslems, and including about 153,000 Europeans (mainly French and Italians) and 63,000 native Jews. Since Tunisia obtained independence in 1956, about 100,000 French and Italians have left the country, and some 115,000 Algerian refugees have entered. Arabic is the official language. Chief cities and populations (est. 1956) are: Tunis, the capital, 410,000; Sfax, 65,635; Sousse, 48,172; and Bizerte, 46,681.

Government.—Formerly a protectorate of France, Tunisia obtained independence under the Franco-Tunisian agreement of March 20, 1956. A National Constituent Assembly was elected on March 25, 1956, and on April 11, Habib Bourguiba, leader of the Neo-Destour Party, was named premier. On July 25, 1957, the assembly deposed the bey of Tunis, proclaimed Tunisia a republic, and chose Bourguiba as president. A constitution was proclaimed on June 1, 1959, providing for a presidential system of government, with a unicameral legislature, and an independ-

[1] Canada reported 1,027 deaths in the same year, compared with 1,183 in 1957.

ent judiciary. The president, who exercises strong executive powers, is elected by universal suffrage for a five-year term. The National Assembly consists of 90 members elected at the same time and for the same period as the president. The first elections under the new constitution took place on Nov. 8, 1959. Bourguiba, the sole candidate, was elected president, and the Neo-Destour obtained all the seats in the assembly.

Education and Religion.—In 1958, 37% of school-age children were enrolled in primary schools, as compared with 19% in 1955, and the literacy rate (about 20% of the population in 1946) is rising steadily. In 1957–58 there were 6,064 primary schools for Moslem children (266,288 pupils), 673 secondary (21,486), and 51 technical (10,663). The Tunisian Constitution proclaims Tunisia a Moslem state and requires that the president be a Moslem, but freedom of worship is guaranteed. The Europeans in Tunisia are mostly Roman Catholics.

Finance.—The ordinary budget for the fiscal year beginning April 1, 1958, totaled 46.8 billion Tunisian francs. On Nov. 3, 1958, a new currency unit, the dinar, came into being simultaneously with the opening of the Central Bank of Tunisia as the new bank of issue. The dinar was initially equivalent to 1,000 Tunisian francs, but when the French franc was devaluated on Dec. 27, 1958, the dinar was disengaged from the franc and retained its official value of U.S.$2.38. In the year ended June 30, 1959, Tunisia obtained $20 million from the United States in special assistance, $8.6 million from the U.S. Development Loan Fund, and $1.7 million in technical cooperation.

Transportation and Communications.—Tunisia has 2 railways: the government-owned Tunisian Railway (including 300 miles of normal-gauge track connected with the Algerian system, and 650 miles of meter-gauge track in north-central Tunisia); and the private Sfax-Gafsa line (283 miles) used mainly to transport phosphate rock. In 1959, Tunisia obtained a loan of $2.4 million from the U.S. Development Loan Fund for the purchase of diesel-powered coaches and other equipment. Tunisia's road network totals 9,153 miles, including 5,685 miles paved. There is an international airport at El Aouina, and there are several secondary airports. Passenger cars numbered 38,726 in 1958; commercial vehicles, 18,550; telephones, 23,843; radio receiver licenses, 108,000 (1957).

Production.—Over two thirds of the population are engaged in farming or livestock raising. European landholdings are reported at about 1.5 million acres, comprising a relatively small proportion of total cultivated land but a large proportion of the best land. Most of the land tilled by the Tunisians is of marginal value, techniques are primitive, and rainfall supply in many areas is uncertain. Under a land reform law of 1958, large landholders in the Medjerdah Valley are required to relinquish parts of their holdings for distribution to the peasants, and in late 1958 President Bourguiba stated the government's intention to buy out the European farmers.

Production for most of the important crops in 1958 was well above previous levels. Output of grain (durum wheat, soft wheat, and barley) totaled 820,000 metric tons (about 20% over 1957). Olive oil production was a record 130,000 metric tons in 1958–59; citrus fruit, 72,000; wine, 1.9 million hectoliters (1958). Other products include vegetables, flaxseed, esparto grass, dates, and cork. Livestock, chiefly sheep and goats, yield meat, dairy products, and hides and skins.

Industry (including mining) and handicrafts provide about a fourth of national income. Industrial development has been hindered by lack of fuel, capital, and skilled labor. Manufacturing, centered largely around Tunis, includes the production of superphosphates, building materials, and lead, and the processing of agricultural, forestry, and fisheries products. Smaller industries produce shoes, textiles, leather, soap, beverages, and other items for local consumption. Handicrafts, including rugs, carpets, embroideries, and leatherwork, remain important. Chief minerals and 1958 output in metric tons were: phosphate rock, 2,278,532; iron ore, 1,103,183; lead concentrate, 35,548; and zinc concentrate, 6,074.

Foreign Trade.—Exports in 1958 totaled 63,399,000 dinars; imports, 64,881,000. Good crops and higher wine sales to France made possible a 16% increase in exports over 1957. Chief exports in order of value in 1958 were: wines, olive oil, phosphates, wheat, iron ore, and lead. Imports are mainly petroleum products, sugar and other foodstuffs, machinery, semifinished products, and consumer goods. France purchased 61.9% of 1958 exports, and provided 71.4% of imports. Italy, Great Britain, and the United States are other important trading partners of Tunisia.

Principal Events, 1959.—Having attained political independence from France in 1956, Tunisia has sought to reduce her economic dependence on France and to free herself from French restrictions in the military sphere. The loosening of economic ties to France is rendered difficult by the fact that France provides the chief market for Tunisian exports, and French enterprise and capital retain their leading role in the modern sector of the Tunisian economy, despite the flight of many French residents and considerable French capital since 1956. The military objective is complicated by the continuation of the Algerian rebellion and the rebels' use of Tunisia as a staging area, as well as a center for their political activity. An important Tunisian gain was scored on June 17, 1958, when France agreed to withdraw her military forces from all of Tunisia except the naval base of Bizerte. A gain in the economic sphere was achieved in 1959, when special monetary arrangements concerning Tunisia's membership in the franc zone afforded Tunisia increased freedom in foreign trade.

The goodwill following the 1958 military agreement was somewhat dissipated by the uncovering of a widespread French espionage network in Tunisia in February 1959. The espionage ring, apparently seeking information on Algerian political and military activities, consisted largely of French employees of the Tunisian postal, telephone, and telegraph service, and French embassy employees. Fourteen Frenchmen were arrested (one committed suicide, 13 were released and allowed to return to France on October 9), 43 French communications employees were dismissed, and the French military attaché was ordered to leave the country.

Incursions against Tunisian border territory by French forces operating against the Algerian rebels continued in 1959, though on a reduced scale as compared with previous years. French fighter planes attacked a group of Tunisian workers near Nefta on February 14, killing four. Six Tunisians were killed in incidents occurring on February 9 and during the first half of April, according to Tunisian charges. On August 15, French planes allegedly made two bombing attacks on the village of Bhiret Zitouna, and on September 26, French artillery was said to have shelled the border village of Ain Karma.

Despite the espionage incident, an agreement was signed in Tunis on April 15 for an 18-month extension of the Tunisian government's employment of 1,850 French teachers, magistrates, and technicians, 40% of whose salaries are to be paid by France. On August 20, President Bourguiba announced Tunisia's abandonment of the customs union with France prevailing since 1956. However, a one-year trade agreement signed in Tunis on September 5 provided that many French products would continue to enter Tunisia duty free or under preferential rates, while Tunisian wine and hard wheat (produced mainly by the French in Tunisia) would continue to receive preferential treatment in France. A one-year monetary agreement signed at the same time provided that Tunisia would remain within the franc zone, but its foreign exchange holdings would be kept in a separate account, and Tunisia would be credited initially with $15 million for exchange transactions outside the franc zone. These developments made possible a liberalization of Tunisian trade policies, and a new customs tariff came into effect on October 1.

The government's efforts to improve the economy and reduce unemployment have thus far been directed mainly toward the modernization of agriculture and the encouragement of new light industries. In May 1959 a National Investment Company was established with an initial capital of 2 million dinars, to engage in various productive enterprises, and on October 10 a National Agricultural Bank was inaugurated to provide credit to peasants at low interest rates.

The Tunisian Constitution, establishing Tunisia as a presidential-type republic, was proclaimed on

June 1, with considerable national rejoicing and celebration. In the first elections under the new constitution on November 8, 91.4% of the electorate voted, and women cast ballots for the first time in a national election. The election served mainly to indicate the undiminished popularity of President Bourguiba, who was re-elected without opposition. The Neo-Destour Party won all seats in the National Assembly, but contests took place in only two districts, where a tiny Communist minority provided the only opposition.

President Dwight D. Eisenhower conferred briefly with President Bourguiba at La Marsa, a suburb of Tunis, on December 17. The two leaders discussed United States aid to Tunisia and expressed the hope of both countries for a settlement of the Algerian conflict.

M. J. G.

TUNNELS. Major tunnels were being dug throughout the world in 1959 for the conveyance of vehicles, water, and sewage.

United States. *Water Tunnels.*—The longest tunnel under construction was the West Delaware Tunnel for the New York City water supply system. This 44-mile, deep-rock bore was being drilled and blasted toward completion scheduled for 1960. It will be lined with concrete to a 13½-foot diameter and will carry water from a reservoir, yet to be built, to the end of the 85-mile Delaware Aqueduct, the world's longest tunnel. Miners on the West Delaware Tunnel have developed and are using a "burncut" method in which an 8-inch-diameter hole at the center of the drill pattern in the rock-face to be blasted has been found to effect clean breakage of the rock for relatively easy removal.

New York City's Board of Water Supply has announced plans for another major tunnel. This would be a 6¼-mile tunnel lying 600 to 1,200 feet under New York Harbor to take water in a 10-foot conduit connecting the boroughs of Brooklyn and Richmond (Staten Island). The $25 million tunnel may be started in 1960.

The second-longest tunnel under construction in 1959 was the 23-mile Roberts Tunnel, which will pierce the Continental Divide in Colorado to bring water from the west slope of the Rocky Mountains to Denver. It is a $50 million project being worked at four headings. The builders expected to hole through in the winter of 1959–60 and to complete the concrete lining of the tunnel, to a 10-foot 3-inch inside diameter by early 1962.

Vehicular Tunnels.—A planned 17½-mile vehicular crossing of Chesapeake Bay in Virginia would include two tunnels, each of approximately a mile in length, and would cost a total of $210 million. A construction contract was negotiated, but the crossing was still without financing at the end of 1959.

At Houma, La., a 960-foot vehicular tunnel under the Intracoastal Waterway was scheduled for completion in mid-1960.

In Boston, construction was begun on a second vehicular tunnel under Boston Harbor. It will parallel the 25-year-old Sumner Tunnel, which will be modernized.

A 3,350-foot, two-lane vehicular tunnel, to cost $20 million, went under construction in 1959 to pass under the Oakland estuary between Oakland and Alameda counties on San Francisco Bay. It will be of the sunken-tube type of construction; that is, tunnel sections will be prefabricated of steel and concrete, sunk into place, and joined under water. There will be 12 tube sections, each 200 feet long and 37 feet in diameter. This will be California's second subaqueous vehicular tunnel. One connecting Oakland and Alameda was completed under San Francisco Bay in 1928.

In Pittsburgh the twin bores of the $17 million Fort Pitt Tunnel, to carry highway traffic through Mt. Washington, were holed through and were being pushed to completion. They will provide approaches to the new two-level Fort Pitt Bridge (see BRIDGES).

Sewer Tunnels.—Also for Pittsburgh, as well as surrounding communities, extensive sewer tunnels were finished in 1959. Altogether, 33 miles of tunnels were cut through hard rock, coal seams, soft ground, and the worst kinds of mixed faces, which required tunneling under air pressures. The completed tunnels were lined by the placement of precast pipe of high-strength concrete. It was difficult tunneling most of the way, with groundwater and explosive gases adding to the troubles.

Difficult sewer tunneling was completed in 1959 in Cincinnati, where a six-mile interceptor line was holed through difficult ground at a cost of about $6.5 million. Called the East Branch Ohio Interceptor, this tunnel will take sewage to the new Mill Creek Sewage Treatment Works.

In New York City, constructors prepared to put a sewer tunnel under the East River (to take Manhattan's sewage across to the Newtown Creek Sewage Plant to be built on Long Island). Troubled with groundwater in the sinking of the access shaft for this under-river force main, they used a freezing method to solidify the soil as they dug down through it in a shaft to solid rock. On the Long Island side of the East River, a $10 million interceptor sewer tunnel was pushed toward the future disposal plant site through soil that required shield driving under compressed air.

Canada.—The Deas Island Tunnel was opened to traffic by Queen Elizabeth II on July 15. It is a $23 million structure under the Fraser River near Vancouver, B.C. This tunnel was interesting as a construction project, since it is a sunken-tube type built of concrete instead of being a steel hull lined with concrete. The concrete box sections were built ashore, floated into line, and then sunk into place to be connected beneath the river. (See also BRITISH COLUMBIA.)

France, Italy, Switzerland.—Three Alpine highway tunnels were being built in 1959. The world's outstanding vehicular tunnel under construction was Mont Blanc Tunnel, which will be the world's longest vehicular tunnel when completed in 1963. Its 7½-mile line, near the highest mountain in the Alps, will connect France and Italy with a $32 million short-cut which will be the only all-season France-Italy connection across the Alps in this region. Also under construction were the 3½-mile Great St. Bernard Project, to be completed in 1961, just to the east of Mont Blanc Tunnel on a route to tie Italy and Switzerland, and the 4-mile San Bernardino Tunnel, to be completed in 1963 into Switzerland from near Milan, Italy.

West Germany.—A double-barreled sunken-tube tunnel, similar to that under the Fraser River in British Columbia, was being placed under the Kiel Canal in West Germany. It is on a main highway connecting Germany and Denmark, and has been planned at an overall length of 2,045 feet.

England.—The north and south sections of a highway tunnel which runs half a mile under the Thames River were linked in April. The $33 million tube connects Dartford and Purfleet.

Australia.—On Australia's Snowy Mountains hydroelectric project, tunnelers claimed another speed record in advancing a 12½-foot horseshoe-shaped bore 526 feet through granite in six days, for an 87.7-foot-per-day average. They used the burncut method which had previously produced an 83-foot-per-day record in the 13½-foot-diameter West Delaware Tunnel in New York State (described above), where the method was developed.

India-Kashmir.—India's new Jawahar Tunnel link with Kashmir had one tube open to traffic in 1959, while the other remained under construction. It will take the place of 11,000-foot-high Banihal Pass, which can be closed by heavy snows from November to March, and sometimes to May. Costing an estimated $8 million, the tunnel is to be 1½ miles long and lies at an elevation of 7,250 feet above sea level.

Japan.—The $3.6 million, 9,745-foot Sasago Tunnel in Japan was completed through the Sasago Pass. It carries a road which connects Tokyo and Kofu, capital of Yamanashi Prefecture.

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TURKEY. The Republic of Turkey (area, 296,185 square miles; pop., 1955 census, 24,121,778) consists of Anatolia (Asia Minor) and Eastern Thrace (European Turkey). The country's capital is Ankara (1955 pop., 453,151); other principal cities include Istanbul (formerly Constantinople; pop., 1,214,616); Izmir (formerly Smyrna; pop., 286,310); Adana (172,465); Bursa (131,336); and Eskişehir (122,755). The vast majority of the population are Moslems (99%) and speak Turkish as their native language (90.4%). Most Turkish Moslems belong to the Sunni sect, though there exists a large Shi'ite minority. The non-Moslem groups (Greek and Armenian Christians, and Jews) total 214,000 and are concentrated in Istanbul and Izmir. Ethnic minorities include the Kurds (1.5 million), largely in the eastern provinces, and Arabs (346,000) in the south.

Government.—Turkey is a republic, and all citizens over 21 years are entitled to vote for the unicameral Grand National Assembly, which serves for four years unless it dissolves itself earlier. Voting is by plurality and by party lists in each of the 67 provinces. Three parties are currently represented in the assembly: the controlling Democrats (led by Prime Minister Adnan Menderes); the Republican People's Party (led by Ismet Inönü), the main opposition; and the Republican Villagers Nation's Party (led by Osman Bölükbaşi).

The president of the republic is elected by the assembly from among its members for the duration of its own term. The incumbent, Mahmud Celâl Bayar (Democrat), was re-elected for a third term on Nov. 1, 1957. The prime minister, Adnan Menderes, who has held the office since 1950, must likewise be an assembly member and is named by the president.

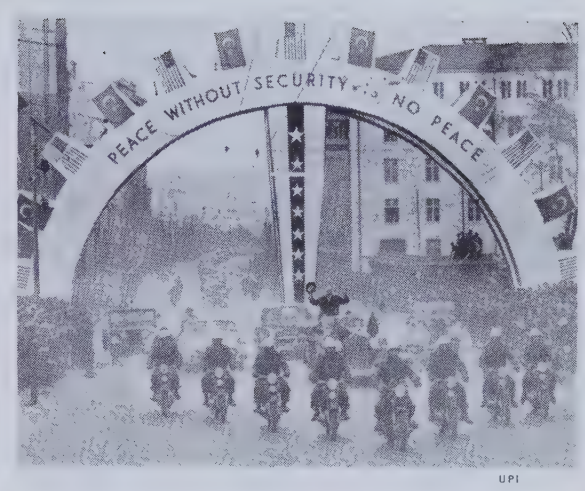
Turkey, a charter member of the United Nations, is also a member of the Balkan Pact (with Yugoslavia and Greece), the Central Treaty Organization, NATO, the Organization for European Economic Cooperation (OEEC), the European Payments Union, the Council of Europe, the International Bank for Reconstruction and Development, the International Monetary Fund, and several other international organizations. In August 1959, Turkey announced its intention to associate with the European Common Market, and Turkey's application was acted on favorably by the six member nations.

Finance.—The monetary unit is the Turkish lira (T£), which is officially pegged at U.S.$0.3571. The 1959–60 budget was balanced at T£6.2 billion, 21.0% of which was allocated for national defense. As of April 1959 the public internal debt totaled T£3.3 billion, and the foreign debt, T£4.3 billion; the Central Bank's gold and foreign exchange assets (Oct. 10, 1959) totaled T£772.1 million, and its gold and foreign exchange liabilities, T£997.7 million. As of Aug. 4, 1958, a new exchange system became effective. For all imports, services, and capital transactions, a surcharge of T£6.20 per U.S. dollar is applied to the par value of T£2.80. The lira's free value declined to $0.07 in August 1958, but was strengthened somewhat thereafter by the large foreign credit extended to Turkey at that time. Since then, the value of the free lira has been stabilized at about $0.09.

From the origin of the Truman Doctrine in 1947 through June 1959, United States military aid to Turkey approximated $2 billion, and economic aid, $991.4 million. The Turkish trading position is still bolstered by the $359 million credit made available to Turkey in August 1958. In August 1959, T£310 million in counterpart funds were released by the United States government for use in Turkey, largely for investment to increase the volume of Turkish exports and effect savings in foreign exchange payments for imports.

Education.—Virtually all schools are operated by the national Ministry of Education, principal exceptions being Robert College (American) and other foreign and minority schools. Total enrollment at the start of the 1958–59 school year was 2.9 million. In 1955, 40% of the population 7 years of age or older was reported to be literate (1950 figure, 33.6%). There are six state universities—Istanbul, Ankara, Istanbul Technical, the Aegean University in Izmir, Middle East Technical in Ankara, and Atatürk University in Erzurum.

Transportation and Communications.—At the end of 1958, Turkey's highway network consisted of about 24,600 miles of all-weather roads, serving a total of about 81,000 commercial and passenger vehicles. There are about 4,900 miles of railroad, mostly single track and entirely state owned and operated. The Turkish State Airways, Inc. flew a record-breaking 103.9 million passenger-miles during 1958. The Turkish merchant marine totaled 650,000 tons at the end of 1958. Turkey's three radio stations (Istanbul, Ankara, and Izmir) are government-operated. At the end of 1958 there were 1,167,052 licensed radio receivers and 167,230 telephones in use.



UPI

President Eisenhower (hands raised), arriving in Ankara on December 6, acknowledges the cheers of welcoming Turks.

Economic Conditions.—The economic stabilization program introduced in August 1958 was continued throughout 1959. As a result, inflationary pressures were somewhat reduced and prices rose more slowly. The increase of money in circulation over 1958 was the lowest annual increase for several years, as was the increase in bank credits. But the internal impact of certain aspects of the stabilization program, particularly the freezing of bank credits at 1958 levels, caused a number of business concerns to reduce operations and increased unemployment in certain areas. Some observers have suggested that the stabilization program had not resolved Turkey's basic economic problems, which stem from the great reliance on agriculture (45.4% of the national income in 1958) and its inadequate structure (largely dry grain farming), the heightened level of consumption expected by the masses, and the political necessity for maintaining a high level of investment in basic development.

It seems doubtful that real income per capita has risen significantly from T£556 in 1953. Investment as a percentage of national product fell from a high of 14.8% in 1955 to 11.7% in 1958. However, in 1951–58, 225 foreign firms invested T£202.9 million in Turkey.

Since 1948 an intensive government-sparked economic development effort has more than doubled normal-weather agricultural production and increased industrial and mining output by about 50%. Production of electricity rose from about 700 million kw.-hr. in 1948 to 3,610 million kw.-hr. in 1958. It was possibly true that the overall rate of development had slowed down slightly during 1958 and 1959.

Agriculture.—Of the total land surface in 1958, about 38% was in meadows and pasture, 29% in cultivated crops (including 10% in fallow), 2% in orchard and vineyard, 13% in forest, and 17% in unproductive area. Principal crops and 1958 output (in thousands of metric tons) were: wheat, 8,550; barley, 3,600; sugar beets, 2,300; grapes, 2,992; potatoes, 1,472; onions, 405; olives, 482; cotton, 180; tobacco, 104; and hazelnuts, 132. Other important crops include a variety of nuts, fruits, and vegetables. Chief animal products, with 1958 output in tons, are as follows: meat, 135,027; wool, 41,950; mohair, 9,683; and silk cocoons, 2,934.

Mining.—Turkey's mineral production increased by 86.5% from 1948 through 1956. Production figures for 1958 were as follows: bituminous coal, 6.6 million metric tons; sub-bituminous coal and lignite, 3.8 million; copper, 22,536; chromite, 509,000; iron ore, 800,000 petroleum, 327,400; and sulfur, 12,800.

Industrial Production.—Principal large-scale industries receiving heavy investment since World War II include textiles, sugar refining, cement, steel, chemical, paper, and food processing. Output of major industrial products in 1958 was as follows: pig iron, 225,900 metric tons; steel mill products, 186,300; cement, 1,512,000; coke, 720,000; paper, 57,720; sugar, 349,500; glass and glass products, 23,300; and superphosphate, 5,136. Production of cotton textiles in 1957 totaled 455 million meters, and woolen textiles, 17 million. Turkey's ambitious industrial program continued in 1959, with a number of projects being undertaken as joint enterprises by private and public capital, and occasionally by foreign private capital.

Foreign Trade.—Turkey's 1958 exports totaled T£692.3 million (down T£274.4 million from 1957), and imports, T£882.3 million (down T£229.7 million). The trade deficit of T£190.0 million in 1958 (up T£44.7 million from 1957) and of T£154 million in the first eight months of 1959 (down T£12 million from the same period in 1958) was in part due to increased import prices, poor crops, and a reduction in the price of chrome. As usual, 1958 exports were largely agricultural (82.3% of total exports), chief among them being tobacco (T£284.4 million), fruits and nuts (T£157.0 million), and cotton (T£64.5 million). Mineral exports were valued at T£89.7 million, or 13% of all exports. Chief imports during 1958 were production machinery, cereals, chemicals, petroleum, and construction materials. Turkey's major trading partners in 1958 were the United States (27.9% of imports and 20.3% of exports), West Germany (15.5% and 18.0%), Italy (11.1% and 5.7%), Great Britain (7.2% and 6.3%), and Czechoslovakia (3.9% and 5.7%). Soviet bloc trade accounted for 18.2% of total imports and 23.7% of exports.

Principal Events, 1959. *Foreign Affairs.*—Turkey continued to cooperate fully with the Western powers through the United Nations, NATO, and the Central Treaty Organization (formerly the Baghdad Pact). On March 5 the United States and Turkey signed a bilateral defense accord which pledged that in the event of aggression against Turkey, the United States "will take such appropriate action, including the use of armed forces, as may be mutually agreed upon."

On February 11 the premiers of Greece and Turkey agreed on a settlement of their countries' long dispute over Cyprus. The settlement called for the founding of a presidential republic organized on a communal basis (see CYPRUS). Shortly thereafter, Greek officers reappeared at the command headquarters of the Allied Land Forces, Southeastern Europe, in Izmir. The opposition Republican People's Party voted (347–138) against ratification of the Cyprus agreement by the Turkish parliament on the grounds that Turkish rights were inadequately protected, that the island might still become Greek, and that the parliament had not been given an adequate opportunity to consider the issue.

The Turkish-American expropriation and confiscation agreement, which was designed to protect private United States investments in Turkey, was ratified by the Turkish parliament in January after considerable debate. Some deputies charged that agreement would in fact give the United States government special rights in Turkey.

On May 11, Turkey signed a multilateral agreement for the settlement of its commercial debts to the OEEC countries totaling $400 million. A few days later, Turkey freed from import licensing 160 categories of raw materials, machinery, and spare parts.

As an aftermath of the political upheavals in Iraq (q.v.), an estimated 2,500 persons had fled into eastern Turkey by May. The Turkish government announced that it would not force these persons to return to Iraq.

Prime Minister Menderes visited the United States in October and attended the meeting of the Council of Ministers of the Central Treaty Organization in Washington. President Bayar made a state visit to Italy on June 8–11, during which he conferred with Italian President Gronchi and had an audience with Pope John XXIII.

President Eisenhower visited Ankara on December 6–7 during his goodwill tour of 11 nations in Europe, Asia, and Africa. He conferred with President Bayar, Prime Minister Menderes, and other Turkish officials, and made a special visit to the tomb of Kemal Atatürk, founder of the Turkish state.

On December 13, after a long stalemate in the voting, the U.N. General Assembly elected Turkey to succeed Poland (in 1961) as a nonpermanent member of the Security Council for the second half of a two-year term.

Domestic Affairs.—On Feb. 17, 1959, Prime Minister Menderes narrowly missed death in the crash of a Turkish airliner near London which took the lives of 15 Turks, including a cabinet minister, a member of parliament, and five public servants. Apparently, the prime minister's escape was interpreted widely in Turkey as a direct intervention of providence and an indication that he held a divine mandate as a national leader. This incident, plus the easing of Turkey's economic problems as a result of foreign loans in 1958, possibly contributed to a somewhat increased popularity for the Democratic Party generally, particularly in the small towns and villages. During 1959 the Democrats continued to win the majority of the village elections held. Perhaps sensing the increase in Democratic strength, the opposition undertook an even more vigorous antigovernment campaign. During the spring both groups attempted to establish mass political organizations—the Democrats, the "Fatherland Front," and the Republican People's Party, the Union of Strength."

As a result of these developments, interparty relations became increasingly bitter. On May 1, in the town of Uşak, the opposition leader Ismet Inönü was attacked by unknown persons, apparently with the intent to kill. A similar incident occurred four days later in Istanbul. In neither situation did he seem to have been given adequate protection by the police. The incidents caused a great furor in the opposition press and in the parliament. Government spokesmen denied any official implication, a denial which was not believed by all.

On September 28, Kâsim Gülek, general secretary of the Republican People's Party, resigned under pressure from the party's central committee. He was replaced by Ismail Rüştü Aksal, finance minister in the last Inönü cabinet. On November 7, Osman Bölükbaşi, leader of the Republican Villagers Nation's Party and a member of parliament, was stripped of his parliamentary immunity and sentenced to 10 months' imprisonment for insulting the parliament; in a 1957 parliamentary speech, he had called the deputies of the Democratic Party "servants of tyrants and people without honor." During the year several Turkish newspaper editors received prison sentences for publishing articles that criticized the government, and their publications were suspended.

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UBANGI-SHARI. See MAURITANIA.

UGANDA. See BRITISH EAST AFRICA.

UKRAINE. See UNION OF SOVIET SOCIALIST REPUBLICS.

UNEMPLOYMENT. See BUREAU OF EMPLOYMENT SECURITY; LABOR; and the Index entry, *Unemployment.*

UNEMPLOYMENT INSURANCE SERVICE. See BUREAU OF EMPLOYMENT SECURITY.

UNESCO. See UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION.

UNION OF SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

UNION OF SOVIET SOCIALIST REPUBLICS. The USSR has the largest contiguous territory of any nation, and ranks third in the world in population, following only China and India. Approximate areas and populations of the 15 Soviet republics constituting the USSR are shown in the accompanying table.

AREAS AND POPULATIONS OF THE SOVIET REPUBLICS

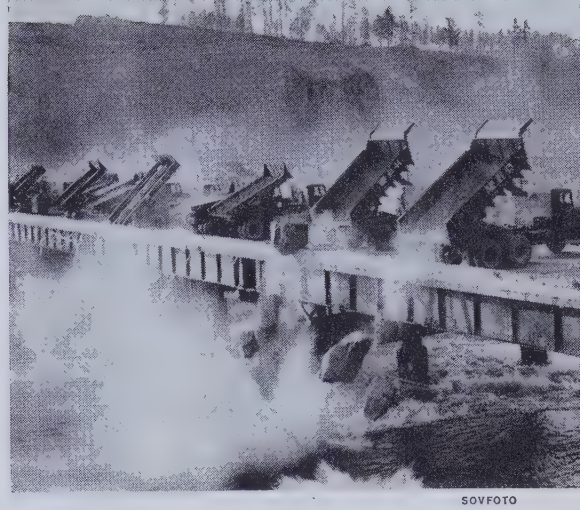
Republic	Area (sq. mi.)	Population
Russian SFSR	6,600,000	117,494,000
Ukrainian SSR	240,000	41,893,000
Kazakh SSR	1,050,000	9,301,000
Uzbek SSR	156,000	8,113,000
Belorussian SSR	80,000	8,060,000
Georgian SSR	30,000	4,049,000
Azerbaidzhan SSR	33,000	3,700,000
Moldavian SSR	13,000	2,880,000
Lithuanian SSR	25,000	2,713,000
Latvian SSR	25,000	2,094,000
Kirgiz SSR	77,000	2,063,000
Tadzhik SSR	55,000	1,982,000
Armenian SSR	12,000	1,768,000
Turkmen SSR	187,000	1,520,000
Estonian SSR	17,000	1,196,000
Total	8,600,000	208,826,000

(Sources: "Preliminary Results of the 1959 All-Union Population Census," *Pravda*, May 10, 1959; and *The National Economy of the USSR*, Moscow 1956.)

Of the total population, 114,800,000 are females (55%), and 94,000,000 are males (45%). This unbalance between the sexes is due mainly to the great loss of males during World War II. Rural residents number 109 million (52%) of the total population, and urbanites, 99,800,000 (48%). Despite the growth of population in Soviet Asia, 70% of the Soviet people still live in the European USSR west of the Ural Mountains. Siberia contains 15% of the population; Central Asia, 10%; and the Caucasus, 5%. Great Russians constitute 50% of the population, and Ukrainians, 20%; the remainder is divided among 58 ethnic groups. About 20% of the population is of Mongoloid stock, consisting of Turko-Tatars and Finno-Ugrians.

The largest Soviet cities are Moscow, the capital (1959 pop., 5,032,000); Leningrad (3,300,000); Kiev (1,102,000); Baku (968,000); Gorki (942,000); and Kharkov (930,000).

Religion.—The Soviet government is officially atheistic, and disseminates atheistic propaganda through the schools, press, radio, television, museums, theaters, and the arts. According to Soviet officials, the Russian Orthodox Church has 50 million adherents; the Hebrew faith, 3 million; and the Baptist Church, 500,000. Other religions with large congregations were the Sunnite Moslem, Roman Catholic, Lutheran, Armenian, Gregorian, and Buddhist. In 1959, as before, the Soviet press complained that religion was still a strong force in Soviet life. Numerous articles accused priests, ministers, rabbis, and bishops of alleged profiteering and immorality. A number of Jehovah's Witnesses were arrested for distributing religious propaganda in Siberia and the Ukraine. During the year several Jewish synagogues were closed by the Soviet police, and an anti-Semitic quota system prevented many Jews from working in high government offices or enrolling in colleges.



SOVFOTO

Damming up of the Angara River in June marked an important step in Soviet construction of one of the world's largest hydroelectric installations. Located near Bratsk in Siberia, the dam will create a reservoir 350 miles long, and the power plant will generate 3.6 million kilowatts.

Education and Culture.—In 1959 the USSR had approximately 30 million students, including 2 million in the nation's 766 colleges and 2 million in the 3,344 vocational high schools. Of the nation's children, 3,400,000 were in kindergartens and nurseries, and 430,000 were in boarding schools. The number of school and college teachers totaled 2 million, of whom 25–30% were members of the Communist Party.

During 1959 the Soviet educational system was slowly shifting from a 7-year grade school and 3-year high school to an 8-year grade school and 3-year high school. In compliance with the new school regime, most high school students and many college students are part-time pupils and hold outside jobs. Even students in the 5th to 8th grades have to work in industry or agriculture for two weeks after the end of the academic year. A law of June 6, 1959, specified that as much janitorial work as possible in schools and colleges be performed by the students.

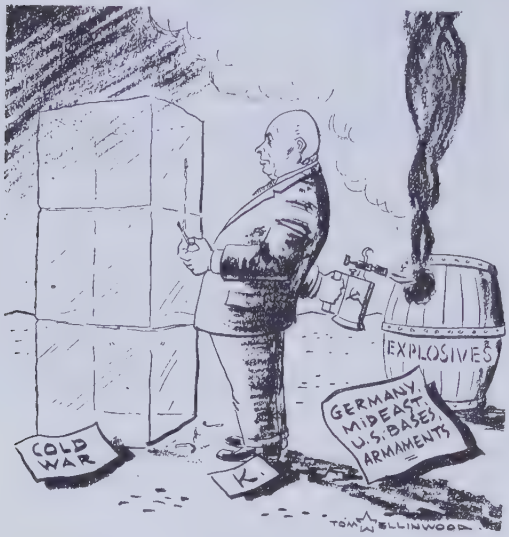
The USSR in 1959 had 7,686 newspapers (two thirds of which were in the Russian language) with a combined circulation of 57,500,000, and 799 magazines (85% in Russian) with a circulation of 29,100,000. More than a billion copies of books and pamphlets were published (80% of which were also in Russian). On May 22, Premier Nikita S. Khrushchev told the Third Congress of Soviet Writers that Soviet authors must "wash people's brains." (See also SOVIET LITERATURE.)

Government and Political Developments, 1959.—The USSR is a dictatorship ruled by the powerful policymaking Presidium of the Central Committee of the Communist Party of the Soviet Union. The formal framework of government, however, was as follows at the close of 1959:

(1) The *Council of Ministers*, consisting of a premier (Nikita S. Khrushchev), several deputy premiers, the 15 premiers of the Soviet republics, and some 40 ministers or heads of organizations of ministerial rank. The Council of Ministers is the chief legislative and executive organ of the USSR, and is appointed by the Supreme Soviet or the latter's Presidium.

(2) The *Presidium of the Supreme Soviet*, consisting of a president (Kliment E. Voroshilov, who is the titular head of the Soviet government), 15 vice presidents (the presidents of the 15 Soviet republics), a secretary, and 15 members. It has legislative, appointive, judicial, and treaty-making powers.

(3) The *Supreme Soviet of the USSR*, consisting of



ELLINWOOD IN THE TUCSON (ARIZ.) DAILY STAR

"THAW?"

two equal houses elected for four years: the Soviet of the Union, with 738 members (one deputy per 300,000 inhabitants); and the Soviet of Nationalities, with 25 deputies from each of the 15 Soviet republics, 11 from each of the 19 autonomous republics, 5 from each of the 9 autonomous oblasts, and 1 from each of the 10 national areas. The Supreme Soviet meets only two to three weeks of each year and, in the interim, delegates its supreme legislative power to the Council of Ministers and the Presidium.

During 1959 the following state committees with ministerial rank were added to the Council of Ministers: Science and Economics, Automation and Machine-building, and Professional and Technical Education. On June 22 the Ministry for Higher Education was transformed into a Ministry for Higher and Special Secondary Education. Among the various ministerial appointments during the year, the most outstanding was that of Aleksei N. Kosygin (a consumer goods expert) as head of the State Planning Committee.

As before, the supreme authority of the USSR in 1959 was the Communist Party Presidium headed by Nikita S. Khrushchev. This body exerts much of its powers through the Central Committee Secretariat of the Communist Party, managed by First Secretary Khrushchev. The Secretariat functions like a party cabinet, is superior to any governmental organization, and in 1959 had the following subdivisions: planning, heavy industry, light industry, agriculture, transport, science, education, administration, republic affairs, party organs, propaganda, military affairs, and police. Some regional party officials were purged during the year in the Caucasus, Central Asia, and the Moscow district.

The Soviet Communist Party in 1959 had 7,622,356 members and 616,775 candidates. The 21st party congress met from January 27 to February 5, and largely devoted its discussions to the Seven-Year Plan for 1959–65. After the congress, local party organizations were ordered to approve one-man rule of the party. This signified the increased power of Khrushchev, who now receives lavish public praise reminiscent of the Stalin worship of the past.

At the beginning of 1959, a new Soviet law code was introduced, providing more moderate legal procedures and penalties than in the past. The death sentence is now imposed only for treason, espionage, assassination of a Soviet official, sabotage, membership in an anti-Soviet organization, banditism, or intentional murder. The maximum prison sentence is 15 years, and imprisonment while under criminal investigation is limited to 6 months. After a lapse of 16 years, a person cannot be punished for a past crime. As before, flight abroad from the USSR is defined as treason.

Finance.—The 1959 budget plan for revenues and expenditures is shown in the accompanying table (the official exchange rate is 4 rubles to the U.S. dollar).

There is no true local taxation in the USSR, as all tax funds go into the combined budget, which includes 80,000 regional and local budgets. The "profits tax" is levied primarily on consumer goods industries, and is included in the price of goods sold to the public. As there are many hidden military appropriations among the budget expenditures, the economic appropriations include subsidies for war industry. The social-cultural expenses are partly for military pensions and civilian military training in schools and sport clubs. The Soviet population is oppressively taxed, since in 1959 more than two thirds of the national income was taken by the government in taxes.

USSR REVENUES AND EXPENDITURES, 1958–59

Item	1958 Billions of rubles	1958 % of total	1959 Billions of rubles	1959 % of total
Revenues:				
Sales tax	301.5	45	333.0	46
Profits tax	130.3	20	154.9	20
Foreign trade	122.8	19	148.4	21
Income tax	49.8	8	56.1	8
Tax on cooperatives	15.7	2	19.6	3
Other direct taxes	22.9	3	11.4	2
Miscellaneous	17.0	3	...	...
Total	660.0	100	723.4	100
Expenditures:				
Economic	257.2	40	308.9	43
Social-cultural	212.8	33	232.2	33
Defense	96.3	15	96.1	14
Secret	61.8	10	58.9	8
Administration	11.9	2	11.5	2
Total	640.0	100	707.6	100

The Seven-Year Plan for 1959–65 provides for capital investments of 1,940–1,970 billion rubles, to be allocated approximately as follows: heavy and war industry, 52%; housing, 19%; communications, 11%; agriculture, 8%; education and health, 4%; consumer goods industry, 4%; and trade, 2%. Thus, in new construction, the Soviet emphasis remained on heavy, war-potential industry. Of the capital investments during the Seven-Year Plan, 64% is planned to be spent in the Russian Soviet Republic, 14% in the Ukraine, and 8% in Kazakhstan. The remaining 14% is to be divided among the other 12 Soviet republics, none of which will receive more than 2%.

Armed Forces.—The Soviet armed forces in 1959 had a strength of 3,623,000 men, and possessed approximately 50,000 tanks. The Soviet Navy in 1959 was estimated to have 27 cruisers, 200 destroyers, and 600 submarines. Soviet shipyards slowed the output of conventional submarines during the year in order to convert to the construction of atomic-powered submersibles. On September 15 the atomic-powered icebreaker *Lenin* (the world's first atomic surface ship) commenced its first cruise. The naval air force consisted of 3,600 planes, all land-based, since there are no known Soviet aircraft carriers.

The Soviet Air Force in 1959 had 20,000 first-line planes, most of which were jet-propelled. During July a Soviet bomber flew nonstop 10,660 miles without refueling, at an average speed of about 500 miles per hour. In October the single-motored jet fighter E-66 attained a speed of 1,560 miles per hour. (See also AERONAUTICS.)

Dosaaf, the Soviet civil defense society, announced in 1959 that it was training millions of civilians for mechanized and air warfare. The society was establishing 45,000 small radio broadcasting stations on collective and state farms to im-

prove rural communications in case of atomic war.

Soviet rocketry continued to display its prowess during 1959. On January 2 the USSR launched its space rocket Mechta (popularly called Lunik I), which passed the moon and became the first man-made object to rotate like a planet in the outer space of the solar system. A Soviet lunar probe, Lunik II, was launched on September 12 and hit the moon on September 14, Moscow time (September 13, Greenwich Civil Time), thus becoming the first projectile from our earth to reach the moon. Another lunar probe, Lunik III, launched on October 4, circled the moon and photographed the hitherto unknown side of that celestial planet. (See also ASTRONOMY; SPACE FLIGHT.) In November, Khrushchev publicly claimed that a Soviet factory was producing 250 rockets per year, equipped with warheads of hydrogen bombs. (See also MISSILES.)

Manpower.—Excluding collective farmers, the USSR had about 55 million manual workers, white-collar workers, and professionals in 1959, including 280,000 scientists and laboratory assistants, and 360,000 physicians. About 45% of the urban labor force and 70% of the collective farmers were women. Soviet trade unions in 1959 had 52,780,000 members; and sport clubs, 20 million.

Standard of Living.—The Soviet standard of living remained low in 1959 despite many public promises by Khrushchev to bring improvement. The average Soviet family still lived in one city room, or in a small rural hut. The Soviet press admitted that there were shortages of cotton clothing, shoes, furniture, sewing machines, iceboxes, and dishes.

The main concession by the government to the people during 1959 was shorter working hours. All workers in mines and in metallurgical plants were transferred to a 42-hour workweek.

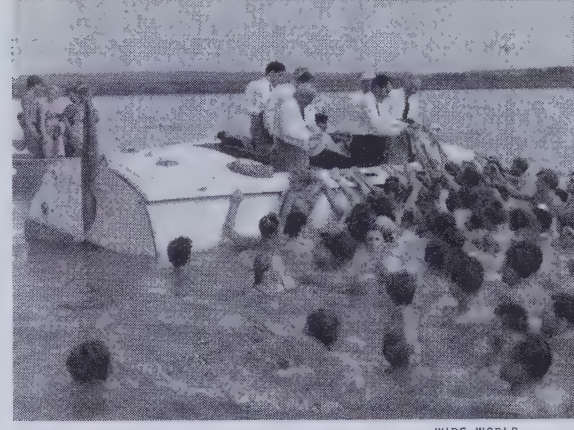
During August, buying on the installment plan was introduced in some stores for the purchase of clothing and certain household appliances. After a down payment of 20–25% of the total price, the customer pays the remainder in wage deductions over a period of 6–12 months.

Agriculture.—In 1959 the USSR had 70,000 collective farms and 6,000 state farms. The total area under crops amounted to approximately 487 million acres, of which more than one fourth belonged to state farms. About two thirds of the total sown area was under grain. Other major crops were potatoes, sunflower seed, cotton, sugar beets, silk, flax, and hemp. Although collective and state farms grow the bulk of Soviet crops, about half the potato acreage and one third of the land growing other vegetables are on the private gardens which every rural resident and suburbanite is allowed to possess.

SOVIET AGRICULTURAL PRODUCTION
(In thousand metric tons)

Item	1958 output	1965 plan
Grain	139,000	164,000–179,000
Potatoes	86,100	147,000
Sugar	5,300	9,200–10,000
Sunflower seed	4,500	5,000
Cotton	4,400	5,700–6,100
Milk	6,000	13,500
Meat	2,900	6,100
Butter	638	1,006
Fish	2,900	4,600

Soviet agriculture in 1959 had 1,000,000 tractors and 500,000 grain-harvesting combines. Total livestock included 70,800,000 cattle, 48,500,000 swine, and 129,600,000 sheep. The 1959 harvests of grain and sugar beets were lower than in 1958 because of drought in several regions. As a result of the policy requiring machine-tractor



WIDE WORLD

Premier Khrushchev and Vice President Nixon stand in motor launch to greet swarm of bathers in Moskva River, July 26. Nixon was a guest at premier's country home nearby.

stations to sell their agricultural machinery to the collective farms, 81% of the collectives purchased this machinery during 1959, and four fifths of the machine-tractor stations were converted into machinery repair stations. Rural living conditions remain very primitive; Khrushchev himself publicly complained that most farm villages lack paved roads, sidewalks, waterpipes, and sewers.

The revised Seven-Year Plan for 1959–65 calls for substantial increases in farm output, as shown in the accompanying table.

Industry and Mining.—In 1959 the USSR produced 129 million metric tons of petroleum, 60 million tons of steel, 38.8 million tons of cement, and 262 billion kw.-hr. of electricity. The USSR was second in world industrial output only to the United States, and produced more of certain types of armament than the United States. However, the overall size of Soviet industry was only half that of the United States. As before, Soviet industry was very unbalanced, with capital goods (including munitions) amounting to about four fifths of all industrial production. This imbalance results in a low production of consumer goods, which in turn creates a poor standard of living.

During 1959 the Soviet press complained about shortages of rolled steel, iron and steel pipe, nonferrous metals, and chemicals. The output plan was underfulfilled for trucks, buses, tractors, and railway freight cars.

Premier Khrushchev (left) and British Prime Minister Macmillan inspect honor guard at Moscow airport as latter arrived for visit, February 21. Between them is interpreter.

WIDE WORLD

The revised Seven-Year Plan for 1959–65 calls for an 80% increase in industrial output, including an 85–88% growth of heavy industry and a 62–65% gain in light industry. The main planned goals in industry are shown in the accompanying table.

USSR INDUSTRIAL PRODUCTION

Product (and unit of measurement)	1958 output	1965 plan
Pig iron (million metric tons)	39.6	65–70
Steel (million metric tons)	54.9	86–91
Coal (million metric tons)	496	600–612
Petroleum (million metric tons)	113	230–240
Natural gas (billion cubic meters)	29.8	150
Electricity (billion kw.-hr.)	233	500–520
Mineral fertilizer (million metric tons)	10.6	31
Machine tools (thousands)	138	190–200
Motor vehicles (thousands)	511	750–856
Timber (million cubic meters)	235	275–280
Paper (million metric tons)	2.2	3.5
Cement (million metric tons)	33.3	75–81
Cotton cloth (billion meters)	5.8	7.7–8.0
Wool cloth (million meters)	303	500
Linen (million meters)	481	635
Silk (million meters)	845	1,485
Hosiery (million pairs)	887	1,250
Shoes (million pairs)	356	515

The Seven-Year Plan provides for especially large increases in the output of steel alloys, aluminum, electrical equipment, and mining and metallurgical machinery. Electric power production will be expanded primarily by the construction of thermal power stations. New centers of heavy industry are to be built in central Siberia, and existing factories and mines in European USSR are to be modernized and expanded. (See also IRON AND STEEL.)

Foreign Trade.—Soviet foreign trade (imports plus exports) in 1959 amounted to approximately $8.65 billion, of which 74% was with the Soviet satellites, 16% with Western industrial nations, and 10% with underdeveloped nations of Asia, Africa, and Latin America. In order of importance, the USSR traded most heavily with the following countries: East Germany, Communist China, Czechoslovakia, Poland, Rumania, Bulgaria, Hungary, Finland, the United Arab Republic, Great Britain, India, France, and West Germany. The Seven-Year Plan calls for a 50% increase in Soviet trade with the Soviet satellites by 1965.

Soviet statistics released in 1959, giving a breakdown of Soviet foreign trade in 1958 by commodities, are summarized in the accompanying table.

SOVIET FOREIGN TRADE BY MAJOR COMMODITIES, 1958
(In percentage of total)

Item	Imports	Exports
Machinery and equipment	25	19
Metals	9	16
Ores	9	4
Fuels	5	15
Timber	0	6
Textile fibers	7	7
Foods	15	8
Furs	0	1
Nonedible consumer goods	14	4
Rubber	4	0
Secret*	12	20

* Secret exports are probably armaments; secret imports may consist largely of uranium.

Trade between the Soviet Union and the United States in 1958 amounted to only $30 million. Aside from various trade pacts with the Soviet satellites, the USSR in 1959 concluded barter agreements with Great Britain, Indonesia, Finland, Greece, Ethiopia, Denmark, and the Sudan. During 1959 the Soviet Union granted several new credits for technical aid: $7.5 million to Nepal for industrialization, $100 million to Ethiopia, and $137.5 million to Iraq for industrial, agricultural, and transportation development. These grants increased total Soviet technical aid to non-Communist countries to approximately $2.5 billion. By the close of 1959, under various technical aid agreements, the USSR was constructing 4 factories in Indonesia, 8 in Ceylon, 7 in Afghanistan, 16 in Iraq, 20 in India, and 39 in the United Arab Republic. In November, Anastas I. Mikoyan, Soviet first deputy premier, opened a Soviet industrial exhibit in Mexico City intended to attract more Latin American purchases of machinery from the USSR.

Transportation and Communications.—The USSR in 1959 had 75,000 miles of railways, 82,000 miles of internal waterways, and 134,000 miles of improved roads. There were 57 television stations, 3 million television receiving sets, 15 million radio receiving sets, and 34.9 million radio loudspeakers wired to central receivers operated by the state. About 80% of Soviet internal freight was carried by the railways in 1959, and one third of this railway freight was hauled by diesel or electric locomotives.

The Seven-Year Plan for 1959–65 provides for the completion of the South and Central Siberian railways, the electrification of 12,400 miles of railways, and the opening of a subway in Kiev. An oil pipeline will be built from Novosibirsk to Irkutsk, and gas pipelines between the following terminals: the north Caucasus and Leningrad, Saratov and Yaroslavl, and Dashava and Riga. Ninety airports will be rebuilt to accommodate large jet planes. According to the Seven-Year Plan, the USSR in 1965 will have 160 television stations, 15 million television receiving sets, and 24 million radio receiving sets.

Foreign Affairs, 1959. *Europe.*—Soviet foreign policy concerning Europe was dominated by the Soviet attempt to force British, French, and American troops to leave West Berlin. On January 10, Soviet notes to the United States, Britain, and France demanded that West Berlin become a demilitarized free city. Speeches by Soviet leaders early in the year had a tough and uncompromising tone on the Berlin question, indicating it must be settled quickly. By fall, however, the USSR's desire for a summit conference had overshadowed its interest in Berlin. While not abandoning their basic demands regarding Berlin, Soviet leaders stated that settlement of the problem was not urgent. (See also GERMANY; SUMMIT CONFERENCE.)

From February 21 to March 3, British Prime Minister Harold Macmillan visited the USSR, but did not succeed in settling any outstanding disputes between Great Britain and the Soviet Union. A Soviet note to the United States made public on April 22 protested against the shipment of atomic weapons to American troops stationed in West Germany and other NATO nations. From May 11 to August 5, a conference of the foreign ministers of the United States, Britain, France, West Germany, East Germany, and the USSR was held in Geneva on the Berlin dispute, without reaching any settlement. On May 13 the USSR protested to Greece against the projected stationing of American nuclear bombers and atomic rockets on Greek territory.

During the summer, Premier Khrushchev had planned to visit Denmark, Norway, and Sweden; but his threatening speeches warning those countries not to accept United States military aid resulted in a Scandinavian press campaign against him, and as a result, he cancelled the planned visit on July 19. On November 11 the USSR protested to the United States, Britain, and France against the West German decision to build a new radio station in West Berlin to be operated by the government of the German Federal Republic.

Asia.—During February the Soviet Red Cross and Red Crescent Society offered to help repatriate Koreans from Japan to North Korea. In the same month the USSR claimed to have caught four Turkish spies, who were allegedly trained by United States military forces in Turkey. In April the Soviet Union unsuccessfully opposed the decision of the International Atomic Energy Agency of the United Nations to send a delegation to aid Taiwan in atomic development. On May 4 the USSR protested to Japan against the stationing of United States nuclear weapons on Japanese soil, and proposed that the Pacific Ocean and Far East become a neutralized zone free from atomic weapons.

The USSR protested on May 28 to Iran against the arrest of two Iranian employees of the Soviet embassy in Teheran who were accused by the Iranian government of distributing subversive propaganda. A Soviet public statement on September 9 expressed regret over the frontier conflict between India and Communist China, and urged the two Asian nations to settle the dispute peaceably. Khrushchev visited Communist China on September 30–October 4. His public speeches in Peking urging peace between East and West received no public statement of support from Chinese Communist leaders.

With regard to the Communist rebellion in Laos, the USSR did everything possible to support the rebels. The USSR demanded unsuccessfully that the British-Soviet International Commission on Laos, which had not met since mid-1958, be convened immediately. On October 3 the USSR rejected a British proposal for the abolition of the Soviet-British International Supervisory and Control Commission in Cambodia. The Soviet Union also opposed all United Nations investigations of the Laos rebellion.

In March the USSR and Australia agreed to resume diplomatic relations, which had been severed since April 23, 1954.

United States.—Relations between the Soviet Union and the United States during 1959 were marked by exchanges of visits by high government officials. On January 4–20, First Deputy Premier Anastas I. Mikoyan toured the United States, apparently for the purpose of stimulating Soviet-American trade. Another Soviet first deputy premier, Frol R. Kozlov, opened the Soviet National Exhibition of Science, Technology, and Culture in New York City on June 29, and then spent a few days traveling through the United States. Vice President Richard M. Nixon (q.v.) opened the American National Exhibition in Moscow on July 24, and then visited several Soviet provincial cities. On September 15–27, Premier Khrushchev toured the United States, visiting Washington, New York City, Los Angeles, San Francisco, Iowa, and Pittsburgh. (For details of his trip, see KHRUSHCHEV, NIKITA S.) Before his departure he held private conversations with Dwight D. Eisenhower (q.v.) at Camp David, Md. President Eisenhower had planned to visit the USSR during the late autumn of 1959, but postponed his visit until the spring of 1960.

None of these visits resulted in a settlement of the basic disputes between the United States and the USSR. However, after the Khrushchev visit, the Soviet press attacked the United States less vigorously than in the past. In general, Soviet-American relations seemed to be less tense than in 1958.

However, friction between the two countries continued during 1959. On February 26, United States naval officers boarded and searched a Soviet fishing trawler off Newfoundland, after 5 transatlantic cables had been damaged in that area. On March 31 the United States protested to the USSR that Soviet fighter planes had flown uncomfortably close to a United States military transport plane en route to West Berlin. The Soviet government replied that the American plane had been flying at an unauthorized altitude. On October 16 the USSR expelled Russell A. Lanzelli, the security attache of the United States embassy in Moscow, for alleged espionage.

The USSR also made several peaceful moves during 1959. On August 28 the Soviet government declared it would not renew nuclear bomb tests so long as the West refrained from testing. In September, Khrushchev urged the United Nations to abolish all armed forces through a series of progressive reductions in armament, but he did not explain how such disarmament could be controlled (see DISARMAMENT). On November 21 the USSR and United States signed an agreement providing for increased scientific, technical, educational, and other cultural exchanges during 1960–61. The agreement included plans for some cooperation in the peaceful use of atomic energy.

(See also references under the Index entry, *Union of Soviet Socialist Republics.*)

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UNIONS, Labor. See AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS; LABOR; and the Index entry, *Unions, Labor.*

UNITED ARAB REPUBLIC. A republic in the Middle East, formed in 1958 by the merger of two Arab republics—Egypt, in northeastern Africa, and Syria, on the Asiatic shore of the Mediterranean—separated from each other by some 600 miles. Its area is 458,000 square miles, and estimated population (1958), 29,061,000. Chief cities (with estimated population) are Cairo, the capital (2,600,000); Alexandria, chief port of the Egyptian Region (1,200,000); Port Said (200,000); Damascus, regional capital in Syria (400,000); Aleppo, metropolis of the Syrian Region (450,000); and Latakia, chief port of the Syrian Region (105,000). The preponderant majority (89%) of the people are Moslems of the Sunnite sect; Christian elements constitute about 10%; and there are several hundred thousand members of other Moslem sects (Alawites, Bedouins, Druzes, and Kurds) in the Syrian Region.

Unification Efforts.—Since the establishment of the United Arab Republic (UAR) by the merger of February 1958, the two formerly independent republics of Egypt and Syria have been making serious efforts to bring about their complete union. The stubborn geographic fact of the distance which separates them, and the somewhat different economy of the two regions have frustrated some of these efforts; as a result, the merger has not been successful on all fronts.

There appears to be almost complete fusion in at least two important spheres: foreign affairs and matters of defense. In other respects, however, particularly in matters of economy and internal politics, the merger is not yet fully implemented. Land reforms, in process of implementation in the Egyptian (or Southern) Region for several years, are being carried out somewhat grudgingly in the Syrian (or Northern) Region. Similarly, restrictions on imports, vigorously enforced in the Egyptian Region for a number of years, and currently in effect in the Syrian Region, seem to have caused considerable discontent. Nor has the attempt to merge the two countries politically been an un-

qualified success. The dissolution of all political parties in the Syrian Region by presidential decree (Feb. 4, 1958) and the declared intention to bring about the establishment of a National Union Party has not materialized.

The National Assembly, as envisaged at the time of merger, has not as yet been realized, though a decisive step was taken in the general local elections held on July 8, 1959. In this first general balloting, voters elected some 40,000 local committeemen in all the 33 provinces of the UAR. These committeemen then were to elect councils for the provinces, and these councils in turn will elect a general congress. From this congress the president will eventually select half of the membership of the future National Assembly.

There has been no perceptible change in the governmental machinery of the UAR since its establishment, with one important exception. In a presidential decree issued on Oct. 21, 1959, President Gamal Abdel Nasser appointed Field Marshal Abdel Hakim Amer, UAR vice president and commander in chief of the armed forces, as general supervisor in the Syrian Region. The effect of Amer's appointment was to give Syria a strong executive for the first time since the merger. Amer was given wide powers to act as the president's representative in economic and other governmental matters, and was made head of the Syrian Executive Council. On December 30 the Syrian vice president and three other Syrian members of the cabinet resigned, reportedly because of their dissatisfaction with Nasser's stern policy in the Syrian Region.

Otherwise, the UAR government in 1959 remained the same as in 1958. There is the all-powerful President Nasser, with authority to govern the two regions by decrees. There are three vice presidents (2 Egyptian, 1 Syrian), and a cabinet of 21 (including the 3 vice presidents). All these are the president's appointees, as are the members of the executive councils of the two regions.

Principal Events, 1959.—Throughout the year the United Arab Republic continued to be the focal point of significant events affecting most of the Middle East.

The year began with the convergence of state visits to Cairo by numerous high dignitaries from many lands, all seeming to woo its friendship and seek favors. On January 3, Prime Minister Karami of Lebanon paid an official visit, and on March 25 Lebanese President Chehab met with Nasser on the Syria-Lebanon border. President Grotewohl of East Germany arrived in Cairo on January 5. On January 6, Cairo welcomed Prime Minister Fanfani of Italy, and soon after his arrival the signature of a cultural-economic agreement was announced, which also provided for the sale of 130,000 tons of wheat to the UAR and the increased purchase of Egyptian cotton, and the settlement of outstanding questions connected with the sequestration of Italian property during World War II. Prime Minister Nkrumah of Ghana arrived on January 9 for a three-day visit; a few days later came Spain's Foreign Minister Fernando Castiella. President Tito arrived on February 20 for an eight-day state visit. On June 24, Emperor Haile Selassie of Ethiopia was in the UAR for a five-day visit. Cairo was host to Imam Ahmed of Yemen on August 6; and on August 31, King Saud of Saudi Arabia arrived for a five-day state visit. On September 26, Premier Ne Win of Burma visited Cairo.

Perhaps the most significant event of the year was the signature of the financial agreement with Britain (and the subsequent resumption of diplomatic relations), thus bringing to an amicable end the long-standing dispute over the sequestrated and nationalized British property in Egypt on the one hand, and the blocked Egyptian sterling accounts in Britain on the other. The agreement, signed on February 28 in Cairo, provided for the return of sequestrated British property in Egypt to its owners, the payment of an agreed sum (£27,500,000 sterling) for such property nationalized by Egypt, and the release of frozen Egyptian accounts in Britain, estimated at about $144 million. Britain waived all claims to an estimated $144 million worth of installations in the former Suez base, and the UAR waived its war damages claims for a similar amount, arising from the Suez fighting in 1956.

It was announced on December 1 that diplomatic relations between Britain and the UAR, disrupted in 1956, would be resumed at the level of chargé d'affaires. The move coincided with reports that the two countries were eager to expand trade agreements. The UAR earlier (October 19) resumed diplomatic relations with Australia.

The UAR also registered gains in its dealings with the West and with all Arab countries (excepting Iraq), though its relations with Moscow and Peking seemed at times strained. In particular, its relations with the United States, somewhat chill since mid-1956, improved steadily. The United States began the sale of $25 million worth of wheat to Egypt early in March, and accepted in payment Egyptian currency. The distribution of United States flour, corn meal, and powdered milk to some 700,000 needy Egyptians and school children was resumed. On July 1 the United States embassy in Cairo announced the resumption of substantial economic and technical aid, totaling $8,418,000. A pact signed on September 28 established a new educational exchange program under the Fulbright Act. Two days later a new parcel post agreement was signed by the two countries, and on October 31 it was announced in Cairo that the United States had supplied $2 million worth of newsprint after the USSR had cut off its shipments to the UAR.

On November 14, an agreement was signed with the UAR (Syrian Region) by the United States to finance the sale of grains valued at $9.6 million for Syrian pounds. The director of the United States Development Loan Fund announced in Cairo on November 26 that "expeditious consideration" would be given for financing seven UAR developmental projects. On December 22 the International Bank for Reconstruction and Development agreed to lend $56.5 million to the Suez Canal Authority of the UAR for widening and deepening the canal. An agreement signed on December 23 between the representatives of the UAR, the Export-Import Bank of Washington, and the General Motors Corporation provided for a loan of $12 million by the bank for the purchase in the United States of locomotives and other equipment for Egyptian railways.

UAR relations with the Soviet Union and Communist China seemed to have suffered temporary setbacks beginning with President Nasser's determined crackdown on Communists in the UAR. On January 1, some 100 Communists were arrested in Egypt, and during the next few days several hundred were jailed. On January 3, a commission was sent to the Syrian Region and scores of Communists were arrested there. Late in January President Nasser declared that despite such drastic moves on his part against these Communists, the "UAR will continue to seek trade with the Soviet bloc." On February 21 Nasser reported an exchange of letters with Khrushchev, in which the Soviet premier

said he would not interfere in UAR internal affairs. Despite apparent rifts, mutual benefits seem to keep the ties between the two countries unbroken. On October 31, it was reported unofficially that the USSR would not only carry out its agreement to build the first stage of the Aswân High Dam, but might undertake to complete the whole project in all its three stages.

The UAR's seemingly amicable relations with Communist China received a severe strain in October when the Syrian Communist chief, who had fled the country, attacked the UAR in a Peking speech. The UAR protested vigorously to Peking for allowing the denunciation. China was also accused of harassing Arab diplomats there. Finally, however, the rift was patched up with an apology.

The UAR's relations with France remained strictly formal, though there seemed to be signs of improvement. In September, West Germany was reassured that the UAR would not recognize the East German regime, thus retaining the Bonn government's friendship. By signing a trade and technical cooperation agreement with Italy on April 29, enabling Italian spinners to buy Egyptian cotton at a 35% premium on Italian currency, Italy became a valued friend of the UAR in the West. These moves were climaxed by the July 27 announcement that the UAR had raised its legation at the Vatican to embassy rank, thus outdoing many of the nominally Christian nations.

Lebanese government circles have come to regard Nasser more and more as the spokesman of the Arab world. The quarrel with Jordan has quieted down, and on August 16 diplomatic relations (broken off in July 1958) were resumed. The big dispute over the Nile waters with Sudan was at last settled by an agreement signed on November 8 in Cairo, providing for the payment to Sudan of about $43 million for the inundation of Sudanese land in the construction of the Aswân High Dam (see also SUDAN.) Only one country, Iraq, remained at odds with the UAR, and there seemed to be no end to the running battle between the leaders of these two countries.

(See also MIDDLE EAST; SUEZ CANAL.)

EGYPTIAN REGION

The most populous Arab-speaking country in northeast Africa and the Middle East, the Egyptian Region of the UAR borders the Mediterranean, with Libya on the west, the Sudan on the south, and Israel, the Gulf of 'Aqaba, and the Red Sea on the east. Its area is 385,000 square miles, but the settled and cultivated area—the Nile Valley and its delta—is only 13,500 square miles. Its population of almost 25,000,000 is increasing by 550,000 annually.

Government.—Since the formation of the United Arab Republic, Egypt's parliamentary form of government has undergone drastic changes, vesting the president with extraordinary powers. Under the provisional constitution, the president (Gamal Abdel Nasser) governs the region with an Executive Council of 15, whose members are his appointees, and who as departmental heads carry out his decrees.

Religion and Education.—More than 91% of the people are Moslems, 8% are Christians, and there are a few thousand Jews. Education is compulsory for children between the ages 6 and 12, and the schools are government supported and free, but illiteracy is high (perhaps 75% of the population). Hundreds of schools are being built annually, yet available educational facilities are inadequate for the population. In 1956–57 there were 1,925,514 pupils in elementary schools, 320,903 in preparatory (junior high) schools, and 109,153 in secondary and technical schools. There are 6 higher institutions at the university level with 85,900 students. In addition, 29,487 students were enrolled in teacher-training schools.

Finance.—The region's finance has been in good condition partly because of the government's fiscal policies and its ability to husband the region's financial resources, and because of the freeing of Egyptian accounts held abroad. The ordinary budget for the fiscal year 1959–60 provides for expenditures of £E198 million and revenue of £E225.6 million. This does not include the region's contribution to the unified budget, which in 1959–60 is estimated at £E95.4 million. The development budget for 1959–60 was estimated at £E98.1 million, compared with £E46 million for 1958–59. Estimates for the 1959–60 unified budget, which finances such items as defense and foreign affairs, increased to £E123.6 million from £E113.9 million in 1958–59. The region's currency is among the most stable monetary units in the area; it has not fluctuated from its base exchange value (£E1 = U.S.$2.87).

Transportation and Communications.—The railroads of the region total some 3,500 miles, and there is a highway network of more than 10,000 miles. The Cairo International Airport, perhaps the largest in the Middle East, serves all major carriers throughout the world. There were 180,000 telephones in 1957.

Production.—The 5-year industrialization plan is proceeding at a good pace. Though geared to help both industry and agriculture, more than half of the $700 million program is being devoted to industries. Particular emphasis is placed on the steel and oil industries, and also on the manufacture of fertilizers. The Helwan steel plant is operating at its full annual capacity of 265,000 tons. Prospecting for oil is proceeding by the General Petroleum Authority (a government firm) in many parts of the country. The refinery capacity at Suez was increased to 1,200,000 tons annually, and the two others established in Alexandria have the combined capacity of 2,300,000 tons. The discovery of new rich phosphate deposits in the eastern desert was reported in October 1959. The region's principal crop, cotton, was expected in 1959 to be approximately equal to that of 1958—about 9.5 million cantars (100 pounds each). In July 1959, Egypt started importing wheat from the United States; 30 million bushels of surplus wheat and flour was made available for about $58 million.

Foreign Trade.—There is a large gap between the region's export and import trade. For the calendar year 1958,

WIDE WORLD

As his father watches proudly, seven-year-old Abdel Hakim Nasser shakes hand of Prime Minister Kwame Nkrumah of Ghana, who visited President Nasser of the UAR in January.

Appointed general supervisor of the Syrian Region by President Nasser on October 21, Marshal Abdel Hakim Amer (left) is cheered as he tours the Syrian-Israeli border.

UPI

exports totaled £E162.2 million, while imports exceeded £E238 million. The figures for 1959 should show considerable improvement, though the gap cannot be closed. The trend of exporting too much to the East and not enough to the West, accelerated since mid-1956, has been tapering off. Cotton continues to account for about 75% of the export trade, the Soviet bloc taking about 40%. Purchase orders placed in the West have been increasing. Trade with the United States in 1958 showed exports of about $20 million and imports of over $50 million.

Syrian Region

An Arab-speaking country on the eastern shore of the Mediterranean, the Syrian Region of the UAR has an area of about 72,000 square miles, and an estimated population (1958) of 4,280,000, including about 250,000 nomads.

Government.—Since its merger with Egypt in 1958, Syria's governmental machinery has changed. The elected representative type was replaced by one of a hand-picked Executive Council whose 11 members are departmental heads and govern the region as agents of the president. On Oct. 21, 1959, Field Marshal Abdel Hakim Amer was appointed chief of government and was vested with extraordinary powers (see above, *Unification Efforts*).

Religion and Education.—About 75% of Syrians are Moslems of the Sunnite sect. Christians constitute about 12% of the population, while the remaining 13% are members of other Moslem sects (Alawites, Bedouins, Ismailis, Shi'ites, and Druzes, as well as Kurds). In 1954 there were 2,636 elementary schools with 339,329 pupils, 244 secondary schools with 60,666 pupils, 13 technical schools with 2,190 students, and 6 teachers colleges with 1,385 students. In addition, some 75,000 pupils attended private schools. There are also the Syrian University, the Higher Teachers' Training College, and the Arab Academy (all in Damascus). About a third of the population is illiterate.

Finance.—Since mid-1958 Syria has been in financial difficulties, and the situation became acute in 1959, mainly because of the cereal crop failure due to severe drought. The 1959–60 ordinary budget for the region listed balanced expenditures and revenue of £S246.4 million (up from £S221.8 million the previous year). Also increased is the economic development budget for the fiscal year 1960, with expenditure of £S185.5 million (compared with £S80.0 million). The region's contribution to the unified budget in 1959–60 is estimated at £S247 million. The official exchange rate of the Syrian pound (U.S.$0.45) and the free exchange rate (U.S.$0.28) seemed unstable.

Transportation and Communications.—Syria's railways total 597 miles. There are some 1,600 miles of first-class roads, 745 miles of second-class roads, and 3,850 miles of dirt roads. Recently several hundred miles of first-class roads between large cities have been widened, repaired, and resurfaced. There are two major airports—one at Aleppo and the other at Damascus—and four local airports at Qamishli, Deir-ez-Zor, Hama, and Hmaimeem (near Latakia). Some 20,000 telephones were installed recently, bringing the total number to more than 56,000.

Production.—Under the current 10-year development plan, the industrialization of the country is being pushed vigorously. However, Syria remains a land of agriculture, although only a fourth of the land is fit for cultivation. Through irrigation and drainage, the government hopes to increase the acreage of cultivable land, and by agricultural land reforms to bring about a more equitable distribution of such land. Because of drought, the wheat and barley crops for 1958 were 561,000 and 176,000 tons, respectively—less than 40% of a normal year's yield. In 1959, crops in these cereals were not expected to be any larger, indicating that there would be none for export. The cotton crop yield was down from 107,200 tons in 1957–58 to about 94,000 tons in 1959. Rigid import restrictions in 1959 caused considerable grumbling on the part of merchants and traders, but certain established industries, such as textiles, glassware, and cement, continued to do a thriving business.

Foreign Trade.—Syria's financial woes are reflected in her foreign trade. In 1958, total exports amounted to £S440 million, and imports to £S729 million. As in the Egyptian Region, serious efforts are being made to divert some of the export trade from East to West. Syria's relations with her best customer, Lebanon, have improved, but that fact is not reflected in the current trade between the two countries. Trade with the United States during 1958 showed exports of $4.1 million and imports of $19.3 million.

A. O. Sarkissian,
Analyst in Middle Eastern and East European Affairs, The Library of Congress.

UNITED ARAB STATES. A federal union between the United Arab Republic (UAR) and the Kingdom of Yemen, established by an agreement of March 8, 1958, which was signed at Damascus by President Gamal Abdel Nasser of the UAR and Crown Prince Saif al-Islam Muhammad al-Badr of Yemen. The agreement defined the United Arab States (UAS) as a federation of the UAR, Yemen, and "those Arab States which will agree to join this Union." While stipulating that each member would retain its own system of government under the federation, it provided for unified foreign and defense policies, coordinated economic planning, a common currency and customs union, and a separate federal budget. Political authority for the UAS is exercised by a Supreme Council, composed of the heads of government of the member states, and assisted by a Federal Council, consisting of six representatives from each state. (See also United Arab Republic; Yemen.)

UNITED CHURCH OF CANADA. The largest non-Roman communion in Canada, The United Church of Canada was formed on June 10, 1925, by the union of the Congregational and Methodist churches and 70% of the Presbyterians in Canada, together with many local union congregations. One of every five Canadians looks to it for spiritual leadership.

On Dec. 31, 1958, the United Church had 6,025 local congregations, served by 2,707 pastoral charges and 3,322 ministers. Total adult membership was 980,461, of whom 41,713 were new members received on profession of faith during 1958. Its 5,271 Sunday schools enrolled 731,219 pupils, and 263,033 belonged to other Christian education groups.

Church extension, including the establishing of new congregations in pioneer areas across Canada and in new suburban communities, continued at an accelerated pace, the quota for 1959 being 64 new churches and 29 manses. In the next four years, 230 additional churches and 95 manses must be erected, for Canada's population continues to grow rapidly.

The Board of Home Missions not only supervises work in small aid-receiving charges but is responsible for Indian work, hospitals (16), mission boats on the coasts (5), and 52 institutional centers. Other administrative boards operate 3 universities, 8 theological colleges, 9 residential secondary schools, a training school for women, 21 homes for senior citizens, 3 redemptive homes, 4 training centers for lay people, and nearly 100 summer camps.

The mission tasks of the church are also shared by the Woman's Missionary Society, which raises $1,600,000 toward the $8,500,000 budget for missionary and promotional work. Total revenues in 1958 were $52,854,940, an increase of $5 million over 1957.

On June 10, 1959—the 34th anniversary of the union—the United Church House, new $2-million headquarters building, was dedicated in Toronto. The General Council, highest court of the church, will meet in September 1960 in Edmonton. Present moderator is the Rt. Rev. Angus J. MacQueen.

Ernest E. Long,
Secretary of the General Council.

UNITED CHURCH OF CHRIST. See Congregational Christian Churches.

UNITED FUNDS AND COMMUNITY CHESTS. These names, with some local variants, are given to the fund-raising federations of voluntary health, welfare, and recreation agencies that exist in more than 2,000 communities in the United States and Canada. A united fund, as distinguished from a community chest, includes, in addition to local services, one or more national or state organizations, such as the American Red Cross and certain of the national health agencies. Since 1950, united funds have replaced community chests in more than half of the 2,000 communities.

Closely associated with or part of the united fund or community chest in many cities is the community welfare council, a federation of social agencies, individuals, and civic groups for the planning and coordinating of both voluntary and tax-supported health, welfare, and recreation services. The chest-council idea has been adopted in The West Indies, Japan, the Philippines, the Canal Zone, Cuba, Greece, Australia, and Mexico.

In 1959 there were 2,104 united community campaigns and 465 welfare councils in operation in the United States and Canada. Of these, there were 2,027 campaigns and 438 councils in the United States, and 77 campaigns and 27 councils in Canada. In 1959 about 27,000,000 contributions totaling $455,000,000 were made through united funds and community chests in the United States and Canada. United funds accounted for $378,000,000 of this sum.

The national association for united funds, chests, and councils in the United States is United Community Funds and Councils of America, Inc. (For information about the association, see SOCIETIES AND ORGANIZATIONS.)

BARBARA ABEL,
Editor, "Community" Magazine.

UNITED KINGDOM. See GREAT BRITAIN.

UNITED NATIONS. The following review of the major activities of the United Nations in its fourteenth year is organized under six headings:

(1) Organization of the United Nations
(2) Security Council
(3) Economic and Social Council
(4) Trusteeship Council
(5) International Court of Justice
(6) General Assembly

(1) ORGANIZATION OF THE UNITED NATIONS

THE SECRETARIAT

Secretary General: Dag Hammarskjöld

THE GENERAL ASSEMBLY

President: Dr. Charles Malik (Lebanon), resumed 13th session; Dr. Víctor Andrés Belaúnde (Peru), 14th session

Afghanistan	Greece	Nicaragua
Albania	Guatemala	Norway
Argentina	Guinea	Pakistan
Australia	Haiti	Panama
Austria	Honduras	Paraguay
Belgium	Hungary	Peru
Belorussian SSR	Iceland	Philippines
Bolivia	India	Poland
Brazil	Indonesia	Portugal
Bulgaria	Iran	Rumania
Burma	Iraq	Saudi Arabia
Cambodia	Ireland	Spain
Canada	Israel	Sudan
Ceylon	Italy	Sweden
Chile	Japan	Thailand
China	Jordan	Tunisia
Colombia	Laos	Turkey
Costa Rica	Lebanon	Ukrainian SSR
Cuba	Liberia	U. of South Africa
Czechoslovakia	Libya	USSR
Denmark	Luxembourg	United Arab Republic
Dominican Republic	Malaya	United Kingdom
Ecuador	Mexico	United States
El Salvador	Morocco	Uruguay
Ethiopia	Nepal	Venezuela
Finland	Netherlands	Yemen
France	New Zealand	Yugoslavia
Ghana		

COMMITTEES

General: Composed of 21 members as follows: General Assembly president; the 13 General Assembly vice presidents (chiefs of delegations or their deputies of Brazil, Burma, China, France, Morocco, Philippines, Rumania, Sweden, Turkey, the Union of South Africa, the USSR, the United Kingdom, and the United States); and the chairmen of the following 7 committees, which are composed of representatives of all member countries:

First (Political and Security): Dr. Franz Matsch (Austria).

Special Political: Charles T. O. King (Liberia).

Second (Economic and Financial): Marcial Tamayo (Bolivia.

UPI

Delegates to the U.N. General Assembly's Political Committee unanimously endorse an East-West resolution to set up a permanent committee on the peaceful uses of outer space. Shown during voting on December 12 are (left to right, front row) Henry Cabot Lodge (U.S.), Miss A. M. Warburton (U.K.), Omar Loufti (UAR), and Vasily V. Kuznetsov (USSR)

Third (Social, Humanitarian, and Cultural): Mme. Georgette Ciselet (Belgium).

Fourth (Trusteeship): Lambertus N. Palar (Indonesia).

Fifth (Administrative and Budgetary): Jiří Nosek (Czechoslovakia).

Sixth (Legal): Dr. Alberto Herrarte (Guatemala).

THE SECURITY COUNCIL

(Membership ends on December 31 of the year noted; asterisks indicate permanent membership.)

Argentina (1960)	France*	USSR*
Ceylon (1961)	Italy (1960)	United Kingdom*
China*	Poland (1961)	United States*
Ecuador (1961)	Tunisia (1960)	

Military Staff Committee: Chiefs of staff (or their representatives) of China, France, the USSR, the United Kingdom, and the United States.

Disarmament Commission: Representatives of all member countries.

THE ECONOMIC AND SOCIAL COUNCIL

President: Daniel Cosío Villegas (Mexico)

(Membership ends on December 31 of the year noted.)

Afghanistan (1961)	Denmark (1962)	Spain (1961)
Brazil (1962)	France (1960)	Sudan (1960)
Bulgaria (1961)	Japan (1962)	USSR (1962)
Chile (1960)	Netherlands (1960)	United Kingdom (1962)
China (1960)	New Zealand (1961)	United States (1961)
Costa Rica (1960)	Poland (1962)	Venezuela (1961)

THE TRUSTEESHIP COUNCIL

President: Max H. Dorsinville (Haiti)

(Membership ends on December 31 of the year noted.)

Australia[1]	France[1]	USSR[2]
Belgium[1]	India (1962)	United Arab Republic (1961)
Bolivia (1962)	Italy[1]	United Kingdom[1]
Burma (1961)	New Zealand[1]	United States[1]
China[2]	Paraguay (1961)	

[1] Administers trust territories. [2] Permanent member of the Security Council which does not administer trust territories.

THE INTERNATIONAL COURT OF JUSTICE

President: Helge Klaestad (Norway)

Ricardo J. Alfaro (Panama)	F. I. Kozhevnikov (USSR)
E. C. Armand Ugon (Uruguay)	H. Lauterpacht (U.K.)
A. H. Badawi (UAR)	L. M. Moreno Quintana (Argentina)
J. Basdevant (France)	Sir Percy Spender (Australia)
R. Córdova (Mexico)	J. Spiropoulos (Greece)
G. H. Hackworth (U.S.A.)	B. Winiarski (Poland)
V. K. Wellington Koo (China)	M. Zafrulla Khan (Pakistan)

INTERNATIONAL ATOMIC ENERGY AGENCY

Director General: W. Sterling Cole

SPECIALIZED AGENCIES

Food and Agriculture Organization of the United Nations; Intergovernmental Maritime Consultative Organization; International Bank for Reconstruction and Development; International Civil Aviation Organization; International Finance Corporation; International Labor Organization; International Monetary Fund; International Telecommunication Union; United Nations Educational, Scientific and Cultural Organization; Universal Postal

Union; World Health Organization; World Meteorological Organization.

(2) Security Council

Disarmament Commission.—On Sept. 10, 1959, the commission held its first meeting since it had been reconstituted by the General Assembly on Nov. 4, 1958. The meeting was held at the request of France, the USSR, the United Kingdom, and the United States, which reported on negotiations outside the United Nations that had resulted in agreement to establish a 10-member committee to consider disarmament. (In addition to these four powers, the committee was to include Bulgaria, Canada, Czechoslovakia, Italy, Poland and Rumania.) The commission expressed the hope that the new committee would "provide a useful basis for the consideration of disarmament in the United Nations," and asked the secretary general to provide facilities for its meetings. (See also Disarmament.)

Laos.—In a letter of Sept. 4, 1959, to the secretary general, Khamphan Panya, the minister of foreign affairs of Laos (q.v.), reported that there had been fighting in Sam Neua Province since July 16, and charged that the rebels had been encouraged and helped by North Vietnam in violation of the Geneva agreement of 1954. On the next day, the secretary general requested Egidio Ortona, president of the Security Council for September, to call a meeting of the council. The council met on September 7, and after a procedural discussion adopted (10–1) an agenda. A draft resolution submitted by France, the United Kingdom, and the United States was adopted (10–1) early on September 8. It provided for the appointment of a subcommittee of Argentina, Italy, Japan, and Tunisia "to examine the statements made before the Security Council concerning Laos, to receive further statements and documents, and to conduct such inquiries as it may determine necessary and to report to the Security Council as soon as possible." In order to avoid the possibility of a "double veto," the president of the council first took a vote on whether the issue was procedural (in which case no veto was possible). When this passed with only a negative vote by the Soviet Union, he put the draft resolution to a vote—a procedure which might prove significant for the council in the future. The committee's report, published on November 6, stated that the information it had received "did not clearly establish whether there were crossings of the frontier by regular troops" of North Vietnam.

Middle East.—At the request of Israel, the council held a meeting on Jan. 30, 1959, to consider charges of a violation of the border between Israel and Syria. After discussing the incident, the members of the council stressed that this was a matter which could be considered by the machinery set up under the armistice agreement between the two countries.

(3) Economic and Social Council

The 27th session of the Economic and Social Council (ECOSOC) met in Mexico City on April 7–24, 1959, while the 28th session met in Geneva on June 30–July 31, and resumed its meetings in New York on December 14–15. Meetings were also held throughout the year by many of the council's commissions and committees.

The 27th session considered reports from the International Monetary Fund (IMF), the International Bank for Reconstruction and Development (IBRD), and the International Finance Corporation (IFC); recommended that the regional economic commissions and the specialized agencies assist less developed countries in diversifying their exports; and requested the secretary general to make arrangements for a conference on new sources of energy and to prepare proposals for future work on industrialization. ECOSOC also urged members to implement previous resolutions on land reform; asked the secretary general to prepare a list of national parks and to assist governments in improving arbitral legislation and practice; recommended that the U.N. Educational, Scientific and Cultural Organization (UNESCO) study the problems of giving technical assistance in the area of freedom of information to underdeveloped countries; and noted the accomplishments of the U.N. Children's Fund (UNICEF) in its antimalarial program.

The 28th session reviewed at Geneva the world economic and social situation and appraised the development and coordination of the council's many activities in relation to the specialized agencies. For the most part, it endorsed the recommendations made in the sessions of the various commissions. The session recommended to the General Assembly the draft Declaration of the Rights of the Child; expressed its concern at the burdens borne by urban welfare services because of the rapid growth of populations and the accelerated movement from rural areas; urged speed in the fulfillment of plans and programs to further economic development; and requested an evaluation of the statistical techniques involved in making long-term projections of economic growth. ECOSOC also dealt with issues relating to the peaceful uses of atomic energy, concerted action in the field of water resources, the financing of economic development, petroleum resources, and industrialization and energy resources.

When the 28th session was resumed in New York, the council confirmed the nomination of representatives to a number of its commissions and committees; elected Canada, Japan, Pakistan, Sweden, Thailand, the USSR, and Yugoslavia to vacancies on the Governing Council of the Special Fund; decided to hold a meeting at the ministerial level in 1960; and approved the agenda of the 29th and 30th sessions.

Commission on Human Rights—The 15th session of the commission, meeting in New York on March 16–April 10, adopted resolutions dealing with freedom in underdeveloped countries and the drafting at its next session of a declaration on the right of asylum; and requested a report on the right of everyone to be free from arbitary arrest, detention, and exile. It also considered advisory services in the field of human rights and recommended an increase (to 14) in the membership of the Subcommission on the Prevention of Discrimination and Protection of Minorities. Lastly, on April 10, the commission unanimously adopted a draft Declaration of the Rights of the Child. (See also Child Welfare.)

Commission on International Commodity Trade.—The commission held its 7th session in New York on March 9–24, the first meeting since it had been given new terms of reference, whereby its main task would be to "study and analyze developments and trends in international commodity trade. . . ." It recommended studies on the impact of fluctuations in economic activity in industrial countries on international measures to deal with fluctuations in primary commodity markets, and reviewed a commodity survey by the U.N. Secretariat which noted that the index of terms of exchange between primary commodities and manufactures had declined by 20% between 1950 and 1958.

Commission on Narcotic Drugs.—At its 14th session, held in Geneva on April 27–May 15, the commission considered the annual reports of the Permanent Control Opium Board and the Drug Supervisory Body as well as those of various governments. It passed resolutions urging governments to bring new narcotic drugs under international control, inviting the World Health Organization (WHO) to prepare a report on the use of cannabis for the extraction of useful drugs, recommending the establishment of requirements for narcotic drugs in first-aid kits of airplanes on international flights, and requesting the General Assembly to set up a continuing program of technical assistance in narcotics control. (See also Narcotics.)

Commission on the Status of Women.—The 13th session of the commission was held in New York on March 9–27. The commission recommended that nongovernmental or-

ganizations help develop international cooperation in activities promoting equal rights for women, and requested publication of a commentary on the Convention on the Nationality of Married Women and of a pamphlet on equal pay. In addition, it discussed aspects of the access of women to education, economic opportunities for women, and equal retirement for men and women; and gave priority in its future work to questions relating to women's political rights.

Economic Commission for Africa (ECA).—The 1st session of the commission, which met in Addis Ababa, Ethiopia, on Dec. 29, 1958—Jan. 6, 1959, was attended by all eligible members except South Africa. The commission adopted rules of procedure and decided to seek liaison with the other international organizations concerned with Africa, such as the Accra Conference of Independent African States, the Economic Committee of the Arab League, and the Commission for Technical Cooperation in Africa South of the Sahara. Problems relating to the expansion of technical and economic assistance in Africa were given special attention, and the commission recognized the immediate needs of the newly independent state of Guinea. The commission devoted most of its time to drawing up a program that emphasized such concerted projects as a study of West African economic contacts, the development of sea fisheries and esparto grass reserves in North Africa, more effective locust control, and the eradication of infectious livestock diseases in northeastern Africa. A long-term statistical program resulted in a conference on African statistics held in Addis Ababa on September 28–October 8.

Economic Commission for Asia and the Far East (ECAFE).—At its 15th session, held in Broadbeach, Australia, on March 9–19, the commission reviewed its program with a view to giving more attention to economic development and planning, trade, the development of resources, and transportation and communications on an intraregional and interregional cooperative basis. It also considered problems caused by the decline in the prices of primary commodities and the need to expand agricultural production. Recommendations for holding a regional population conference and a seminar to evaluate data from the 1960 world censuses program were approved, as were resolutions on the problems of land settlement, population growth, and economic development.

Economic Commission for Europe (ECE).—The commission reviewed its entire work program at its 14th session, held in Geneva on April 20–May 6. It adopted resolutions recognizing the usefulness of periodic special meetings on energy problems; making the Working Party on Gas Problems a permanent body; and continuing studies on automation, technical and economic documentation, the productivity of labor, and water control. The commission's executive secretary was requested to report on government views on USSR proposals to create an all-European regional trade organization and to call a conference on intra-European trade.

Economic Commission for Latin America (ECLA).—The commission held its 8th session in Panama City on May 14–23. It adopted resolutions on the improvement of budget procedures, the establishment of economic development advisory groups, a proposed study of trends and prospects in the timber industry, the institutional framework of industrialization, structural and institutional factors in agricultural development, the initiation of a study of the metal-transforming industries, the peaceful uses of atomic energy, and the planning and utilization of hydroelectric resources.

Population Commission.—At its 10th session, held in Geneva on February 9–20, the commission requested the secretary general to publish a demographic pilot study on the Philippines and to develop studies on internal migration. It noted no change in the trends of population growth, but recognized the fact that growth was greater in the less developed countries, and raised the question as to whether the growth in certain countries had not reached a point of hindering economic development. According to a report by the secretary general, the population of the world, which now totaled 2.8 billion, would be between 3.6 billion and 3.9 billion in 1975, and possibly between 4.9 billion and 6.9 billion if present trends continued. The commission stressed the need for further studies to consider this trend and particularly the social and economic consequences for underdeveloped countries.

Social Commission.—The commission gave primary attention to problems of housing, social services, and social defense in its 12th session, held in New York on April 27–May 15. A resolution urging the encouragement of low-cost housing and community facilities as part of national programs to develop long-range planning in housing was passed unanimously on May 4. The commission considered *Training for Social Work: Third International Survey,* and purposed further study of new ways of helping underdeveloped countries to develop their social services. It also adopted resolutions dealing with strengthening activities in the prevention of crime, suppressing the exploitation of prostitution, and extending UNICEF aid for social services for children.

Special Fund.—The Special Fund created on Oct. 14, 1958, by the General Assembly to provide continued assistance to help integrate technical economic and social development in the less developed countries came into existence on Jan. 1, 1959. An organizing 1st session of its Governing Council, held in New York on January 26–27, authorized temporary funds to organize administrative

UNITED NATIONS

Walter S. Robertson, U.S. delegate to the General Assembly, argues against the admission of Communist China in an address before the assembly on September 21. The assembly voted the next day to bar the issue from its agenda.

arrangements and heard a report by Paul G. Hoffman, the managing director. Mr. Hoffman explained that initially the fund would give priority to projects which would demonstrate the wealth-producing potential of unsurveyed natural resources, training and research institutes, and surveys of limited cost that would lead to early investment in the less developed countries. By April 10, the fund had received project requests totaling $81,081,000. The 2d session of the council, held in New York on May 26–28, adopted rules of procedure, approved financial regulations and an administrative budget ($400,000), and authorized funds ($7,550,000) for 13 projects in 16 countries. At this meeting, Mr. Hoffman reported the discouraging fact that contributions to the fund totaled only $26 million, or $40 million less than the original goal. The 3d session of the council was held in New York on December 8–10. At this time, approval was given to 31 projects, totaling $23,710,910, in 35 countries and territories.

Subcommission on the Prevention of Discrimination and Protection of Minorities.—Meeting in New York for its 11th session on January 5–23, the subcommission dealt with several aspects of discrimination. It continued its examination of discrimination in religious rights and practices, expressed its hope for greater assistance from governments in their study of discrimination in political rights, recommended that states ratify the International Labor Organization (ILO) convention on discrimination in employment, and decided to continue its study on the right to leave a country.

Transport and Communications Commission.—The 9th session of the commission, which met in New York on May 4–12, adopted resolutions calling for studies on the promotion of travel and tourism and the adoption of recommendations on the transport of dangerous goods. The commission also considered reports on travel and transport statistics, the coordination of inland transport, transport insurance, and regional developments in transport. In addition, it reviewed the functions of its work that had been taken over by the Intergovernmental Maritime Consultative Organization (IMCO) in evaluating its future program.

Shinichi Shibuzawa of Japan, head of a U.N. Security Council subcommittee of inquiry into Laos' charges of aggression by North Vietnam, points to a map of the region after the panel returned in October from an inspection trip. Other members are (from left) Ludovico Barattieri di San Pietro (Italy), Mondher ben Ammar (Tunisia), and Gen. Heriberto Ahrens (Argentina). They found no proof of overt aggression.

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(4) Trusteeship Council

The Trusteeship Council held three sessions in New York in 1959: 23d session (January 30–February 18 and March 17–20), 24th session (June 2–August 6), and 10th special session (December 2–14). The 23d session reviewed the annual report and petitions from Tanganyika; noted the action of the General Assembly in 1958 regarding French Togoland, which was scheduled to become independent in 1960; and postponed consideration of the report on Ruanda-Urundi. It discussed the future of the British and French Cameroons and considered the report of the visiting mission that went to these territories in 1958. On February 17 the council adopted (12–1, with 1 abstention) a resolution recommending to the General Assembly that it terminate the trusteeship agreement when the French Cameroons became independent on Jan. 1, 1960. On the following day, unable to reach a more positive agreement, the council referred (13–0, with 1 abstention) the report of the visiting mission to the British Cameroons to the assembly.

The 24th session considered reports on and petitions from Ruanda-Urundi, French Togoland, New Guinea, Nauru, the Pacific Islands, Somaliland, and Western Samoa; and the reports of the visiting missions to Samoa and to Nauru, New Guinea, and the Pacific Islands. The council reviewed with approval the agreement between Togoland and France to proclaim the territory's independence on April 27, 1960. In addition, it approved the plans submitted by Italy for the gradual transfer of governmental functions to Somaliland, which was scheduled to become independent on Dec. 2, 1960; and endorsed the timetable worked out by New Zealand and the visiting mission to Western Samoa, which provided steps leading to the independence of the territory by the end of 1961. Although the council considered the question of the effects of the European Economic Community on certain trust territories, it took no action.

The 10th special session considered the report of the plebiscite commissioner on the results of the voting in the northern section of the British Cameroons on November 7 (see below, *General Assembly*), and forwarded it to the General Assembly for its consideration.

(5) International Court of Justice

On March 21, the International Court of Justice rejected the United States contention that the dispute in the Interhandel case (Switzerland *v.* United States) was solely within its domestic jurisdiction, but ruled that Switzerland had not "exhausted the legal remedies available to it in the United States courts." On March 25 the court received a request from IMCO for an advisory opinion on whether its Maritime Safety Committee, elected on January 15, was constituted in accordance with the organization's convention. This committee was to be elected from among the "largest ship-owning nations," and the election had been contested by Liberia and Panama when they did not obtain seats. On May 26 the court decided with respect to the Aerial Incident of July 27, 1955, case (Israel *v.* Bulgaria) that it lacked jurisdiction because Bulgaria had not accepted the compulsory jurisdiction clause in its statute. Similar decisions were rendered in the Aerial Incident of July 27, 1955 (United Kingdom *v.* Bulgaria), Aerial Incident of Sept. 4, 1954 (United States *v.* USSR), and Aerial Incident of Nov. 7, 1954 (United States *v.* USSR) cases. In the Sovereignty over Certain Frontier Lands case (Belgium *v.* Netherlands), the court ruled on June 20 that the 35 acres concerned belonged to Belgium. (See also International Law.)

(6) General Assembly

The 13th session of the General Assembly was resumed in New York on Feb. 20–March 13, 1959, to consider the future of the Cameroons. The 14th session met in New York on September 15–December 13.

Disarmament.—Addressing the General Assembly on September 17, British Foreign Secretary Selwyn Lloyd outlined a three-stage disarmament proposal. The first stage would consist of a series of conferences on all phases of disarmament, the second would implement their decisions, and the third would begin comprehensive disarmament under an effective control system. On the following day, Soviet Premier Nikita S. Khrushchev called for "general and complete disarmament" to be achieved by the destruction of all atomic and hydrogen bombs and military rockets and by the abolition of all armed forces except limited numbers of police and militia. He also told the assembly: "There should be initiated a system of control over all disarmament measures which should be created and should function in conformity with the stages by which disarmament should be effected." Following discussion of these two proposals and behind-the-scenes negotiations between the USSR and the United States, the assembly unanimously adopted on November 20 a resolution transmitting the proposals to the Disarmament Commission and to the new 10-nation Disarmament Committee (see above, *Security Council*).

On the same day, the assembly requested (51–16, with 15 abstentions) that France refrain from nuclear tests in the Sahara, and suggested (70–0, with 12 abstentions) that the Disarmament Committee consider means whereby powers now producing nuclear weapons would "refrain from handing over the control of such weapons" to those not now possessing them, and whereby the latter would not begin to manufacture them. Two resolutions on the suspension of nuclear and thermonuclear tests were adopted on November 21. The first urged (78–0, with 2 abstentions) the nations meeting in Geneva to continue their efforts to reach an agreement on the prohibition of such tests and hoped that they would maintain their voluntary ban. The second, approved by a vote of 60 to 1 with 20 abstentions, made the same plea but stressed the need for suspension not simply on the ground of disarmament, but also on that of hazards resulting from the tests. On the same day, the assembly decided unanimously to continue the 82-member Disarmament Commission. (See also Atomic Energy; Disarmament.)

Elections.—Ecuador and Ceylon were elected on October 12 to replace Panama and Canada as nonpermanent members of the Security Council, but a contest between Turkey and Poland to fill the seat then held by Japan was not settled until December 13, when Poland was chosen on the 52d ballot. Before the last ballot was taken, General Assembly President Víctor Andrés Belaúnde announced that an understanding had been reached whereby Poland would be the sole candidate and, if elected, would retain the post for 1960 and then resign. At the 15th assembly session, Turkey would be the sole candidate for the one-year vacancy caused by Poland's resignation.

On October 12, Brazil, Denmark, Poland, the USSR, and the United Kingdom were elected on the first ballot, and Japan on the seventh ballot, to

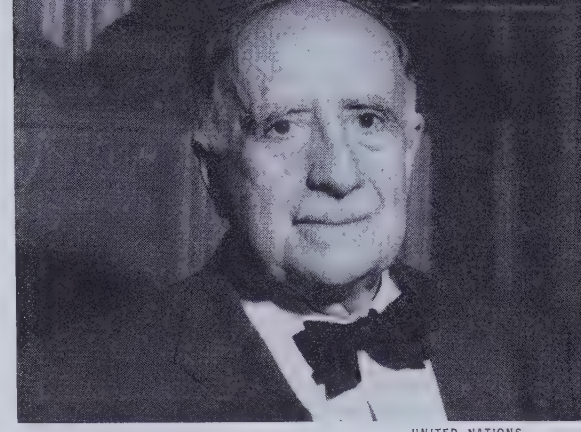
three-year terms on the Economic and Social Council. Two months later, on December 12, Bolivia and India were elected to fill expiring terms on the Trusteeship Council. This delay resulted from the fact that France and Italy would cease to be trust administrators during 1960, when French Cameroons, French Togoland, and Somaliland were scheduled to become independent. The U.N. Charter requires that membership in the Trusteeship Council be divided equally between trust administrators and nonadministering states, including permanent members of the Security Council. In 1959 there were 7 administering members and 7 nonadministering members. If France ceased to be an administrator, she would automatically become a nonadministering member because of her permanent membership in the Security Council. If Italy ceased to be a member, by the latter part of 1960 the council would be composed of 5 administrators and 8 nonadministrators, which would be a violation of the charter. Finding no solution to the constitutional dilemma, the assembly decided to fill the two vacancies and hope that a formula could be devised in 1960 whereby some of the elected nonadministering members might resign when necessary.

The assembly joined the Security Council on September 29 in electing Dr. Ricardo J. Alfaro of Panama to fill the unexpired term of the late Judge José Gustavo Guerrero of El Salvador on the International Court of Justice.

Outer Space.—On December 12, the assembly decided unanimously to establish a 24-member Committee on the Peaceful Uses of Outer Space, consisting in 1960 and 1961 of Albania, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Czechoslovakia, France, Hungary, India, Iran, Italy, Japan, Lebanon, Mexico, Poland, Rumania, Sweden, the USSR, the United Arab Republic, the United Kingdom, and the United States. The committee is to review the area of international cooperation, study means of giving effect to programs in the peaceful uses of outer space that could be undertaken by the United Nations, and consider the nature of legal problems that might develop from the exploration of outer space. The assembly also requested the secretary general to make arrangements for holding an international scientific conference for the exchange of experience in the peaceful uses of outer space.

Tibet.—In a cable to the secretary general on September 9, the Dalai Lama charged Communist China with violation of the territorial integrity of Tibet and with inhuman treatment of the Tibetan people. He hoped that the matter would be given "the consideration which it deserves" in the United Nations. On October 12, despite Soviet objections that this was a matter for domestic jurisdiction, the assembly approved (43–11, with 25 abstentions) the inclusion of the question of Tibet on its agenda. After discussion, on October 21, the assembly deplored (45–9, with 26 abstentions) events in Tibet and called "for respect for the fundamental human rights of the Tibetan people and for their distinctive cultural and religious life." (See also China; Far East; Tibet.)

Other Political and Security Matters.—On November 17, the assembly noted (78–0) the progress report of the U.N. Scientific Committee on the Effects of Atomic Radiation and made arrangements for some of the specialized agencies to help the committee in its work. On the same day, it again expressed (62–3, with 7 abstentions) regret and concern over the failure of the Union of South Africa to reconsider its apartheid policies. In a resolution of December 9, the assembly deplored (53–10, with 17 abstentions) the continued disregard by the USSR and Hungary of its previous resolutions on the Hungarian situation and again requested them to cooperate with Sir Leslie Munro, the United Nations representative on Hungary. At the same time, it voted (80–0, with 1 abstention) to continue the U.N. Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), and it also continued (54–9, with 17 abstentions) the work of the U.N. Commission for the Unification and Rehabilitation of Korea (UNCURK). On December 10, it again appealed (66–0, with 12 abstentions) to South Africa to negotiate with India and Pakistan on the treatment in the Union of persons of Indian origin. A draft resolution calling (39–22, with 20 abstentions) for negotiations between the parties concerned in Algeria failed on December 12 to obtain the required two-thirds majority.



UNITED NATIONS

Dr. Víctor Andrés Belaúnde, veteran Peruvian diplomat, was elected president of the General Assembly on September 15.

Economic Matters.—On November 20, the assembly unanimously approved the progress report of the Special Fund and those of the Regular and Expanded programs of Technical Assistance ($32,403,241 was allocated to the latter for 1960). At the same time, it decided (64–0, with 16 abstentions) to continue the experimental program of assistance to centers for training in public administration.

On December 5, the assembly recommended (63–0, with 10 abstentions) close relations between the United Nations and the International Development Association (q.v.), proposed (80–0, with 1 abstention) strengthening and developing world trade and improving trade conditions of the less developed countries, unanimously urged members to help abolish restrictive practices that hinder international commodity trade, and requested (72–0, with 9 abstentions) the secretary general to appoint a group of experts to help the Commission on International Commodity Trade in studying measures to assist in offsetting fluctuations in commodity prices.

The assembly also requested (67–0, with 15 abstentions) the secretary general to consult with members on the establishment of a U.N. Capital Development Fund, asked (80–0, with 1 abstention) him to transmit to ECOSOC information on the development of the petroleum industry in underdeveloped countries, unanimously requested him to prepare for a preliminary investigation of a study of world economic development, continued (81–0, with 1 abstention) support of agrarian reform programs, and called (73–0, with 9 abstentions) on members to assist in the formation and growth of industrial development banks and development corporations. At the same time, it unanimously urged greater development of scientific and technical cooperation and exchange of experience, approved the work of ECLA in preparing

for a Latin American common market, and recommended that ECOSOC consider the prompt establishment of a Commission for Industrial Development.

Rights of the Child.—On November 20, the assembly adopted unanimously a Declaration of the Rights of the Child. A modern version of the Geneva Declaration of the Rights of the Child of 1924, it sets forth principles designed to safeguard the rights of children and is comparable to the Universal Declaration of Human Rights of 1948. The assembly also recommended unanimously that the declaration be given wide publicity and called on individuals, organizations, and governments to recognize these rights and strive for their observance. (See also CHILD WELFARE.)

Other Social Matters.—On November 20, the assembly approved (66–0, with 12 abstentions) the report of the United Nations high commissioner for refugees, recommended (74–0, with 3 abstentions) that he continue to assist refugees from Algeria in Tunisia and Morocco, urged (63–9, with 3 abstentions) further support for the World Refugee Year of 1959–60, unanimously approved the report of UNICEF, and asked unanimously that ECOSOC continue to give attention to the interrelationship of the economic and social factors of development. At the same time, it unanimously asked the secretary general to inquire into efforts being made to promote low-cost housing, encouraged (70–0, with 9 abstentions) studies of juvenile delinquency, unanimously decided to establish a continuing program of technical assistance in narcotics control, asked (57–0, with 22 abstentions) ECOSOC to initiate a study of capital punishment, hoped (75–0, with 1 abstention) that a UNESCO survey of international relations and exchanges in education, science, and culture would be submitted to the 30th session of ECOSOC, and invited (68–0, with 13 abstentions) WHO to make further efforts to encourage cancer research.

Cameroons.—The resumed 13th session of the assembly considered the question of the British and French Cameroons, which had been referred to it by the Trusteeship Council. On March 13, the assembly passed (56–0, with 23 abstentions) a resolution terminating the trusteeship over the French Cameroons on Jan. 1, 1960, when the area was scheduled to become independent. The resolution also recommended that the new nation be admitted to the United Nations after it had attained independence. At the same time, the assembly recommended (56–0, with 24 abstentions) that separate plebiscites be held in the northern and southern parts of the British Cameroons. That in the north would determine whether the population wanted integration with Nigeria or favored determining its future at a later date. The alternatives of the plebiscite in the south were to be considered by the 14th session. The assembly then elected Djalal Abdoh of Iran as the United Nations plebiscite commissioner to supervise the elections.

The people of the northern section of the British Cameroons decided (70,401–42,797) on November 7 to postpone the question of their future. On October 16, the 14th session of the assembly approved (76–0, with 2 abstentions) arrangements for a plebiscite beginning on Sept. 30, 1960, in the southern section, and inquiring as to whether the inhabitants want to achieve independence by joining Nigeria or Cameroon (formerly French Cameroons). Later, on December 12, it unanimously recommended a further plebiscite in the northern section, to be held at the same time and with the same alternatives as in the southern section.

Other Trusteeship Matters.—On November 17, the assembly approved three resolutions dealing with petitions from South West Africa, reiterated (56–1, with 13 abstentions) its previous resolutions urging that South West Africa be made a trust territory, approved (55–5, with 11 abstentions) the work of the Committee on South West Africa and invited South Africa to negotiate with the United Nations with a view to making the area a trust territory, noted (55–4, with 16 abstentions) the legal avenues open to members to ensure fulfillment of the obligations by South Africa, and approved (65–9, with 2 abstentions) the report of the Good Offices Committee on South West Africa.

On December 5, the assembly accepted without objection the report of the Trusteeship Council and adopted resolutions on the dissemination of information on the United Nations and the trusteeship system (67–0, with 13 abstentions), offers of study and training facilities for inhabitants of trust territories (unanimous), the training of indigenous civil service cadres in the territories (68–0, with 9 abstentions), targets for self-government or independence (53–15, with 8 abstentions), an ECOSOC study of opportunities for international cooperation on behalf of former trusts which have become independent (66–0, with 10 abstentions), assistance to areas emerging from a trust status (unanimous), aid to French Togoland (unanimous), and reforms in Ruanda-Urundi (unanimous). At the same time, the assembly unanimously reaffirmed the independence date for French Togoland as April 27, 1960, and set July 1, 1960, as the date for the independence of Somalia (formerly Somaliland).

In addition, 11 resolutions dealing with education and other developments in non-self-governing territories were passed on December 12.

Administrative and Budgetary Matters.—The assembly accepted unanimously on November 3 a gift of $6.2 million from the Ford Foundation for a new U.N. Library, and on December 1 it authorized the secretary general to prepare plans for a United Nations building in Santiago, Chile. On December 5, a supplementary appropriation of $854,980 was approved (66–0, with 9 abstentions) for the 1959 budget, and a 1960 budget of $63,149,700 was voted (71–0, with 9 abstentions). The Working Capital Fund was set (62–9, with 4 abstentions) at $25 million, and the secretary general was authorized (49–9, with 21 abstentions) to spend up to $20 million to continue the operations of the U.N. Emergency Force in 1960.

Legal Matters.—On November 21, the assembly approved without objection the report of the International Law Commission (ILC), requested (56–0, with 11 abstentions) the ILC to consider the codification of international law relating to the right of asylum, and requested (63–0, with 3 abstentions) the secretary general to undertake preliminary studies on legal problems relating to the use of international rivers. On December 7, it decided (67–0, with 5 abstentions) to convene an international conference on diplomatic intercourse and immunities, unanimously requested the ILC to initiate a study of the juridical regime of historic waters, and passed two resolutions on reservations to conventions.

THOMAS HOVET, JR.,
Associate Professor of Government and Administrator of the United Nations Program, New York University.

UNITED NATIONS CHILDREN'S FUND. The United Nations Children's Fund (UNICEF) was established in December 1946 to help governments meet the emergency food and health needs of

children in war-devastated countries. Since 1950 the long-range needs of children in underdeveloped countries have been emphasized. Assistance is provided only on government request and must be given to children without regard to race, creed, nationality, or political belief. Policies are determined by a 30-nation executive board. The United States is represented on the board by Mrs. Katharine Oettinger. Administration is handled by an executive director and an internationally recruited staff of 175 members.

The assisted governments are themselves responsible for the child-care programs. UNICEF aid consists primarily of supplies and equipment not available in the assisted countries. Some stipends and grants are also provided to assist in the training of national personnel. Technical advice and international personnel are furnished by other United Nations bodies, including the Bureau of Social Affairs, FAO, WHO, and UNESCO.

UNICEF is financed by voluntary contributions from some 90 governments (as of 1959), and by private individuals and organizations. Allocations in 1959 amounted to $28 million. For every dollar allocated by UNICEF, the assisted countries spend from $2 to $2.50 to provide local staff, buildings, indigenous supplies, and administrative services.

In 1959 the Children's Fund was assisting 372 projects in 104 countries and territories.

UNICEF aid falls into the following categories:

(1) Basic maternal and child welfare services. UNICEF provides: equipment for (a) rural health centers, clinics, laboratories, hospitals and other child-care institutions; (b) rehabilitation of physically handicapped children; (c) care of prematurely born infants; and help for training of health and welfare personnel.

(2) Disease control. UNICEF provides equipment, insecticides, vaccines, penicillin, drugs, and transport for campaigns against malaria, tuberculosis, yaws, trachoma, leprosy, and other diseases afflicting children; also equipment for local production of insecticides, antibiotics, sera, and vaccines.

(3) Nutrition programs. UNICEF provides: (a) dried milk and vitamins for distribution to children and mothers through health centers and schools; (b) equipment for processing milk and other high-protein foods for distribution to children; (c) help for development and testing of new protein-rich foods for children, such as fish flour, soy products, peanut flour, cottonseed flour; (d) aid for self-help nutritional activities, such as school gardening and raising of fish and poultry, for professional training of nutrition workers and for nutrition surveys.

(4) Emergency relief to child and mother victims of war or natural disasters.

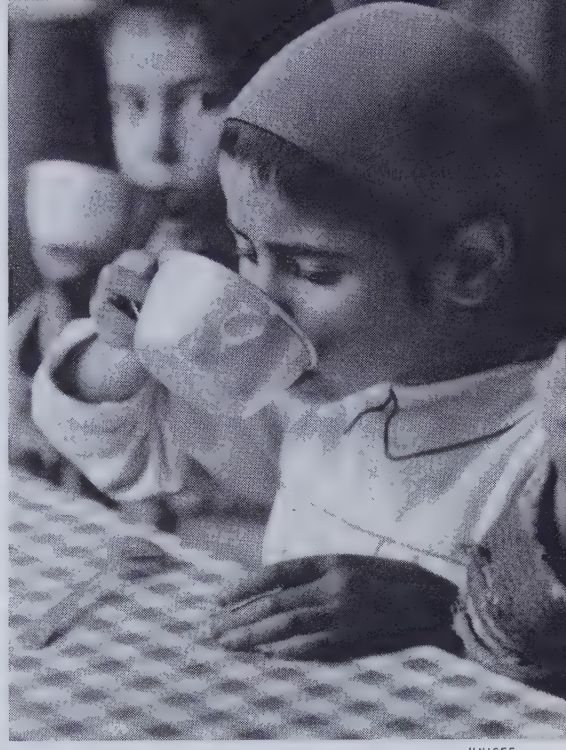
In March 1959 the UNICEF Board approved in principle aid for social services for children, especially for those needing some form of care outside their own homes, and aid to primary education through teacher training in subjects such as health, nutrition, and home economics.

Since its inception, UNICEF has provided equipment for 23,000 rural health centers. Some 286 million children have been tested for tuberculosis, and 111 million have been vaccinated with BCG. More than 35 million children and mothers have been examined for yaws and nearly 13 million have been treated. Over 5 million afflicted children have been treated for trachoma.

Currently, UNICEF is helping 46 countries to control or eradicate malaria and is aiding 26 countries with antileprosy programs. In 1959 more than 55 million children and mothers benefited directly from UNICEF-aided disease-control and child-feeding programs.

(See also CHILD WELFARE.)

MAURICE PATE,
Executive Director, UNICEF.



UNICEF

Children at a primary school in Bizerte, Tunisia, receive a warm meal and milk as part of a comprehensive nutrition program assisted by the United Nations Children's Fund.

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. This specialized agency of the United Nations, with headquarters in Paris, France, has its policies formed by a biennial general conference or representatives of the 81 member nations and by an Executive Board of 24 members (chairman, Sir Ben Bowen Thomas, of the United Kingdom), responsible to their own governments. Activities are carried out by an international secretariat headed by an elected director general (Dr. Vittorino Veronese, of Italy, who took office, Dec. 5, 1958) and by national commissions which serve as a liaison between UNESCO headquarters and their own countries. At the most recent general conference (held in Paris, Nov. 4–Dec. 5, 1958) the 1959–60 budget was set at $25,970,463.

Services to Member States.—Five fields receive priority in UNESCO's work with member states: (1) free and compulsory education at the primary level; (2) fundamental education; (3) racial, social and international tensions; (4) mutual appreciation of Asian-Western cultural values; and (5) scientific research for the improvement of living conditions.

Education.—Education continues to be the organization's first concern. In 1957 UNESCO published *World Illiteracy at Mid-Century* (Paris), which showed that in 1950 some 700 million people, or 44% of the world's adult population, were illiterate, a situation made more acute by a universal shortage of schools. UNESCO's *World Survey of Primary Education,* published in 1958 and covering more than 190 primary school systems, showed that out of the world's estimated school-age population of 550 million, some 250 million are not in school, a large majority because there are no schools to which to go. Nevertheless, this survey shows that progress is being made. In 1950 only 48% of the world's children between the ages of 5 and 14 were enrolled in school, compared with 55% in 1954.

UNESCO has played an important role in assisting nations to meet this problem by: (1) helping member states to prepare programs to extend compulsory primary education; (2) organizing fundamental education campaigns; (3) establish-

ing methods for statistical analysis and for measuring illiteracy; and (4) working with governments to furnish good reading material for new literates.

To carry out the campaign for a more adequate provision of schools, UNESCO conducts international conferences in collaboration with the International Bureau of Education at Geneva, Switzerland, and regional conferences on specific educational problems.

One of the areas in which illiteracy represents a serious handicap to national development is Latin America. To deal with this problem, the Major Project on the Extension of Primary Education in Latin America was launched at a 12-nation conference at Havana, Cuba, in 1957. There, UNESCO planned a campaign to help ministries of education systematically provide for the building of schools and for training of new teachers.

UNESCO has also developed a program for teaching illiterate adults, which it calls "fundamental education." UNESCO fundamental education training center at Pátzcuaro, Mexico, serves Latin America, and a second in Sirs el Layyan, United Arab Republic, serves the Arab world. In 1958 there were over 20 UNESCO fundamental education missions operating throughout the world.

Science.—Arid and semiarid zones cover one third of the earth's land surface and represent a serious problem in more than 30 member states and 20 non-self-governing territories. A major UNESCO project, Scientific Research for Arid Lands, aims at encouraging research such as seeking out plants that can grow in the desert, dealing with the problem of saline soils, and finding new ways to irrigate parched areas. Many international meetings of scientists have been held by UNESCO to adapt solutions used in one area of the world to other areas.

In 1959, UNESCO organized the first international conference on information processing, including its impact in the translation field. An intergovernmental conference on oceanography will be organized under UNESCO auspices in July 1960 in Denmark.

Social Sciences.—UNESCO has concentrated on the problem of the effects of industrialization on the lives of people, and in 1956 it opened at Calcutta, India, a Research Center in the Social Implications of Industrialization of Southern Asia. The organization also helped establish a Latin American Social Science Research Center in Brazil and a Latin American Social Science Faculty in Chile. Another important aspect of UNESCO's work in this field is a continuing study of race, designed to combat race prejudice.

Culture.—The Major Project on Mutual Appreciation of Cultural Values between Asia and the West has been intensified by an increased exchange of scholars, artists, and philosophers; publication of previously untranslated classics, particularly of outstanding Oriental works; and the organization of national conferences.

UNESCO continued its work on behalf of the Universal Copyright Convention, which protects the rights of authors, artists, and publishers, and which has been ratified by 34 nations. An International Convention for the Protection of Cultural Property in the event of armed conflict has been ratified by 30 nations.

In order to facilitate exchanges between artists, musicians, philosophers, and other scholars, UNESCO has founded and helps organizations like the International Theater Institute, the International Music Council, and the International Council of Philosophy and Humanistic Studies to increase reciprocal understanding of the cultures of all nations.

Besides an intensive publishing program in the cultural field, UNESCO also prepares traveling exhibits of art works for circulation among its members. UNESCO also helps member nations to preserve great masterpieces of art.

Mass Communication.—Besides publicizing the work of the organization, the Mass Communication Department concentrates on improving international exchange of information, and eliminating barriers to the free flow of news. It also works to ease travel restrictions on educational, scientific, and cultural materials. The department has successfully promoted the Agreement on the Importation of Educational, Scientific and Cultural Materials, which came into force in 1952 and now has 31 adherents, and the Agreement for Facilitating the International Circulation of Visual and Auditory Materials of an Educational, Scientific and Cultural Character, in force since 1954, which 13 nations have ratified. Among other benefits, these agreements eliminate customs duties on these materials. UNESCO has also been influential in encouraging member states to lower costs of travel for teachers, students, and research workers. The department is now working with the Universal Postal Union to lower telegraph and telephone rates for press dispatches.

Exchange of Persons.—UNESCO encourages travel abroad, both for students and workers, as one way to promote international understanding. It also publishes four books in this area: *Travel Abroad; Study Abroad,* which lists scholarships offered by colleges and universities; *Workers Abroad;* and *Vacations Abroad.*

Technical Assistance.—UNESCO participates in the United Nations Expanded Program of Technical Assistance, which is designed to promote economic advance in underdeveloped countries. In 1958 UNESCO sent 282 experts to 53 countries, where they worked in programs primarily related to education and science.

To fill the need for other experts in areas of UNESCO's competence, UNESCO instituted its own program, which paid for 46 of the 282 experts mentioned above. Under this program, UNESCO issued 242 fellowships in 1958.

SALLY G. SWING,
Information Officer, UNESCO, New York.

UNITED STATES. With the admission of Hawaii as a state on Aug. 21, 1959, the United States of America comprises the 50 states (commonly referred to as the Union) and the District of Columbia. United States possessions include the Canal Zone, the Virgin Islands of the United States, American Samoa, Guam, and other small Pacific islands. Puerto Rico became a self-governing commonwealth associated with the United States in 1952. Since World War II the United States has administered territories in the Pacific under United Nations trusteeship, as well as other former Japanese islands which, according to the Japanese Peace Treaty (1951), remain under United States control although Japan retains residual sovereignty over them (see PACIFIC ISLANDS).

On Aug. 21, 1959, President Dwight D. Eisenhower signed an executive order establishing a 50-star United States flag, effective July 4, 1960. The traditional 13 stripes are retained in the new flag, and the 50 stars are arranged in nine horizontal rows, staggered in alternate rows of 6 and 5 stars each.

Area.—The area of the Union (which now includes both Alaska and Hawaii) is 3,615,209 square miles (land, 3,552,197; inland water, 63,012); that of the possessions, 1,011 square miles; that of Puerto Rico, 3,435 square miles; and that of the Trust Territory of the Pacific Islands, 8,475 square miles; total, 3,628,130 square miles. (See separate articles on the states, possessions, and PUERTO RICO.)

Population.—The census of April 1, 1950, placed the population residing in the then continental United States at 150,697,361, an increase of 14.5% over the 1940 census total of 131,669,275 (the 1950 census figure plus the estimate of armed forces overseas totaled 151,132,000); that residing in Alaska, at 128,643; and that in Hawaii, at 499,794. A Census Bureau estimate placed the United States population (including Alaska and Hawaii and the armed forces overseas) at 179,245,000 as of Jan. 1, 1960. Washington, D.C., the national capital, had an estimated population of 828,000 on July 1, 1958. (See also CENSUS DATA, U.S.)

Government.—Republican in form, the government of the United States is divided into executive, legislative, and judicial branches.

Executive Branch.—Dwight D. Eisenhower (q.v.), Republican, was re-elected to the presidency in the national election of Nov. 6, 1956, and was sworn into office on Jan. 20, 1957. He receives a salary of $100,000, plus $50,000 for expenses; in addition, up to $40,000, nontaxable,

may be expended for traveling and official entertainment.

The vice president, Richard M. Nixon (q.v.), serves as president of the Senate. His salary is $35,000, plus $10,000 for expenses.

The executive branch also comprises 10 departments (the heads of which form the cabinet) and a number of independent establishments. The members of the cabinet receive salaries of $25,000 each. As of Jan. 1, 1959, the 10 departments and their heads were:

DEPARTMENT OF STATE—Secretary, Christian A. Herter, since April 22, 1959.
DEPARTMENT OF THE TREASURY—Secretary, Robert B. Anderson, since July 29, 1957.
DEPARTMENT OF DEFENSE—Secretary, Thomas S. Gates, Jr., since Dec. 2, 1959.
DEPARTMENT OF JUSTICE—Attorney General, William P. Rogers, since Nov. 8, 1957.
POST OFFICE DEPARTMENT—Postmaster General, Arthur E. Summerfield, since Jan. 21, 1953.
DEPARTMENT OF THE INTERIOR—Secretary, Fred A. Seaton, since June 8, 1956.
DEPARTMENT OF AGRICULTURE—Secretary, Ezra Taft Benson, since Jan. 21, 1953.
DEPARTMENT OF COMMERCE—Secretary, Frederick H. Mueller, since Aug. 10, 1959.
DEPARTMENT OF LABOR—Secretary, James P. Mitchell, since Oct. 9, 1953.
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE—Secretary, Arthur S. Flemming, since Aug. 1, 1958.

Legislative Branch: Congress.—The 1st session of the 86th Congress was held from January 7 to Sept. 15, 1959. The 2d session (see list of members, pages 796–797) convened on Jan. 6, 1960; its party composition was as follows:

SENATE: 100 senators (65 Democrats; 35 Republicans).
HOUSE OF REPRESENTATIVES: 437 representatives (280 Democrats; 153 Republicans; 4 vacancies); 1 resident commissioner. Two additional vacancies were created by the deaths of R. M. Simpson (Pa., Jan. 7, 1960) and D. M. Hall (N.C., Jan. 29, 1960).

The members of Congress receive salaries of $22,500; the salary of the speaker of the House of Representatives is $35,000, plus $10,000 for expenses.

(For information on major congressional activities in 1959, see the section *The United States in 1959* in this article; also Index entries on special subjects, such as *Foreign Aid Programs, U.S.; Housing; Labor;* and *Taxation.*)

Judicial Branch.—The judiciary consists of a Supreme Court, circuit courts of appeal, district courts, special courts, District of Columbia courts, and territorial courts. On Jan. 1, 1960, the personnel of the Supreme Court was as follows: chief justice, Earl Warren; associate justices, Hugo L. Black, Felix Frankfurter, William O. Douglas, Tom C. Clark, John M. Harlan, William J. Brennan, Jr., Charles E. Whittaker, and Potter Stewart. The salary of the chief justice is $35,500; that of the associate justices, $35,000. (For a discussion of the Supreme Court's principal decisions in 1958–59, see the article LAW.)

Education.—The United States Office of Education is the country's chief advisory authority on education. For particulars regarding the general trend of education in the United States see the articles EDUCATION and OFFICE OF EDUCATION, U.S.; the section on *Education* in the articles on the states and possessions; COLLEGES AND UNIVERSITIES; LIBRARIES; and Index entries under *Education.*

Religion.—See the article RELIGION and Index entries under this heading.

Social Welfare.—See the article SOCIAL WELFARE and Index entries under this heading.

Finance.—See the article TREASURY DEPARTMENT, U.S.

Economy.—See the article BUSINESS DATA, U.S. and the Index entry, *Financial and Economic Review.*

Agriculture.—See the article AGRICULTURE and Index entries under this heading.

Industry.—See the article INDUSTRIAL PRODUCTION.

Labor.—See the article LABOR.

Mineral Production.—See the articles MINERAL PRODUCTION and MINING and articles on specific minerals.

Foreign Trade.—United States exports (including re-exports) in 1958 were valued at $17,858 million, according to the U.S. Department of Commerce; imports, at $12,830 million. In the first 9 months of 1959 exports were valued at $12,927 million and imports at $11,257 million. (For a discussion of United States foreign trade, see the articles INTERNATIONAL TRADE and TARIFFS and the Index entries on these subjects.)

Defense.—The organization for national security at the beginning of 1960 included the following:

NATIONAL SECURITY COUNCIL: Membership includes the president of the United States, the vice president, the secretaries of state and defense, and the director of the Office of Civil and Defense Mobilization.
OFFICE OF CIVIL AND DEFENSE MOBILIZATION: Director—Leo A. Hoegh (confirmed on July 11, 1958).
SECRETARY OF DEFENSE: Thomas S. Gates, Jr. (sworn in on Dec. 2, 1959); assisted by a deputy secretary of defense (James H. Douglas; sworn in on Dec. 11, 1959), a director of defense research and engineering, 7 assistant secretaries of defense, a general counsel, and assistants to the secretary of defense for atomic energy, legislative affairs, and special operations.
Department of the Army: Wilber M. Brucker, secretary of the army (sworn in on July 21, 1955).
Department of the Navy: William B. Franke, secretary of the navy (sworn in on June 8, 1959).
Department of the Air Force: Dudley C. Sharp, secretary of the air force (sworn in on Dec. 11, 1959).
Joint Chiefs of Staff: Chairman—Gen. Nathan F. Twining; Chief of Staff, U.S. Army—Gen. Lyman L. Lemnitzer; Chief of Naval Operations—Adm. Arleigh A. Burke; Chief of Staff, U.S. Air Force—Gen. Thomas D. White. The commandant of the Marine Corps, Gen. David M. Shoup, has a voice on the Joint Chiefs of Staff whenever it considers policy or strategy measures which "directly concern the Marine Corps."
Armed Forces Policy Council: Chairman—the secretary of defense.

(See the article NATIONAL SECURITY and the Index entries *Military* and *National Security.*)

Communications.—See Index entries under this heading.

Transportation.—See Index entries under this heading.

THE UNITED STATES IN 1959

Americans were essentially prosperous in 1959 despite pockets of unemployment, tension over the proper relationships between labor union leadership and industrial management, and the economic uncertainties caused by a lengthy steel strike. They were deeply interested in presidential travels abroad, in the apparent candor of visiting Soviet Premier Nikita S. Khrushchev (q.v.), and in preliminary maneuvers of candidates for the 1960 presidential nominations. Continuing dispute over the status of Berlin, the Soviet success in sending a rocket to the moon, and troubles in Cuba, Panama, Laos, and other countries all had a major impact on American political life. A great issue was drawn in and out of Congress between administration insistence on a balanced budget and pressures for spending for defense, education, and economic advancement.

The Cold War.—Increased personal and official contact between leaders of the United States and the Soviet Union, notable in 1959, gave no genuine indication of a lessening Communist drive for world domination. Instead, Communist propaganda was augmented in Latin America, the Middle East, and Africa. Communist economic and military strategists continued to seek trouble spots for po-

(*Continued on page 798*)

EIGHTY-SIXTH CONGRESS OF THE UNITED STATES

(SECOND SESSION)

(Membership as of Feb. 15, 1960)

SENATE

(Democrats, 65; Republicans, 35; total, 100)

President: Vice President Richard M. Nixon, Calif.
President Pro Tempore: Carl Hayden, Ariz.
Secretary: Felton M. Johnston

Majority Leader: Lyndon B. Johnson, Texas
Minority Leader: Everett McKinley Dirksen, Ill.

Letters after senators' names refer to party affiliation—D for Democrat, R for Republican. Single asterisk (*) denotes term expiring in January 1961; double asterisk (**) denotes term expiring in January 1963; triple asterisk (***) denotes term expiring in January 1965; dagger (†) denotes appointment to serve until June 1960.

Alabama
**Lister Hill, D
*John Sparkman, D

Alaska
*E. L. Bartlett, D
**Ernest Gruening, D

Arizona
**Carl Hayden, D
***Barry Goldwater, R

Arkansas
*John L. McClellan. D
**J. W. Fulbright, D

California
**Thomas H. Kuchel, R
***Clair Engle, D

Colorado
*Gordon Allott, R
**John A. Carroll, D

Connecticut
**Prescott Bush, R
***Thomas J. Dodd, D

Delaware
***John J. Williams, R
*J. Allen Frear, Jr., D

Florida
***Spessard L. Holland, D
**George A. Smathers, D

Georgia
*Richard B. Russell, D
**Herman E. Talmadge, D

Hawaii
***Hiram L. Fong, R
**Oren E. Long, D

Idaho
*Henry Dworshak, R
**Frank Church, D

Illinois
*Paul H. Douglas, D
**Everett M. Dirksen, R

Indiana
**Homer E. Capehart, R
***Vance Hartke, D

Iowa
**Bourke B. Hickenlooper, R
*Thomas E. Martin, R

Kansas
*Andrew F. Schoeppel, R
**Frank Carlson, R

Kentucky
*John Sherman Cooper, R
**Thruston B. Morton, R

Louisiana
*Allen J. Ellender, D
**Russell B. Long, D

Maine
*Margaret Chase Smith, R
***Edmund S. Muskie, D

Maryland
**John Marshall Butler, R
***J. Glenn Beall, R

Massachusetts
*Leverett Saltonstall, R
***John F. Kennedy, D

Michigan
*Pat McNamara, D
***Philip A. Hart, D

Minnesota
*Hubert H. Humphrey, D
***Eugene J. McCarthy, D

Mississippi
*James O. Eastland, D
***John Stennis, D

Missouri
**Thomas C. Hennings, Jr., D
***Stuart Symington, D

Montana
*James E. Murray, D
***Mike Mansfield, D

Nebraska
***Roman L. Hruska, R
*Carl T. Curtis, R

Nevada
**Alan Bible, D
***Howard W. Cannon, D

New Hampshire
*Styles Bridges, R
**Norris Cotton, R

New Jersey
*Clifford P. Case, R
***H. A. Williams, Jr., D

New Mexico
***Dennis Chavez, D
*Clinton P. Anderson, D

New York
**Jacob K. Javits, R
***Kenneth B. Keating, R

North Carolina
**Sam J. Ervin, Jr., D
*B. Everett Jordan, D

North Dakota
†Norman Brunsdale, R
**Milton R. Young, R

Ohio
**Frank J. Lausche, D
***Stephen M. Young, D

Oklahoma
*Robert S. Kerr, D
**A. S. Mike Monroney, D

Oregon
**Wayne Morse, D
*Richard L. Neuberger, D

Pennsylvania
**Joseph S. Clark, D
***Hugh Scott, R

Rhode Island
*Theodore Francis Green, D
***John O. Pastore, D

South Carolina
**Olin D. Johnston, D
*Strom Thurmond, D

South Dakota
*Karl E. Mundt, R
**Francis Case, R

Tennessee
*Estes Kefauver, D
***Albert Gore, D

Texas
*Lyndon B. Johnson, D
***Ralph Yarborough, D

Utah
**Wallace F. Bennett, R
***Frank E. Moss, D

Vermont
**George D. Aiken, R
***Winston L. Prouty, R

Virginia
***Harry Flood Byrd, D
*A. Willis Robertson, D

Washington
**Warren G. Magnuson, D
***Henry M. Jackson, D

West Virginia
*Jennings Randolph, D
***Robert C. Byrd, D

Wisconsin
**Alexander Wiley, R
***William Proxmire, D

Wyoming
*Joseph C. O'Mahoney, D
***Gale W. McGee, D

HOUSE OF REPRESENTATIVES

(Democrats, 279; Republicans, 152; vacancies, 6; total, 437)

Speaker: Sam Rayburn, Texas
Clerk: Ralph R. Roberts

Majority Leader: John W. McCormack, Mass.
Minority Leader: Charles A. Halleck, Ind.

Letters after representatives' names refer to party affiliation—D for Democrat, R for Republican. The abbreviation "At-L." in place of congressional district number means "representative at large." Asterisk (*) before member's name indicates re-election in 1958 (served in 85th Congress); dagger (†) indicates election in 1959 to fill vacancy.

Alabama
1. *F. W. Boykin, D
2. *G. M. Grant, D
3. *G. W. Andrews, D
4. *K. A. Roberts, D
5. *A. Rains, D
6. *A. I. Selden, Jr., D
7. *C. Elliott, D
8. *R. E. Jones, Jr., D
9. *G. Huddleston, Jr., D

Alaska
At-L. R. J. Rivers, D

Arizona
1. *J. J. Rhodes, R
2. *S. L. Udall, D

Arkansas
1. *E. C. Gathings, D
2. *W. D. Mills, D
3. *J. W. Trimble, D
4. *O. Harris, D
5. D. Alford, D
6. *W. F. Norrell, D.

California
1. C. Miller, D
2. H. T. Johnson, D
3. *J. E. Moss, D
4. *W. S. Mailliard, R
5. *J. F. Shelley, D
6. J. F. Baldwin, Jr., R
7. J. Cohelan, D
8. *G. P. Miller, D
9. *J. A. Younger, R
10. *C. S. Gubser, R
11. *J. J. McFall, D
12. *B. F. Sisk, D
13. *C. M. Teague, R
14. *H. Hagen, D
15. *G. L. McDonough, R
16. *D. L. Jackson, R
17. *C. R. King, D
18. *C. Hosmer, R
19. *C. Holifield, D
20. *H. A. Smith, R
21. *E. W. Hiestand, R
22. *J. Holt, R
23. *C. Doyle, D
24. *G. P. Lipscomb, R
25. G. A. Kasem, D
26. *J. Roosevelt, D
27. *H. R. Sheppard, D
28. *J. B. Utt, R
29. *D. S. Saund, D
30. *B. Wilson, R

Colorado
1. *B. G. Rogers, D
2. B. L. Johnson, D
3. *J. E. Chenoweth, R
4. *W. N. Aspinall, D

Connecticut
1. E. Q. Daddario, D
2. C. Bowles, D
3. R. N. Giaimo, D
4. D. J. Irwin, D
5. J. S. Monagan, D
At-L. F. Kowalski, D

Delaware
At-L. H. B. McDowell, Jr., D

Florida
1. *W. C. Cramer, R
2. *C. E. Bennett, D
3. *R. L. F. Sikes, D
4. *D. B. Fascell, D
5. *A. S. Herlong, Jr., D
6. *P. G. Rogers, D
7. *J. A. Haley, D
8. *D. R. Matthews, D

Georgia
1. *P. H. Preston, D
2. *J. L. Pilcher, D
3. *E. L. Forrester, D
4. *J. J. Flynt, Jr., D
5. *J. C. Davis, D
6. *C. Vinson, D
7. *E. Mitchell, D
8. *I. F. Blitch, D
9. *P. M. Landrum, D
10. *P. Brown, D

Hawaii
At-L. D. K. Inouye, D

Idaho
1. *G. Pfost, D
2. *H. H. Budge, R

Illinois
1. *W. L. Dawson, D
2. *B. O'Hara, D
3. W. T. Murphy, D
4. E. J. Derwinski, R
5. *J. C. Kluczynski, D
6. *T. J. O'Brien, D
7. *R. V. Libonati, D
8. D. Rostenkowski, D
9. *S. R. Yates, D
10. *H. R. Collier, R
11. R. C. Pucinski, D
12. vacant
13. *M. S. Church, R
14. E. J. Hoffman, R
15. *N. M. Mason, R
16. *L. E. Allen, R
17. *L. C. Arends, R
18. *R. H. Michel, R
19. *R. B. Chiperfield, R
20. E. Simpson, R
21. *P. F. Mack, Jr., D
22. *W. L. Springer, R
23. G. E. Shipley, D
24. *M. Price, D
25. *K. J. Gray, D

Indiana
1. *R. J. Madden, D
2. *C. A. Halleck, R
3. J. Brademas, D
4. *E. R. Adair, R
5. J. E. Roush, D
6. F. Wampler, D
7. *W. G. Bray, R
8. *W. K. Denton, D
9. E. Hogan, D
10. R. S. Harmon, D
11. J. W. Barr, D

Iowa
1. *F. Schwengel, R
2. L. G. Wolf, D
3. *H. R. Gross, R
4. †J. Kyl, R
5. N. Smith, D
6. *M. Coad, D
7. *B. F. Jensen, R
8. *C. B. Hoeven, R

Kansas
1. *W. H. Avery, R
2. N. A. George, D
3. D. D. Hargis, D
4. *E. H. Rees, R
5. *J. F. Breeding, D
6. *W. Smith, R

Kentucky
1. F. A. Stubblefield, D
2. *W. H. Natcher, D
3. F. W. Burke, D
4. *F. Chelf, D
5. *B. Spence, D
6. *J. C. Watts, D
7. *C. D. Perkins, D
8. *E. Siler, R

Louisiana
1. *F. E. Hébert, D
2. *H. Boggs, D
3. *E. E. Willis, D
4. *O. Brooks, D
5. *O. E. Passman, D
6. *J. H. Morrison, D
7. *T. A. Thompson, D
8. H. B. McSween, D

Maine
1. J. C. Oliver, D
2. *F. M. Coffin, D
3. *C. G. McIntire, R

Maryland
1. T. F. Johnson, D
2. D. B. Brewster, D
3. *E. A. Garmatz, D
4. *G. H. Fallon, D
5. *R. E. Lankford, D
6. J. R. Foley, D
7. *S. N. Friedel, D

Massachusetts
1. S. O. Conte, R
2. *E. P. Boland, D
3. *P. J. Philbin, D
4. *H. D. Donohue, D
5. *E. N. Rogers, R
6. *W. H. Bates, R
7. *T. J. Lane, D
8. *T. H. Macdonald, D
9. H. Keith, R
10. *L. Curtis, R
11. *T. P. O'Neill, Jr., D
12. *J. W. McCormack, D
13. J. A. Burke, D
14. *J. W. Martin, Jr., R

Michigan
1. *T. M. Machrowicz, D
2. *G. Meader, R
3. *A. E. Johansen, R
4. *C. E. Hoffman, R
5. *G. R. Ford, Jr., R
6. *C. E. Chamberlain, R
7. J. G. O'Hara, D
8. *A. M. Bentley, R
9. *R. P. Griffin, R
10. *E. A. Cederberg, R
11. *V. A. Knox, R
12. *J. B. Bennett, R
13. *C. C. Diggs, Jr., D
14. *L. C. Rabaut, D
15. *J. D. Dingell, D
16. *J. Lesinski, D
17. *M. W. Griffiths, D
18. *W. S. Broomfield, R

Minnesota
1. *A. H. Quie, R
2. A. Nelsen, R
3. *R. W. Wier, D
4. J. E. Karth, D
5. *W. H. Judd, R
6. *F. Marshall, D
7. *H. C. Andersen, R
8. *J. A. Blatnik, D
9. O. Langen, R

Mississippi
1. *T. G. Abernethy, D
2. *J. L. Whitten, D
3. *F. E. Smith, D
4. *J. B. Williams, D
5. *A. Winstead, D
6. *W. M. Colmer, D

Missouri
1. *F. M. Karsten, D
2. *T. B. Curtis, R
3. *L. K. Sullivan, D
4. †W. J. Randall, D
5. *R. Bolling, D
6. *W. R. Hull, Jr., D
7. *C. H. Brown, D
8. *A. S. J. Carnahan, D
9. *C. Cannon, D
10. *P. C. Jones, D
11. *M. M. Moulder, D

Montana
1. *L. Metcalf, D
2. *L. H. Anderson, D

Nebraska
1. *P. Weaver, R
2. *G. Cunningham, R
3. L. Brock, D
4. D. F. McGinley, D

Nevada
At-L. *W. S. Baring, D

New Hampshire
1. *C. E. Merrow, R
2. *P. Bass, R

New Jersey
1. W. T. Cahill, R
2. *M. W. Glenn, R
3. *J. C. Auchincloss, R
4. *F. Thompson, Jr., D
5. *P. Frelinghuysen, Jr., R
6. *F. P. Dwyer, R
7. *W. B. Widnall, R
8. *G. Canfield, R
9. *F. C. Osmers, Jr., R
10. *P. W. Rodino, Jr., D
11. *H. J. Addonizio, D
12. G. M. Wallhauser, R
13. C. E. Gallagher, D
14. D. V. Daniels, D

New Mexico
At-L. *J. M. Montoya, D
At-L. T. G. Morris, D

New York
1. *S. Wainwright, R
2. *S. B. Derounian, R
3. *F. J. Becker, R
4. S. Halpern, R
5. *A. H. Bosch, R
6. *L. Holtzman, D
7. *J. J. Delaney, D
8. *V. L. Anfuso, D
9. *E. J. Keogh, D
10. *E. F. Kelly, D
11. *E. Celler, D
12. *F. E. Dorn, R
13. *A. J. Multer, D
14. *J. J. Rooney, D
15. *J. H. Ray, R
16. *A. C. Powell, D
17. J. V. Lindsay, R
18. *A. E. Santangelo, D
19. *L. Farbstein, D
20. *L. Teller, D
21. *H. Zelenko, D
22. *J. C. Healey, D
23. vacant
24. *C. A. Buckley, D
25. *P. A. Fino, R
26. *E. B. Dooley, R
27. R. R. Barry, R
28. *K. St. George, R
29. *J. E. Wharton, R
30. *L. W. O'Brien, D
31. *D. P. Taylor, R
32. S. S. Stratton, D
33. *C. E. Kilburn, R
34. A. Pirnie, R
35. *R. W. Riehlman, R
36. *J. Taber, R
37. *H. W. Robison, R
38. J. M. Weis, R
39. *H. C. Ostertag, R
40. *W. E. Miller, R
41. T. J. Dulski, D
42. *J. R. Pillion, R
43. †C. E. Goodell, R

North Carolina
1. *H. C. Bonner, D
2. *L. H. Fountain, D
3. *G. A. Barden, D
4. *H. D. Cooley, D
5. *R. J. Scott, D
6. *C. T. Durham, D
7. *A. Lennon, D
8. *A. P. Kitchin, D
9. *H. Q. Alexander, D
10. *C. R. Jonas, R
11. *B. L. Whitener, D
12. vacant

North Dakota
At-L. Q. Burdick, D
At-L. D. L. Short, R

Ohio
1. *G. H. Scherer, R
2. *W. E. Hess, R
3. *P. F. Schenck, R
4. *W. M. McCulloch, R
5. D. L. Latta, R
6. vacant
7. *C. J. Brown, R
8. *J. E. Betts, R
9. *T. L. Ashley, D
10. W. H. Moeller, D
11. R. E. Cook, D
12. S. L. Devine, R
13. *A. D. Baumhart, Jr., R
14. *W. H. Ayres, R
15. *J. E. Henderson, R
16. *F. T. Bow, R
17. R. W. Levering, D
18. *W. L. Hays, D
19. *M. J. Kirwan, D
20. *M. A. Feighan, D
21. *C. A. Vanik, D
22. *F. P. Bolton, R
23. *W. E. Minshall, R

Oklahoma
1. *P. Belcher, R
2. *E. Edmondson, D
3. *C. Albert, D
4. *T. Steed, D
5. *J. Jarman, D
6. T. Morris, D

Oregon
1. *W. Norblad, R
2. *A. Ullman, D
3. *E. Green, D
4. *C. O. Porter, D

Pennsylvania
1. *W. A. Barrett, D
2. *K. E. Granahan, D
3. *J. A. Byrne, D
4. *R. N. C. Nix, D
5. *W. J. Green, Jr., D
6. H. Toll, D
7. W. H. Milliken, Jr., R
8. *W. S. Curtin, R
9. *P. B. Dague, R
10. S. A. Prokop, D
11. *D. J. Flood, D
12. *I. D. Fenton, R
13. *J. A. Lafore, Jr., R
14. *G. M. Rhodes, D
15. *F. E. Walter, D
16. *W. M. Mumma, R
17. vacant
18. vacant
19. J. M. Quigley, D
20. *J. E. Van Zandt, R
21. *J. H. Dent, D
22. *J. P. Saylor, R
23. *L. H. Gavin, R
24. *C. D. Kearns, R
25. *F. M. Clark, D
26. *T. E. Morgan, D
27. *J. G. Fulton, R
28. W. S. Moorhead, D
29. *R. J. Corbett, R
30. *E. J. Holland, D

Rhode Island
1. *A. J. Forand, D
2. *J. E. Fogarty, D

South Carolina
1. *L. M. Rivers, D
2. *J. J. Riley, D
3. *W. J. B. Dorn, D
4. *R. T. Ashmore, D
5. *R. W. Hemphill, D
6. *J. L. McMillan, D

South Dakota
1. *G. S. McGovern, D
2. *E. Y. Berry, R

Tennessee
1. *B. C. Reece, R
2. *H. H. Baker, R
3. *J. B. Frazier, Jr., D
4. *J. L. Evins, D
5. *J. C. Loser, D
6. *R. Bass, D
7. *T. Murray, D
8. *R. A. Everett, D
9. *C. Davis, D

Texas
1. *W. Patman, D
2. *J. Brooks, D
3. *L. Beckworth, D
4. *S. Rayburn, D
5. *B. Alger, R
6. *O. E. Teague, D
7. *J. Dowdy, D
8. *A. Thomas, D
9. *C. W. Thompson, D
10. *H. Thornberry, D
11. *W. R. Poage, D
12. *J. Wright, D
13. *F. Ikard, D
14. *J. Young, D
15. *J. M. Kilgore, D
16. *J. T. Rutherford, D
17. *O. Burleson, D
18. *W. Rogers, D
19. *G. Mahon, D
20. *P. J. Kilday, D
21. *O. C. Fisher, D
22. B. Casey, D

Utah
1. *H. A. Dixon, R
2. D. S. King, D

Vermont
At-L. W. H. Meyer, D

Virginia
1. T. N. Downing, D
2. *P. Hardy, Jr., D
3. *J. V. Gary, D
4. *W. M. Abbitt, D
5. *W. M. Tuck, D
6. *R. H. Poff, R
7. *B. P. Harrison, D
8. *H. W. Smith, D
9. *W. P. Jennings, D
10. *J. T. Broyhill, R

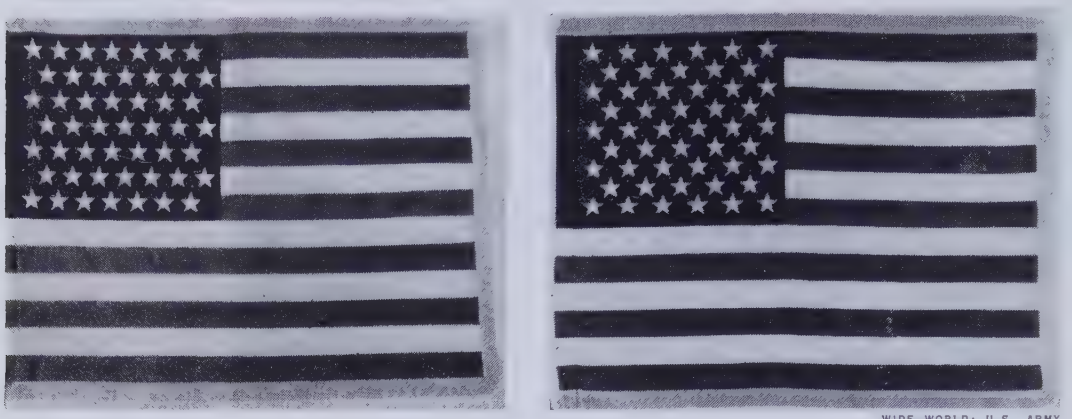
Washington
1. *T. M. Pelly, R
2. *J. Westland, R
3. *R. V. Mack, R
4. C. May, R
5. *W. Horan, R
6. *T. C. Tollefson, R
7. *D. Magnuson, D

West Virginia
1. *A. A. Moore, Jr., R
2. *H. O. Staggers, D
3. *C. M. Bailey, D
4. K. Hechler, D
5. *E. Kee, D
6. J. M. Slack, Jr., D

Wisconsin
1. G. T. Flynn, D
2. R. W. Kastenmeier, D
3. *G. R. Withrow, R
4. *C. J. Zablocki, D
5. *H. S. Reuss, D
6. *W. K. Van Pelt, R
7. *M. R. Laird, R
8. *J. W. Byrnes, R
9. *L. R. Johnson, D
10. *A. E. O'Konski, R

Wyoming
At-L. *K. Thomson, R

Puerto Rico
Resident Commissioner
*A. Fernós-Isern, D



WIDE WORLD; U.S. ARMY

(Left) Marking the admission of Alaska to the Union, the 49-star flag first flew officially on July 4, 1959. *(Right)* New flag of 50 stars, redesigned by order of the president to show Hawaiian statehood, is due to become official on July 4, 1960.

litical exploitation even as Soviet officials used less militant language.

Throughout the year there was an impasse in negotiations over the status of Berlin, symbol of free government and of the unification of a democratic Germany to much of the West and to the Soviet Union an annoying enclave in the structure of its satellites. Technically occupied by the four great powers victorious over Nazi Germany in 1945, the city had been divided between Soviet East Berlin and a West Berlin closely linked with West Germany. Long desiring that Berlin be within the Communist orbit, and contending that the occupation was over, the Soviet Union in November 1958 renewed its efforts to remove the United States, Great Britain, and France from West Berlin.

On Jan. 10, 1959, the USSR proposed, in notes to the United States and 26 other countries, that a conference be held to discuss a Soviet draft for a German peace treaty. This draft would make Berlin a demilitarized free city and provide for a partially demilitarized West Germany, with its present borders and without Western defense ties. In effect, the plan would make some Soviet concessions on Berlin in return for a weakened Germany. Both the United States (January 10) and West Germany (January 12) declared the proposal to be similar to one made by the Soviets in 1954 and an unacceptable device to recognize two Germanies and to deprive a reunified Germany of border adjustments and defense alliances. The propaganda effect nevertheless seemed to give the USSR a new peace initiative.

Soviet First Deputy Premier Anastas I. Mikoyan arrived in the United States on January 4 for a much-publicized unofficial tour. Though received with some reserve, he made public appearances from coast to coast as a skillful advocate of Soviet positions. A meeting with President Dwight D. Eisenhower (q.v.) on January 17, which was devoted to Germany, disarmament, and international trade, produced no new proposals. Two days later, State Department officials, in conference with Mikoyan, rejected steps to increase trade in strategic goods, to lower tariffs, and to remove credit restrictions on the ground that trade increases, which the Soviets could easily begin, must be in nonstrategic commodities, and that loans to the Soviet Union were barred by law because of Soviet debts to the United States. The president said at a press conference on January 21 that he had tried to make it clear that "we are ready to explore anything" when there is "opportunity for advancing the peace," but added that America "simply won't be pushed around." The Mikoyan visit, ending on January 20, enabled Soviet leaders to point to high-level negotiations as an actuality. On January 26, Khrushchev said in Moscow that it had shown that "the possibility of a thaw in our relations is not excluded."

Pressure mounted for international discussion of the potentially dangerous Berlin issue, made the more urgent because of the 1958 proposal of the

(Left) Lewis L. Strauss (r.) confers with Frederick H. Mueller, who replaced him as secretary of commerce on August 10. Strauss, who had served under a recess appointment, failed to win Senate confirmation. *(Right)* Neil H. McElroy (r.), who resigned as secretary of defense on December 1, congratulates his successor, Thomas Gates, Jr., deputy secretary since June.

UPI; WIDE WORLD

USSR to turn over its occupation functions in Berlin to East Germany by May 27, 1959. On February 4–8, Secretary of State John Foster Dulles (q.v.) conferred in Europe with British, French, and West German leaders in order to develop a common German policy, and on February 16, the United States, Britain, and France asked the USSR to join in a foreign ministers' conference. The Soviet acceptance of March 2 was hedged with conditions, including suggestions that Poland and Czechoslovakia be invited, that the agenda give priority to the Soviet proposals on Berlin and Germany, and that the meeting be of limited duration.

Meanwhile, a United States Army truck convoy from Berlin was detained on February 2–4 by Soviet Army officers seeking to inspect cargo as it entered West Germany. It was allowed to pass after a strong United States protest (February 4) in Moscow. On February 5, the State Department released a tape recording of Soviet fighter pilot conversations that revealed an attack on an unarmed U.S. Air Force transport plane shot down in Soviet Armenia on Sept. 2, 1958. Soviet broadcasters charged on February 7 that the tape was a "fake" made to transfer blame for the incident from Americans flying "over Soviet territory." President Eisenhower denied on February 10 that American planes crossed Soviet borders to monitor air defenses, and stated that "once in a while" there may be "false radio signals that will take a plane out of course."

On March 16, in a national radio-television report on Berlin, the president said that "we will not retreat one inch from our duty." The United States would negotiate, but not "under a dictated time limit or agenda." The right to free passage to and from West Berlin would be exercised, and the United States would not agree to a compulsory division of Germany or to arrangements undermining Western security. In a news conference on March 11, the president had rejected as unnecessary an increase in United States ground forces in Europe and had declined to rule out the possibility of nuclear warfare.

On March 26, after a meeting between President Eisenhower and British Prime Minister Harold Macmillan at Camp David, Md. (March 20–22), the Western powers proposed that the foreign ministers' conference on Germany open in Geneva on May 11, and insisted that it be limited to the four powers "responsible for Germany." The USSR accepted on March 30. Foreign ministers of the three Western powers and West Germany, who met in Washington on March 31–April 1 and in Paris on April 29–30, agreed that the freedom of West Berlin should be maintained, while placing a lower priority on German reunification than heretofore. The Geneva Conference, which met intermittently from May 11 to August 5, ended in a deadlock, as had been predicted. Christian A. Herter (q.v.), successor to Dulles as secretary of state, had warned Americans on May 7 against "great expectations." The conference failure was almost forgotten, however, in the announcement by President Eisenhower on August 3 that Premier Khrushchev would visit the United States in September, that the president would go to Europe prior to that time for conferences with Western leaders, and that he would later return the Khrushchev visit. Diplomacy had reached the summit because no other level of authority could so fully negotiate and no other effort could so quickly obscure the implications of deadlock. (See also GERMANY; SUMMIT CONFERENCE.)

In the meantime, Secretary Dulles, who had resigned on April 15 because of cancer, died on May 24. His funeral in Washington three days later was attended from abroad by the four foreign ministers participating in the Geneva Conference, by West German Chancellor Konrad Adenauer, and by high officials from many other countries.

UPI

Replica of Soviet sphere (Lunik II) which landed on the moon is studied by President Eisenhower. The model was a gift of Premier Khrushchev (right), presented on his arrival in Washington, September 15. Behind leaders at the White House are Secretary of State Herter (left) and interpreter.

On June 29, Soviet First Deputy Premier Frol R. Kozlov officially opened in New York the Soviet National Exhibition of Science, Technology, and Culture, which had been arranged on an exchange basis. The American National Exhibition was opened in Moscow on July 24 by Vice President Richard M. Nixon (q.v.). At a preview earlier in the day, he engaged in a debate, part of it televised, with Premier Khrushchev on the merits of capitalism. Nixon toured in the USSR, addressed the Russians by television and radio from Moscow on August 1 on his experiences there and on his hope for ending the cold war, and visited Poland on August 2–5.

The government of Laos (q.v.) declared an emergency on August 4 in five provinces after guerrilla attacks near North Vietnam and Communist China. The State Department charged on August 11 that fighting in Laos was Communist inspired, and Secretary Herter, addressing the U.N. General Assembly on September 17, reiterated United States determination to aid the Laotian government against Communist rebels.

President Eisenhower, in Europe for conferences as a prelude to the Khrushchev visit to the United States, was hailed by great crowds in Bonn (August 26–27), London (August 27–September

President Eisenhower addresses crowd at Washington airport on his return from European tour, September 7. With him are Mrs. Eisenhower (r.) and Vice President and Mrs. Nixon.

WIDE WORLD

HAYNIE IN THE LOUISVILLE COURIER-JOURNAL

"Out in Space"

2), and Paris (September 2–4). His meetings with leaders of major Western powers were designed to unify plans and to assure the allies of the United States that it would support their interests.

The Khrushchev visit was preceded on September 14 (Moscow time) by Soviet success in placing on the moon Lunik II, a rocket package with scientific instruments. The Soviet premier arrived at Andrews Air Force Base, near Washington, on September 15, and until his departure on September 27 maintained a hectic schedule. As he traveled across the country, his mood was mercurial. He was sharp to hecklers at press conferences and dinners; he was critical of security arrangements which, in California, he said amounted to "house arrest"; he was jovial in San Francisco and in Iowa. On September 18, he said to the U.N. General Assembly that "all states should effect complete disarmament," a proposal which Western delegates heard with skepticism about its workability. In talks with the president at Camp David on September 25–27, Berlin and disarmament were apparently the chief topics. Negotiations over Berlin would be reopened without a time limit. On his return to Moscow on September 28, Khrushchev said that he was impressed that the president "sincerely wanted to liquidate the cold war."

"Oops!"

PLETCHER IN THE SIOUX CITY (IOWA) JOURNAL

In November, the president made plans to meet with heads of Western governments in Paris on December 19 and to visit 11 countries before and after the meeting. Leaving Washington by air on December 3, he visited Italy, Turkey, Pakistan, Afghanistan, India, Iran, Greece, Tunisia, France, Spain, and Morocco, and returned to the United States on December 22. Following conferences held at Paris and Rambouillet on December 19–21, he joined Prime Minister Macmillan and President de Gaulle in inviting Premier Khrushchev to a summit conference in Paris in 1960. (See also Foreign Policy of the U.S.)

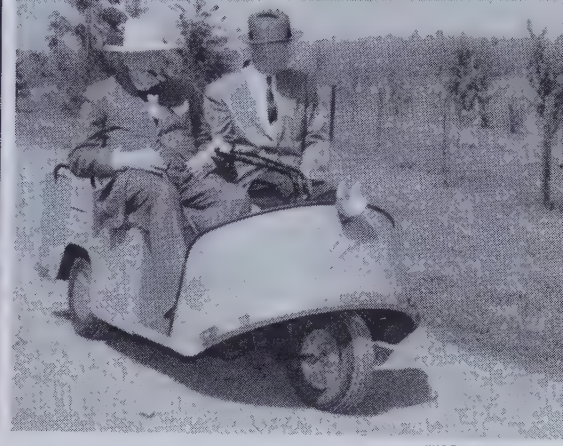
Global Responsibilities.—Treasury withdrawals for foreign aid in the fiscal year ending June 30, 1959, totaled $3,651.9 million. For the fiscal year 1960, Congress appropriated on Sept. 15, 1959, a total of $3,225.8 million, or $704.2 million less than the president had requested. On June 24, the president sent to Congress with his endorsement a recommendation from the President's Committee to Study the United States Military Assistance Program (headed by William H. Draper, Jr.) that military aid be authorized on a permanent basis, and that it be planned three to five years ahead. The committee reported on July 13 that there was some evidence of "waste and maladministration" in economic aid, but that programs must be improved, not abandoned. On August 20, it recommended increases in military aid appropriations.

Riots developed in Bolivia on March 2–4 over an article in *Time* magazine in which an unidentified United States embassy officer was quoted as saying in effect that Bolivia ought to be abolished. The State Department reported that no such statement had been made.

On February 19–20, President Eisenhower and President Adolfo López Mateos of Mexico conferred on economic matters at Acapulco. On June 26, the president and Queen Elizabeth II dedicated at St. Lambert, Quebec, the St. Lawrence Seaway (q.v.), which had been opened to traffic on April 25.

Because of anti-American overtones, the Cuban regime of Premier Fidel Castro caused growing concern in the United States. On October 26, Castro charged that the United States had permitted planes to drop antigovernment leaflets and bombs on Havana on October 21. The United States denied the allegations on October 27, and on November 9 protested a Cuban government pamphlet reiterating them. (See also Cuba.) In Panama rioting developed on November 3 and 28 over efforts to fly the Panamanian flag in the Canal Zone as a symbol of sovereignty. (See also Panama.)

National Defense.—In the fiscal year 1959, United States net military expenditures totaled $41,196,238,676, or $1,341,323,579 more than in the preceding fiscal year. On Aug. 4, 1959, Congress appropriated $39,228,239,000 for the Department of Defense for the fiscal year 1960, or $19,961,000 less than the president had requested. The bill provided $17,472,706,000 for the Air Force, $11,006,503,000 for the Navy, $9,375,805,000 for the Army, and $1,373,225,000 for the secretary of defense. Based on a strength for the



WIDE WORLD

(Left) Western foreign ministers confer in Washington, March 31, on the topics of Germany and a summit conference. From left are von Brentano of West Germany, Lloyd of Great Britain, Herter of the United States, and Couve de Murville of France. *(Right)* Sir Winston Churchill joins President Eisenhower in a tour of the chief executive's Gettysburg, Pa., farm on May 6.

Army of 870,000, for the Air Force of 845,000, and for the Navy of 630,000, it also gave the president funds to use at his discretion to increase the strength of the Marine Corps from 175,000 to 200,000 and that of the Army Reserve from 270,000 to 300,000. It required that the National Guard be maintained at a strength of 400,000, rejecting the president's proposed cut to 360,000. An additional appropriation for military construction (September 4) totaled $1,363,961,200, or $199,238,800 less than the president's request. (See also NATIONAL SECURITY.)

On January 12, the National Aeronautics and Space Administration (NASA) announced plans to build a capsule in which a man might safely be sent into orbit and returned to earth (Project Mercury). Seven potential astronauts were introduced at a press conference on April 9. On October 21, the president announced his decision to transfer the Army Ballistic Missile Agency to NASA.

During the year the United States successfully launched ten earth satellites: Vanguard II (February 17) and III (September 18); Discoverer I (February 28), II (April 13), V (August 13), VI (August 19), VII (November 7), and VIII (November 20); and Explorer VI (August 7) and VII (October 13). A lunar probe, Pioneer IV, launched by the Army on March 3, passed the moon at a distance of 37,300 miles and went into orbit around the sun. (See also SPACE FLIGHT.)

On December 2, Thomas S. Gates, Jr., succeeded Neil H. McElroy as secretary of defense.

The Legislative Record.—The first session of the 86th Congress met from January 7 to Sept. 15, 1959. On the opening day, Democrats outnumbered Republicans in the Senate by 64 to 34 and in the House of Representatives by 283 to 153. Rep. Sam Rayburn, Democrat of Texas, was reelected speaker of the House for a ninth term, and Rep. John W. McCormack (Mass.) again became majority floor leader. In the Senate, Democrats again chose Lyndon B. Johnson (Texas) majority leader and Mike Mansfield (Mont.) majority whip. Republican senators elected Everett M. Dirksen (Ill.) minority leader by a vote of 20 to 14 over John Sherman Cooper (Ky.). Thomas H. Kuchel (Calif.) was chosen minority whip, also by 20 to 14, over Karl E. Mundt (S. Dak.). Meeting in caucus on January 6, House Republicans selected Charles A. Halleck (Ind.) minority leader by a vote of 74 to 70 to replace Joseph W. Martin, Jr. (Mass.). Notable legislation of the session provided for labor reform, the admission of Hawaii to statehood, extension of the Selective Service System, a housing program, higher interest for government savings bonds, and a two-year extension of the Civil Rights Commission. The president's final requests for operating funds for the fiscal year 1960 were $70,740,118,520, and Congress appropriated $69,235,752,364. With supplemental appropriations of $2,764,500,380 for 1959 and funds provided outside the appropriation process, the session approved a total of $79,428,598,352.

The president's State of the Union message, delivered in person on January 9 before a televised joint session of Congress, urged the necessity of strength as a means to peace and the importance of a balanced budget. His budget message, which he submitted on January 19, requested expenditures of $77,030 million in the fiscal year 1960, or $3,849 million less than he had asked for 1959. "This budget," he said, "rejects the philosophy that the national welfare is best served by satisfying every demand for Federal expenditures." The annual economic report, submitted on the next day, recommended caution in the matter of wage increases and federal spending because of the threat of inflation. Senator Johnson called the budget "propaganda . . . prepared to create a political issue for 1960," while Republican congressional leaders began to affix a label of "spenders" on Democratic spokesmen.

Meanwhile, on January 12, Senator Johnson won (72–22) a change in rules that would permit two thirds of the senators present and voting to close debate instead of two thirds of all senators. This change was more moderate than a proposal for closing debate by a majority vote of the Senate, made by a group of civil rights advocates, which had been rejected (60–36) on January 9 on a motion to table it.

Labor legislation early became a critical issue, with strong support in both houses for action against labor racketeering of the sort revealed by congressional investigations. On January 20, Sen. John F. Kennedy (Mass.) introduced a bill which would impose curbs but would also modify the Labor Management Relations Act of 1947 (Taft-Hartley Act) in a few ways desired by labor. The administration favored a stronger measure including, as revealed in a presidential message of January 28, provisions against secondary boycotts and minority picketing.

On April 25, the Senate passed (90–1) the Kennedy bill, to which had been added (77–14) a compromise "bill of rights" for union employees proposed by Sen. Thomas H. Kuchel. The president, businessmen, and many others regarded the bill as too weak, while labor thought it too strong. On August 14, the House passed (303–125) the Landrum-Griffin bill, which the president had endorsed in a television statement on August 6, and

which was supported by a Southern Democratic–Republican coalition. The House had rejected (245–132) the mild Shelley bill for union administrative reforms, approved by labor, on August 12, and on the next day it had substituted (229–209) the Landrum-Griffin bill for the Elliott bill supported by the House Democratic leadership. In Senate-House conferences most of the provisions of the Landrum-Griffin bill and a few from the Kennedy bill were adopted. The resulting law, the Labor-Management Reporting and Disclosure Act of 1959 (otherwise known as the Labor Reform Act of 1959), was approved by the Senate (95–2) on September 3 and by the House (352–52) on September 4, and signed by the president on September 14. It contained a bill of rights for union members, clauses against secondary boycotts as well as organizational and recognition picketing, greater authority for state agencies, and requirements for union procedures. President George Meany of the AFL-CIO declared on September 6 that the measure was part of a business campaign "to enact restrictive antilabor laws in the name of accomplishing labor reform." (See also LABOR.)

A bill to make Hawaii (q.v.) the 50th state was voted by the Senate (76–15) on March 11 and by the House (323–89) on March 12. The measure was signed by the president on March 18, Hawaiian voters approved statehood on June 27 by a vote of 132,938 to 7,854, and the new state was proclaimed by the president on August 21.

The Selective Service Act, which requires men to register with draft boards at the age of 18 and makes them subject to call at 18½, was extended for four years by a Senate vote of 91 to 1 on March 11 and by voice vote in the House on the next day. The bill was approved by the president on March 23. (See also SELECTIVE SERVICE.)

On July 7 the president vetoed a compromise housing bill passed by the Senate (56–31) on June 22 and by the House (241–177) on June 23, on the ground of "excessive" spending, which he thought would do "more damage than good." The veto was sustained on August 12, when the Senate, voting 55 to 40 to override, failed to reach the necessary two-thirds majority. A second housing bill, passed by the Senate (71–24) on August 18 and by the House (283–105) on August 27, also was vetoed, on September 4, and on the same day the Senate sustained the veto by its 58–36 vote to override. A further compromise, retaining some of the features to which the president objected but reduced in cost to $1 billion, was passed by the Senate (86–7) on September 9 and by a voice vote in the House on the next day. It was approved by the president as the Housing Act of 1959 on September 23. (See also HOUSING.)

A $1,206.8 million public works measure, passed by Congress on August 17, also was vetoed (August 28) by the president, who objected to 67 unbudgeted projects, which he said would cost over $800 million. The veto was sustained by a single vote on September 2, when the House voted by 274 to 138 to override. A new version, totaling $1,185.3 million, was passed by Congress on September 8 and vetoed on the next day. On September 10 both houses overrode the veto, the first of President Eisenhower's 146 vetoes to be overridden, by votes of 280 to 121 in the House and 72 to 23 in the Senate.

Among the financial measures enacted by Congress were bills increasing the debt limit to $285 billion on a permanent basis and to $295 billion temporarily (June 25), extending present corporation and excise tax rates for a year (June 29), increasing the federal gasoline tax by 1 cent a gallon (September 9), and authorizing increased interest rates for Series E and H government savings bonds (September 12). The veterans' pension system was extensively revised by a bill passed by Congress on August 18 and signed by the president on August 29.

On September 19, President Eisenhower declared that it had taken great public pressure to force the Democratic "majority to shelve at least temporarily its more lavish proposals" for spending. Among "many disappointing failures," he mentioned "refusal to establish . . . authority for sound management of the public debt," failure to make the postal service self-sustaining, reduction of mutual security appropriations, and "mushrooming the huge public works expenditures." Issues shelved included proposals for civil rights legislation, aid to education, farm legislation, assistance to depressed areas, higher minimum wages, larger social security benefits, and home rule for the District of Columbia.

Two major presidential appointments aroused controversy. Clare Boothe Luce was confirmed (79–11) as ambassador to Brazil by the Senate on April 28, after a vigorous attack on her qualifications led by Sen. Wayne Morse. Her comments on Morse led to new attacks, defense by the president, and her resignation on May 1. On June 19 the Senate refused (49–46) to confirm the nomination of Lewis L. Strauss, who had been serving under a recess appointment, as secretary of commerce. The campaign which led to this unusual action on a cabinet nomination was spearheaded by Sen. Clinton P. Anderson and others who disapproved of Strauss' conservatism. Strauss resigned on June 30, and on August 6 the Senate confirmed the nomination of Frederick H. Mueller as his successor.

During the year the Senate Select Committee

Potential presidential nominees in 1960 (from left): Vice President Richard M. Nixon, Republican, and Democrats Edmund (Pat) Brown of California, Hubert H. Humphrey of Minnesota (candidacy announced December 30), and Lyndon B. Johnson of Texas.

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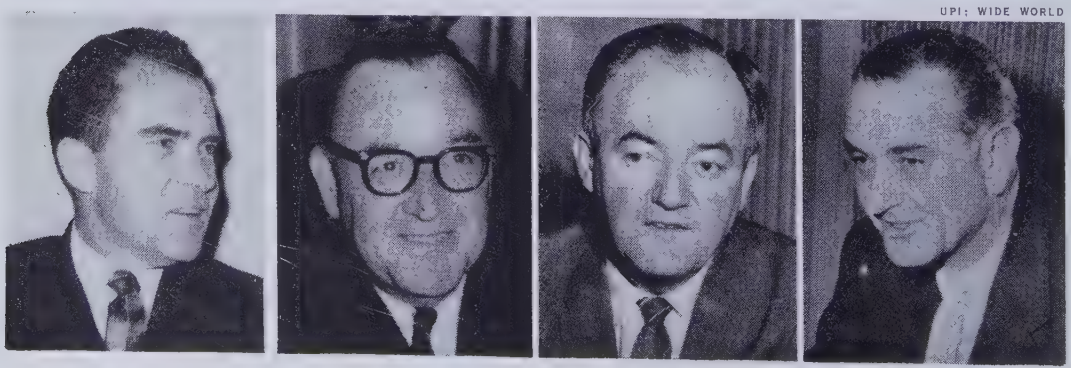


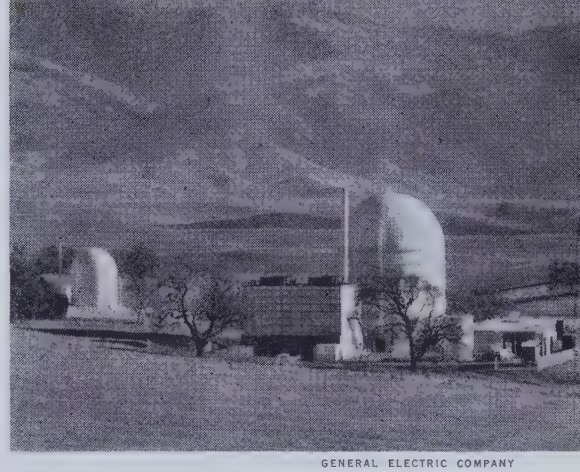
on Improper Activities in the Labor or Management Field continued its investigations of racketeering, while other Senate and House committees studied the missile program, space exploration, radioactive fall-out, and unemployment. The most spectacular postsession hearings were those held by the House Special Subcommittee on Legislative Oversight under the chairmanship of Rep. Oren Harris. They developed evidence of rigged television quiz programs and were climaxed by the admission (November 2) by Charles Van Doren that he had been given questions and answers in advance when he won $129,000 on a 1956 program. (See also RADIO AND TELEVISION.)

Political Developments.—During 1959, Democratic and Republican leaders shaped their plans with the 1960 presidential campaigns in mind. Major issues already included inflation, high interest rates, labor union regulation, farm price supports, higher minimum wages, aid to education, enlarged social security, housing and slum clearance, civil rights, national defense and space efforts, and foreign policy. The administration sought to make a record on the principle of a balanced budget; Democrats were divided, but many leaned toward larger expenditures for social progress.

Vice President Nixon was regarded as the leading Republican presidential candidate, with much support apparent for Gov. Nelson A. Rockefeller of New York until he withdrew from the race on December 26. No Democratic candidate had a clear lead, but discussion centered on Adlai E. Stevenson, who insisted that he was not running, and the more obviously receptive Senators Kennedy, Johnson, Stuart Symington, and Hubert H. Humphrey. Gov. Edmund G. Brown of California was a leading favorite son. Much public comment dealt with the question of whether a Roman Catholic would be handicapped or helped by his religion in a presidential race. The Democrats decided to hold their 1960 national convention in Los Angeles beginning on July 11, while the Republicans chose Chicago and July 25.

Paul M. Butler, chairman of the Democratic National Committee, who openly opposed policies of more conservative Democrats, retained the support of the committee despite Southern attacks. Sen. Thruston B. Morton was elected chairman of the Republican National Committee on April 11, 1959, to succeed Meade Alcorn. Scattered elections in November gave the Democrats encouragement but confirmed trends toward ticket splitting and emphasis on local issues. (See also DEMOCRATIC PARTY; ELECTIONS, U.S.; REPUBLICAN PARTY.)

The National Economy.—At the end of the 1959 congressional session, presidential requests for new spending were officially summarized at $82,009,008,445, and appropriations and other spending authority for various years at $79,428,598,352. On December 31, the gross public debt totaled $290,797,771,717, as compared with $282,922,423,583 on Dec. 31, 1958.



GENERAL ELECTRIC COMPANY

Domed cylinders at the Vallecitos Atomic Laboratory, Pleasanton, Calif., house a boiling water reactor and a nuclear test reactor. It is the largest private facility in the U.S. for experimental development of peacetime atomic energy.

The gross national product, which had reached a seasonally adjusted annual rate of $457.1 billion in the fourth quarter of 1958, rose to $484.5 billion in the second quarter of 1959. From the recession low in the first quarter of 1958 it had risen more than 10% (allowing for price increases) before the steel strike. Chiefly because of the strike, it declined by 1.2% in the third quarter, to $478.6 billion. Personal income rose from a seasonally adjusted annual rate of $369 billion in January to $383.8 billion in June, dropped steadily to $380.0 billion in August, but rose to an all-time high of $384.8 billion in November. (See also INCOME.) Employment, which totaled 65,306,000 in October 1958, dropped to 62,706,000 in January 1959, rose consistently thereafter to 67,594,000 in July, but declined to 65,640,000 by November. Unemployment mounted steadily from 3,805,000 in October 1958 to 4,749,000 in February 1959, dropped to 3,389,000 in May, rose to 3,982,000 in June, declined regularly to 3,230,000 in September, but increased to 3,670,000 in November. By mid-October the seasonally adjusted unemployment rate (which excludes most workers on strike) had risen to 6% of the labor force, having been 4.9% before the steel strike; in mid-November it stood at 5.6%. Average weekly hours per worker in all manufacturing industries rose from 39.9 in January 1959 to 40.7 in

Other potential Democratic presidential nominees are (from left): John F. Kennedy of Massachusetts (who announced his candidacy Jan. 2, 1960), Robert B. Meyner of New Jersey, Adlai E. Stevenson of Illinois, and Stuart Symington of Missouri.

TWA; WIDE WORLD

June, but dropped to a preliminary figure of 39.9 in November. Average weekly gross earnings by workers in those industries rose from $87.38 in January 1959 to $91.17 in June, fell to $88.70 in August, and rose to $89.47 in September; preliminary figures for November showed a decline to $88.98. (See also BUREAU OF EMPLOYMENT SECURITY; LABOR; WAGES AND HOURS.)

The value of new construction (seasonally adjusted) rose from $4,557 in January 1959 to $4,713 million in May, but declined to $4,263 in October. (See also BUILDING AND CONSTRUCTION.)

The Consumer Price Index (1947–49 = 100), which stood at 123.8 in January 1959, with two slight downward fluctuations rose to a record high of 125.6 in November. The index of food prices declined from 119.0 in January to 117.6 in April, rose to 119.4 in July (well below the 121.7 record high for July 1958), and stood at 118.4 in October. (See also COST OF LIVING.) The index of prices received by farmers for all products (1910–14 = 100) dropped from 245 in January to 228 in December. The parity ratio, which had risen to 87 in September 1958, stood at 82 from January to May 1959, but dropped to 77 by November. (See also AGRICULTURE.)

Exports of United States merchandise totaled $1.384.8 million in January 1959, reached a high of $1,535.3 million in May, and dropped to $1,460.5 million in October. Imports totaled $1,154.2 million in January, $1,300.9 million in March, and $1,204.8 million in October. (See also INTERNATIONAL TRADE.) Seasonally adjusted manufacturers' sales were valued at $28,143 million in January, $31,248 million in June, and $29,199 million in November. Corporate profits after taxes were at a seasonally adjusted annual rate of $23.8 billion in the first quarter and $27.0 billion in the second quarter. The seasonally adjusted index of industrial production (1947–49 = 100) was 143 in January, 155 in June, and 148 (preliminary figure) in November. (See also BUSINESS DATA, U.S.; INDUSTRIAL PRODUCTION.)

Consumer credit was $45,094 million in January and, after a slight decline in February and March, rose steadily to a record of $50,379 million in November. (See also CONSUMER CREDIT.) Mortgage debt (preliminary figures) rose from $171.5 billion at the end of 1958 to a new record of $186.3 billion at the end of the third quarter of 1959. The bank discount rate at the Federal Reserve Bank of New York, which had been raised from 1¾% to 2½% in 1958, was increased to 3% on March 6, 1959, to 3½% on May 29, and to 4% on September 11. (See also BANKING.)

Organized Labor.—The longest steel strike in the nation's history (July 15–November 7) overshadowed even the question of corruption in some union leadership and the enactment of the Labor Reform Act of 1959. Negotiations between the United Steelworkers of America and the steel industry to replace the work contract due to expire on June 30 began on May 5. The union asked for wage increases without steel price rises, while the industry proposed a one-year wage freeze and changes in work rules to give management greater control. When bargaining brought no acceptable compromise, 500,000 steelworkers went on strike on July 15. Further talks brought no results, and on October 9, President Eisenhower invoked the Taft-Hartley Act and appointed a three-member board of inquiry. Since both industry and labor rejected counterproposals, the president on October 19 requested action for an injunction to end the strike for 80 days. The injunction was granted two days later by a federal district court in Pittsburgh, then stayed, but upheld (2–1) on October 27 by the Court of Appeals for the 3d Circuit. The Supreme Court upheld (8–1) the injunction on November 7, and the strikers began returning to work. By the end of October, layoffs in other industries caused by steel shortages had affected nearly 500,000 workers. (See also IRON AND STEEL; LABOR.)

The 3d biennial convention of the AFL-CIO, held in San Francisco on September 17–23, reelected President Meany and adopted a legislative program calling for a minimum wage of $1.25 per hour; further federal aid to depressed areas, education, and the unemployed; health insurance; housing; protection of civil rights; and liberalized immigration. It criticized the 86th Congress for failure "to act decisively in the public interest." It also agreed to plan a labor arbitration board with power to settle jurisdictional disputes among unions. (See also AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS.)

Security and Civil Liberties.—The Civil Rights Commission, in a report to the president released on September 8, stated that many Americans "are denied the franchise because of race" through legal and administrative obstacles and fears of economic or physical reprisals. It recommended legislation providing temporary federal registrars to list qualified voters where discrimination was discovered, preservation of election records for five years, requirements against discrimination by election officials, authority for the commission to request federal court orders to direct witnesses to appear and produce records, and compilation by the Bureau of the Census of registration and voting statistics by race, color, and national origin. Three commissioners also recommended a constitutional amendment prohibiting literacy tests for registration and voting.

The life of the commission was extended for two years, and $500,000 was granted to it, by an appropriations bill rider immediately before Congress adjourned on September 15. The extension was approved in the Senate by 71 to 18 and in the House by 221 to 81. Efforts by some senators to obtain more comprehensive civil rights legislation were postponed on assurances received from floor leaders of both parties that proposals would be considered early in 1960.

In two 5 to 4 decisions the Supreme Court upheld on June 8 the power of Congress and the states to investigate communism and to require answers from witnesses. On June 29, the court ruled (8–1) that there was no legal authorization for the government's security risk program in defense plants, since the program did not provide the right to confront and cross-examine witnesses. (See also CIVIL LIBERTIES; LAW.)

Desegregation.—The Virginia policy of "massive resistance" to school desegregation was modified after federal courts and its own Supreme Court of Appeals (5–2, on January 19) had overruled state laws. Gov. J. Lindsay Almond, Jr., said on January 28 to a special session of the legislature that he would not use state police to close schools in resistance to court orders. On January 31, he obtained legislation ending compulsory school attendance and providing for tuition grants to students who shifted to private schools. In Little Rock, Ark., three segregationist members of the school board were removed in a recall election on May 25 after they had voted (May 4) to dismiss 44 teachers. On June 26, Prince Edward County, Va., closed its public school system, the first such action, rather than comply with an order (May 5) of the Court of Appeals for the 4th Circuit to admit qualified Negroes. On October 12, the Supreme Court declined to review lower court deci-

sions which upheld the constitutionality of the pupil placement law of North Carolina. (See also EDUCATION.)

(For further references, consult the Index entry, *United States.*)

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UNITED STATES AIR FORCE. See AIR FORCE, U.S.

UNITED STATES ARMY. See ARMY OF THE U.S.

UNITED STATES BUREAU OF MINES. See MINING.

UNITED STATES COAST AND GEODETIC SURVEY. See COAST AND GEODETIC SURVEY, U.S.

UNITED STATES COAST GUARD. See COAST GUARD, U.S.

UNITED STATES CONGRESS. For a list of members of Congress, see UNITED STATES. For a discussion of legislation, see UNITED STATES and articles on specific subjects, such as EDUCATION, HOUSING, TAXATION, etc.

UNITED STATES EMPLOYMENT SERVICE. See BUREAU OF EMPLOYMENT SECURITY.

UNITED STATES INFORMATION AGENCY. Completing its sixth year of operating an overseas program distributing information about the United States, this independent governmental agency (George V. Allen, director) continued to support United States foreign policies both in long-range objectives and in current international events. In 1959 the USIA maintained 200 field posts responsible to American diplomatic missions in 80 countries. Services were made available in the field and from the United States in radio, television, press, motion pictures, libraries, translations, exhibits, and other cultural areas. In its work the agency encountered strong Communist progaganda opposition, which was notably increased in Africa, the Near East, South Asia, and Latin America.

The agency made progress in presenting information about the United States to people in the Soviet Union and other eastern European countries. Nearly 3 million Soviet citizens saw the American National Exhibition in Moscow. Opened on July 24 by Vice President Nixon, accompanied by Soviet Premier Khrushchev, the exhibition was attended until September 4 by 50,000 to 75,000 people daily. More than 2.5 million guidebooks, largely financed by 25 American firms, were distributed to visitors, who saw consumer goods such as automobiles, a model house and furnishings, fashions, farm equipment, color television, a supermarket, voting machines, and some 8,000 books supplied by American publishers (about 100 of which were removed after objection by Soviet authorities).

In February the agency began distribution in Poland of a new Polish-language monthly magazine, *America Illustrated* (30,000 circulation), similar to the edition published in the Soviet Union since 1956. In October a new bimonthly cultural magazine, *Life in America,* was introduced in Arabic for circulation (50,000 copies initially) in the Near East.

Voice of America broadcasts in 1959 were carried in 37 languages. There were daily worldwide broadcasts of English and of music for 16 hours and 5¼ hours, respectively. Daily programs in all languages totaled 81½ hours. Beginning with the Khrushchev visit to the United States on September 15, Soviet jamming of broadcasts in six languages (a practice never applied to broadcasts in English) became only sporadic, but jamming in satellite countries continued. The press service continued its daily wireless coverage of background news for translation abroad, and distributed pamphlets and other publications in 85 languages.

In 1959 there were 158 libraries in 64 countries, and binational cultural centers were increased to 97 in 25 countries. Some 136,000 students were enrolled in English courses, in 55 countries. Book translations resulted in 6.9 million copies of 805 editions in 50 languages. The Informational Media Guaranty Program guaranteed the conversion to United States funds of $9.8 million of foreign currencies received by American publishers from sale of publications in 12 countries.

For the fiscal year ending June 30, 1960, Congress appropriated $101.5 million in operating funds (of $106.1 million requested), $2.75 million for amounts not recovered in the Informational Media Guaranty Program, and $9 million for construction of radio facilities. On June 30, 1959, the total of agency personnel was 11,060, including 2,667 in the United States and 8,393 abroad (7,145 of the latter being citizens of the host countries).

FRANKLIN L. BURDETTE,
Professor and Director, Bureau of Governmental Research, University of Maryland.

UNITED STATES MARINE CORPS. See MARINE CORPS, U.S.

UNITED STATES MARITIME COMMISSION. See MERCHANT MARINE; SHIPBUILDING.

UNITED STATES MINT. See MINT ESTABLISHMENT, U.S.

UNITED STATES NAVY. See NAVY, U.S.

UNITED STATES OFFICE OF EDUCATION. See OFFICE OF EDUCATION, U.S.

UNITED STATES SUPREME COURT. See LAW.

UNITED STATES TARIFF COMMISSION. See TARIFFS.

UNITED STATES TREASURY. See TREASURY DEPARTMENT, U.S.

UNIVERSITIES. See COLLEGES AND UNIVERSITIES; EDUCATION.

UPPER VOLTA. The Republic of Upper Volta is an autonomous republic of the French Community (q.v.), situated in western Africa. Estimated area, 105,839 square miles; pop. (est. 1958), 3,470,000, including (in 1956) 3,693 nonindigenous persons, mainly French. Chief cities are Ouagadougou, the capital (est. pop., 47,500), and Bobo-Dioulasso (41,700).

Government.—A former French overseas territory included within the federation of French West Africa (q.v.), Upper Volta chose the status of a member state of the French Community on Dec. 11, 1958. As an autonomous republic, Upper Volta has self-rule in domestic affairs, with the Community exercising control of foreign relations, defense, currency, strategic minerals, and certain other matters. Upper Volta adopted its constitution on Feb. 28, 1959, and it was approved by a referendum on March 15. The Legislative Assembly consists of 75 members elected for a five-year term by universal suffrage. The president of the council (premier) is invested by a majority in the assembly. Maurice Yameogo, leader of the Voltaic Democratic Union, is premier.

Education and Religion.—In 1958 there were 281 schools with a total of 39,896 pupils (7.8% of the school-age population). Expenditure on education amounted to 635.8 million francs CFA, or about 16.4% of the budget. The majority of the population are animists. The Hamitic peoples of the northeast are mostly Moslems, and there is a small minority of Christians.

Finance.—The territorial budget for 1958 totaled 4,081 million francs CFA, including an extraordinary budget of 538 million (the franc CFA equals 2 metropolitan francs). In the period 1947–57, French aid under the Economic and Social Investment Development Fund was equal to $44.7 million.

Transportation.—The Abidjan-Niger Railway runs southwestward from Ouagadougou to the port of Abidjan, in Ivory Coast, forming Upper Volta's chief link to the sea. Roads and trails total 10,288 miles (1956), including 1,322 miles of highways. The principal airports are at Ouagadougou and Bobo-Dioulasso.

Production.—The main economic activities are agriculture and stock raising. Cattle, sheep, and

goats are raised in the areas free from the tsetse fly, and livestock constitutes the republic's chief export. Subsistence crops include millet, sorghum, maize (corn), beans, sweet potatoes, and yams. Cash crops are mainly peanuts, cotton, shea nuts, sesame, and sisal. Fishing is of some importance for home consumption and export. Manufactures include chiefly the processing of vegetable oil and shea butter, and native handicrafts.

Foreign Trade.—Exports in 1958 totaled 1,131 million francs CFA; imports, 1,800 million. Chief exports and values in 1958 were live animals (596 million francs CFA), fish products (216 million), and ginned cotton (106 million). Ghana purchased 76% of 1958 exports; France purchased 19% of exports and provided 66% of imports.

Principal Events, 1959.—Upper Volta took part in the preliminary arrangements for the formation of the Mali Federation (q.v.), but on February 28 adopted a constitution which made no provision for membership in the federation. Elections on April 19 resulted in a victory for the Voltaic Democratic Union (local branch of the African Democratic Rally), which obtained 64 of the 75 seats in the Legislative Assembly. On April 27, Maurice Yameogo was re-elected premier, heading the first elected government of Upper Volta as an autonomous republic.

URANIUM. There was a further rise in the output of uranium ore, in milling capacity, and in consumption in countries outside the Communist bloc in 1958.

United States.—Although the domestic tonnage of uranium mined increased nearly 40%, the United States lost first place in mine production to Canada in 1958. Uranium ore receipts at all private plants and government purchase depots totaled 5,178,315 dry short tons, compared with 3,676,000 tons in 1957. The ore contained an average of 0.28% U_3O_8 and was worth more than $116 million. In 1958 the number of producing mines decreased, chiefly works producing less than 50 tons yearly, and the percentage of output by large producers rose, according to the U.S. Bureau of Mines. The output of uranium came chiefly from New Mexico, Utah, Colorado, Wyoming, Arizona, Nevada, Washington, and South Dakota; and the remainder, from Alaska, California, Idaho, Montana, and Texas. New Mexico led in tonnage of uranium produced at the mines, with Utah second; but the grade of the Utah production was 0.36% U_3O_8 against 0.21% for the New Mexican ore, which made Utah first in value and New Mexico second.

Private mills made 98% of ore purchases in 1958. The only Atomic Energy Commission (AEC) ore-buying station still operating was at Monticello, Utah. Domestic production from 23 uranium mills totaled 12,560 tons of uranium concentrate valued at $238 million, an increase of 45% over production in 1957. The modified federal domestic uranium-procurement program for 1962–66 forecast the annual requirement for domestic uranium at 35,000 tons of U_3O_8 from 1960 to 1966, according to the Bureau of Mines.

The bureau reports that an estimated 5,750 persons were employed by 624 domestic uranium shippers in 1958 (5,500 persons and 727 shippers in 1957). Approximately 1,825 persons were employed in the mills.

Uranium deliveries under long-term contracts from foreign producers comprise about 60% of the United States supply. As heretofore, the United States was Canada's major market for uranium in 1958. A total of 12,695 tons of uranium, expressed in terms of U_3O_8 content, was delivered to the United States in 1958. The schedule for 1959 calls for 13,400 tons. Other suppliers include the Union of South Africa, Belgian Congo, Australia, and Portugal. The AEC announced in 1958 that domestic producers of uranium ore and concentrates would be permitted to make private sales of the materials to licensed domestic and authorized foreign buyers for peaceful use of atomic energy.

World Production and Reserves.—Production of uranium in countries outside the Communist bloc in 1958 was estimated at 35,000 short tons of U_3O_8. Output in Canada totaled 13,537 tons, more than double that in 1957, and was the most valuable metal mined in the country. Most of the uranium produced in Canada is exported in its natural form only. Canada superseded the United States in first place, and the Union of South Africa ranked third, followed by Australia, Belgian Congo, France, Portugal, Italy, and the Federation of Rhodesia and Nyasaland. The number of uranium mills or plants in the free world producing concentrates, by a variety of chemical processes, totaled 66 in 1958.

According to data reported to the September 1958 Geneva Conference on the Peaceful Uses of Atomic Energy, inferred uranium reserves of the free world increased 500,000 tons over the reserves in 1957, or to 1.5 million tons of U_3O_8. Of this uranium reserve, 90% is in South Africa, Canada, and the United States. Ore reserves in the United States increased in 1958; the discovery rate of domestic uranium ore was about 10 million tons, or about twice that required to meet all needs for 1958.

(See also ATOMIC ENERGY and the Index entry, *Uranium.*)

F. E. HARRIS, *Former Publications Editor, "Mineral Trade Notes"; and* BERENICE B. MITCHELL, *Commodity Industrial Analyst, Division of Foreign Activities, U.S. Bureau of Mines.*

URBAN PLANNING AND RENEWAL. See CITY PLANNING; HOUSING.

URBAN TRANSIT. As of Jan. 1, 1959, the urban transit industry in the United States was composed of 1,300 operating companies. This total included 1,249 companies engaged exclusively in the operation of motorbuses; 35 companies having composite fleets, including motorbuses, electric railway cars, and/or trolley coaches; 15 companies engaged exclusively in electric railway freight and switching service; and 3 companies using railway facilities exclusively in passenger service. There were 6 rapid transit systems (elevated and subway operations) included in the foregoing. (See also MOTOR TRANSPORTATION.)

UNITED STATES URBAN TRANSIT INDUSTRY

	Calendar year 1959 (preliminary)	Calendar year 1958 (final)
Results of Operation:		
Operating revenues	$1,357,000,000	$1,349,500,000
Operating expenses[1]	1,246,000,000	1,266,560,000
Operating taxes[2]	65,800,000	66,110,000
Net operating revenues[3]	45,200,000	16,830,000
Operating Statistics:		
Number of passengers	9,550,000,000	9,732,000,000
Vehicle miles operated	2,172,800,000	2,201,000,000
Route miles operated[4]	110,000	111,370
Passenger vehicles owned[4]	66,700	67,150
Employees (average)	161,000	165,000
Total payroll	$ 825,000,000	$ 831,000,000

[1] Including depreciation. [2] Except federal income and excess profits taxes. [3] Before income deductions and federal income and excess profits taxes. [4] As of December 31.

During 1959 the transit industry operated 2.2 billion miles and carried 9.6 billion passengers. Some 110,000 miles of routes were served by 66,700 passenger vehicles. The facilities to furnish

the service required an investment of $3.8 billion. Average annual compensation for each employee during 1959 was $5,124 on an industrywide basis. Total wages and salaries of employees amounted to $825 million.

Material, supplies, and other services called for a further expenditure of $422 million. Operating taxes, including all taxes except federal income taxes, amounted to $66 million in 1959.

ARTHUR W. BAKER,
General Secretary, American Transit Association.

URUGUAY. Uruguay is located on the South Atlantic coast of South America, between Argentina and Brazil. With 72,172 square miles, it is the continent's smallest country. The population in 1959 was estimated at 2.75 million. Montevideo (pop. 965,000), is the capital and principal port. Paysandú (65,000) and Salto (55,000) follow in size. Spanish is the official language. The white population is principally of Spanish and Italian origin. Most nonwhites (2% Negro, 8% mestizo) live in the interior. Living standards probably average the highest in Latin America, with few extremes of wealth or poverty.

Government.—The 1951 constitution established a 9-member National Council of Administration, elected for a 4-year term by modified proportional representation. The cabinet of 9 members is supervised by the council, which makes decisions by a majority vote and which possesses the powers normally exercised by a president. Martín R. Echegoyen, of the Blanco (Nacional) Party, became council president and chief of state for one year on March 1, 1959, following the election of November 1958; he represents the 6 majority party members, while the Colorado party holds the 3 minority seats. A bicameral General Assembly legislates, may override the council's veto, interpellates and censures cabinet members, and elects the 5 members of the Supreme Court of Justice. The government owns many important businesses and utilities, and is committed to an extensive social security system.

Religion and Education.—Free public education through the National University was established in 1877. The literacy rate is about 85%, and Uruguay uses more newsprint (9.8 kilograms per capita in 1954) than any other Latin American country. Autonomous councils composed of professional educators direct the schools, which receive 19% of the national budget (compared with 9% for the army). Education is regarded as being at the highest general professional standard in Latin America.

There are many Protestant and evangelical churches, but most Uruguayans are nominal Catholics. The Catholic Church was disestablished by the 1917 constitution; religious teaching was prohibited in the public schools in 1909. The Catholic clergy is headed by Antonio María Cardinal Barbieri, and numbers about 260 priests and bishops.

Finance.—The monetary unit is the peso. Its official rate for trade purposes is 2.10 per U.S.$1, fixed in August 1956, but the open market rate on Dec. 31, 1959, was 11.10. The total government deficit for 1958 was 147.7 million pesos. Central administration expenses were 790.3 million, with a deficit of 90.7 million; in addition, foreign exchange operations lost 20 million, and government businesses lost 32.1 million. Tax reforms, including the adoption of a personal income tax, were expected to be adopted in 1960. The government's cost-of-living index (1948 = 100) was 244.7 on July 31, 1958, and 344 on July 31, 1959. There was much resultant social unrest.

Transportation and Communications.—The railroad system of 1,875 miles was purchased by the government from British owners in 1949. About 75% of operating costs go to wages, and deficits are chronic. A report by French consultants in 1959 urged modernization of equipment, the discharge of many employees, and curtailment of uneconomic branch lines and services. There are 26,000 miles of roads, with the 6,200 miles of all-weather highways in generally poor condition. At the start of 1957 there were 52,310 automobiles, 46,000 trucks, and 1,990 buses in use. Rivers provide 500 miles of navigable waterways. PLUNA, a government company, provides domestic air service. Foreign lines and PLUNA provide international service. Carrasco international airport at Montevideo is being expanded to accommodate jet aircraft.

Montevideo has the only television station; 56 radio stations serve the country, and about 450,000 radios are in use. About 132,000 telephones were in use in 1959, and international loans to expand service by an additional 52,000 were negotiated in 1959.

Agriculture.—About 30% of the normal national gross product is from agriculture; in 1951, 50% of the population was classed as rural. Of the productive land, 82.5% is devoted to stock raising, and the census of 1959 reported 6.9 million cattle and 21.3 million sheep. The wool clip for the 1958–59 season was 98,000 metric tons, but was expected to fall to 77,000 in 1959–60. Uneconomic practices in slaughtering and marketing of meat reduced deliveries to established markets and provoked continued smuggling to Brazil and black marketing in Montevideo. Importation of Argentine cows to increase meat production was planned late in 1959.

Wheat production in 1958–59, originally estimated at 900,000 tons, was reduced to about 250,000 tons due to torrential rains in April and May. In September, Argentina "loaned" 100,000 tons to meet the country's needs. Floods destroyed the normal surpluses of rice, corn, linseed, and other crops, and United States agricultural surpluses were imported under Public Law 480. Government policies of giving producers only a portion of the value of crops, by means of discriminatory foreign exchange treatment, with the balances used to support government businesses and social security measures, as well as to give more favorable treatment to industry, were responsible in part for the defeat of the Colorado Party in the 1958 elections. The new government is reversing these policies as conditions permit, but increased living costs have resulted.

Industry.—Manganese prospecting by German interests seems to offer promise for the future. Otherwise, sand, stone, and marble are the only known mineral raw materials. All branches of industry declined seriously in 1959 because of the cumulative effects of insufficient importation of raw materials. Construction remained active, but meat packing, textiles, and beverages dropped off. Assembly of consumers' "hard goods" from imported parts nearly ceased. Petroleum refining remained high, with crude oil provided by barter with the Soviet Union. Unemployment was estimated at 85,000.

Foreign Trade.—Trade in 1958 showed a favorable balance of $4 million, but exports totaled only $138.6 million, and imports were the lowest in over 20 years. Severe controls continued during 1959, but a trade deficit of $37 million for the year was expected by the government.

Leading exports in 1958, in order of value, were wool, 58%; meat and byproducts, 10.5%; hides and skins, 6.5%. Wool exports rose to 164,000 bales in the year 1958–59, with 24.8% going to the Soviet Union and 12% additional to Soviet satellites. Imports in 1958, in order of value, were raw materials, 41.7% (including fuels, lubricants, and crude petroleum, 25.9%); machinery, 8.4%; and construction materials, 5.6%. Exchange and import reforms planned in late 1959 would eliminate the favored position of countries with which barter agreements existed. A survey by the International Monetary Fund indicated some loss of export potential unless these and other reforms occurred.

Great Britain was the largest customer of exports (15.2%), followed by the Soviet Union (11.7%), Netherlands (10.2%), and the United States (7.7%). Imports came principally from Brazil (18.2%), Venezuela (13.3%), the United States (12.2%), and France (9.0%).

Principal Events, 1959.—Floods in April and May inundated the country after rainfall amounting to four times the seasonal normal. Salto was under 15 meters of water; roads, bridges, and rail lines were washed out, and the country's principal hydroelectric station was partially destroyed when water went over the top of Rincón del Bonete Dam. Much international aid was received, and special efforts toward recovery produced improvement by the end of the year.

The new government experienced much political difficulty. Luis Alberto de Herrera, longtime Nacionalista leader who had supervised the three-faction coalition composing it, died on April 8, five weeks after his party's assumption of power. Few qualified persons were available for government posts. The floods worsened the already serious economic situation. Brief adoption of limits on civil liberties met with strong union and student opposition. The opposition party tried to capitalize on the situation, but several parliamentary interpellations were generated from within the coalition itself. Benito Nardone's Ruralistas, whose defection to the Blancos won the party the 1958 election, demanded power considered excessive by the other factions.

Uruguay's support of a common market for southern South America was indicated by Montevideo's selection as the negotiation site. Soviet bloc economic penetration proceeded through trade agreements and commerce, and supported, in turn, increasing Soviet use of Montevideo as a propaganda and espionage center. Otherwise, Uruguay's relations with its neighbors were good, although the economic troubles produced an unaccustomed rising tide of nationalism in dealings with the United States and with the recommendations of the International Monetary Fund regarding economic recovery.

PHILIP B. TAYLOR, JR.,
Associate Professor of Political Science, Tulane University.

USSR. See UNION OF SOVIET SOCIALIST REPUBLICS.

UTAH. Western state, United States; admitted to the Union, Jan. 4, 1896. The "Beehive State" ranks 11th in area and 38th in population among the 50 states.

Area and Population.—Area: 84,916 square miles (land, 82,346; inland water, 2,570), divided into 29 counties. Population: (1950) 688,862; (est., July 1, 1958) 858,000. Urban places with 1950 populations above 7,500 are: Logan, 16,832; Murray, 9,006; Ogden, 57,112; Orem, 8,351; Provo, 28,937; Salt Lake City, *the capital*, 182,121; and South Salt Lake, 7,704.

Executive.—Chief state officers in 1959:
Governor: George D. Clyde (Republican)
Secretary of State: Lamont F. Toronto
Treasurer: Sherman J. Preece
Attorney General: Walter L. Budge
Auditor: Sid Lambourne
Supt. of Public Instruction: E. Allen Bateman

Constitution and Judiciary.—The present constitution went into effect in 1896. The Supreme Court comprises five justices; chief justice in 1959 was J. Allan Crockett.

Legislature.—The Utah Legislature comprises a 25-member Senate (in 1959, 13 Republicans and 12 Democrats) and a 64-member House of Representatives (42 Democrats and 22 Republicans).

In 1959 it met in both a regular session (January 12–March 13) and a special session (May 28–29).

The legislature appropriated approximately $200 million for the 1959–61 biennium, including $91.9 million for the General Fund. To help meet increased spending it enacted a comprehensive state income tax withholding system; extended the 2% sales tax to include lodgings, cleaning establishments, and certain labor services; and raised the oil-gas severance tax from 1% to 2%. The legislature permitted counties and municipalities to impose a 0.5% local sales tax and authorized a $5 million revolving fund for purchases of rights-of-way by the Road Commission.

The legislature also increased state support of public school operations, assigned $4 million for emergency school building needs, and began a 50-year continuing program to replace classroom units, the program to be jointly financed by the state and local school districts. The lawmakers authorized establishment of a junior college in Roosevelt, and permitted Weber College to become a four-year institution.

In miscellaneous actions the legislators created an independent Utah Insurance Department, ratified the Western Interstate Corrections Compact, permitted first- and second-class cities to change to a mayor-council type of government, provided for continuity of state government in the event of a nuclear attack; and generally increased workmen's compensation benefits.

Finance.—In the 1958–59 fiscal year, state revenue of $183,336,757.71 comprised $80,726,309.06 from tax sources, $44,150,819.67 from the federal government, and $58,459,628.98 from other sources. Tax revenue consisted of $25,745,995.21 from a 2% general sales tax, $12,434,916.84 from individual income taxes, $5,480,586.71 from corporate income taxes, $19,645,945.91 from motor fuel taxes, $4,693,315.76 from licensing, and $12,725,548.63 from other sources. Expenditures of $187,004,164.63 comprised $59,857,880.16 for education, $22,433,817.41 for health, welfare, and safety, $51,969,943.22 for highways, and $52,742,523.84 for other purposes.

Banking.—As of June 10, 1959, the state's 7 national banks had $478,453,000 in assets, $240,146,000 in demand deposits, and $186,624,000 in time deposits. The 42 state banks had assets of $497,970,489, demand deposits of $276,821,819, and time deposits of $178,411,834.

Education.—School attendance is compulsory between the ages of 6 and 17, inclusive. National Education Association estimates for the 1959–60 school year placed operating expenditures for public elementary and secondary school education at $74 million ($345 per pupil). Revenue was estimated at $44,275,000 from local school districts, $42 million from the state, and $3 million from the federal government. Capital outlays approximated $26,500,000, and teachers' salaries averaged an estimated $4,975.

In the 1959–60 school year there were an estimated 140,900 pupils and 4,232 teachers in public elementary schools, and 92,300 pupils and 3,488 teachers in public secondary schools. College and university enrollment (1958–59) was 30,972.

Public Assistance.—In the 1958–59 fiscal year, public assistance expenditures from federal and state funds (excluding institutional costs) totaled $15,962,960.01, including $6,667,828.26 for the aged, $5,298,614.64 for dependent children, and $1,749,195.48 for the permanently and totally disabled. A monthly average of 29,036 persons received assistance.

Labor Force.—The state's labor force totaled 294,081 persons in December 1958, including 31,475 agricultural workers. Nonagricultural employment of 253,700 in November 1959 was slightly above the 249,500 of the previous November and the average of 251,972 for the 12 intervening months. Major sources of nonfarm employment in 1959 were manufacturing (18%), trade (22%), and government (24%). The 13,300 unemployed persons in November 1959 (up from 12,600 in the previous November) included 1,200 workers on strike against the Kennecott Copper Corporation and 800 in its Garfield refinery. The former group was called back to work on Dec. 25, 1959; the latter had to await a build-up of supplies.

Manufacturing.—The 1,090 manufacturing plants in the state in 1958 employed an average of 38,855 persons who received $192,859,599 in wages. Value added by manufacture (1957) totaled $473,514,000, and outlays for new plant and equipment amounted to $33,650,000. Production workers averaged $98.53 for an average workweek of 41.4 hours in August 1959. The principal industry is that of food and kindred products, which in 1957 employed 7,183 persons who received $29,086,000 in wages, and which added $62,372,000 in value by manufacture.

Mining.—In 1958 Utah stood 13th among the states in the value of its mineral output, with 2.21% of the national total. The state yielded all of the nation's output of gilsonite; ranked second in asphalt, byproduct arsenic, copper, gold, molybdenum, silver, uranium, and vanadium; and stood third in lead and potash.

Agriculture.—Cash farm income for the first nine months of 1959 dropped slightly to $108,483,000 from $112,687,000 for the corresponding period of 1958. For the full year 1958, income comprised $127,797,000 from livestock and livestock products, $33,488,000 from crops, and $5,596,000 from government payments. Principal cash sources in

UTAH MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Asphalt (gilsonite)	317,280	$ 4,864,000
Coal	5,328,000	30,340,000
Copper	189,184	99,511,000
Gold (ounces)	307,824	10,774,000
Iron ore, usable (long tons)	3,514,000	25,202,000
Lead	40,355	9,443,000
Natural gas (million cu. ft.)	19,247	2,829,000
Petroleum (bbl.)	24,386,000[1]	72,914,000[1]
Salt (common)	184,000	2,275,000
Sand and gravel	25,304,000	14,379,000
Silver (ounces)	5,278,000	4,777,000
Stone	13,126,000	13,949,000
Uranium ore	1,239,767	38,583,000
Zinc	44,982	9,176,000
Other minerals	...	28,007,000
Total	...	$365,960,000[2]

[1] Preliminary. [2] Total adjusted to eliminate duplication in the value of raw materials used in the manufacture of cement and lime. (Source: U.S. Bureau of Mines.)

1958 were cattle, $49,097,000, and dairy products, $27,178,000.

The state had 23,700 farms in 1958. Total acreage (1954) of 12,262,000 included 1,229,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 720,000 cattle, 1,301,000 sheep, and 2,229,000 chickens (excluding commercial broilers). There were 47,222 family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1954.

UTAH CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	404	330	350
Apricots (tons)	5,370	4,000	5,800
Barley (1,000 bu.)	6,470	7,257	7,965
Cherries (tons)	5,494	7,050	2,550
Hay (1,000 tons)	1,240	1,403	1,348
Peaches (1,000 bu.)	523	420	470
Potatoes (1,000 cwt.)	1,641*	1,550	1,438
Sugar beets (1,000 short tons)	443	429	567
Wheat (1,000 bu.)	7,752	5,141	5,355

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $49,577,192.83, and 363.8 miles of new, reconstructed, and resurfaced roads were completed.

Highways and roads on Jan. 1, 1959, totaled 33,351.2 miles (17,371.5 surfaced). Registered *motor vehicles* numbered 389,641 on Dec. 31, 1958, including 301,975 passenger cars. There were (1959) 8 *railroads* operating (Dec. 31, 1958) 1,751.82 line miles; (1959) 5 regularly scheduled *airlines;* and (1959) 155 *airports and airfields* (47 commercial and municipal, 5 military, 100 private and 3 CAA intermediate).

Communications media (1959) included 25 AM and 2 FM *radio stations;* 5 VHF *television stations;* 5 daily *newspapers* (circulation, 236,934) and 53 other newspapers (97,037); and (January 1) 90,500 business and 230,000 residential *telephones.*

Principal Events, 1959.—Among the knotty problems considered by the state legislature during its 60-day regular session were a Sunday closing law (vetoed by the governor), repeal of the right-to-work law (failed to pass), withholding of state income tax (passed), and a 0.5-cent optional sales tax for municipal and county governments (passed and adopted by 8 counties and 40 municipalities). (See also above, *Legislature.*)

In Salt Lake City, voters approved a $2,500,000 general obligation bond issue for airport improvements, on the assurance by the City Commission that the cost of the improvements would be fully paid out of airport revenues. The Mayor's Citizens Committee on Capital Improvements made a recommendation for a $28 million outlay for capital improvements, with $17,500,000 to be appropriated immediately and the balance to be spread over a 20-year period. In the municipal election in November former Gov. J. Bracken Lee

U.S. BUREAU OF RECLAMATION (A. E. TURNER)

Aerial view of site of Glen Canyon Dam shows new Glen Canyon Bridge, officially opened by the governors of Utah and Arizona on February 20. One of the highest steel arch spans in the world, the bridge stands 700 feet above the Colorado River in northern Arizona. Utah will benefit from irrigation and power to be furnished by the vast project.

was elected mayor. Once a Republican, he ran as an independent and defeated Bruce S. Jenkins, a Democratic member of the state Senate. Also in Salt Lake City, ground-breaking ceremonies were held the week of July 18 for the first unit of the $10 million University of Utah Medical Center.

Utah's negligent-homicide law was upheld as constitutional by the state Supreme Court in a 4–1 decision. Salt Lake County's first grand jury since 1948 was called the week of May 2, and the first week in July a grand jury was ordered for Davis County.

Economically, 1959 was marked by heavy drought, declining mineral prices, and strikes in the copper and steel industries. However, this was somewhat offset by the booming missile industry. Contracts totaling nearly a billion dollars have been awarded to several Utah firms for development of national defense weapons. Continued exploration by oil companies in San Juan County led to substantial finds of natural gas and petroleum. Highway construction and dam projects on the Colorado River also helped to keep payrolls high.

Further diversification was brought to the state's economy by the growing tourist business. The new state park land acquisition program will provide recreational facilities and easier access to scenic areas. The program got under way with an initial fund of $1 million. Dead Horse Point, on the Colorado River in San Juan County, was purchased by county and state agencies and made a state park. Another attraction for tourists was the Railroad Village Museum, dedicated May 9 at Corinne near the point where the two stretches of the first transcontinental railroad were joined in 1869.

In the early summer, Gov. George D. Clyde, along with several other state governors, spent four weeks touring the Soviet Union under the auspices of the National Conference of Governors.

Principal Events by: ELLSWORTH E. WEAVER,
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UTILITIES. See PUBLIC UTILITIES and the Index entry, *Public Utilities.*

VACCINES. See MEDICINE; PEDIATRICS; RESPIRATORY DISEASES; and the Index entry, *Vaccines.*

VANADIUM. See MINERAL PRODUCTION.

VAN ALLEN RADIATION LAYERS. See ATMOSPHERE RESEARCH; SPACE FLIGHT.

VANCOUVER. Located on British Columbia's Burrard Inlet, with 100 miles of waterfront and 50 square miles of deep-sea anchorage, Vancouver is Canada's third largest city and most important Pacific seaport. The city occupies 44 square miles and has a population (est. 1958) of 407,000. The metropolitan area (est. pop., 1959, 583,000) includes North and West Vancouver, Burnaby, Richmond, and the University of British Columbia.

Vancouver is governed by a City Council of 10 aldermen and a mayor. The city sends 9 members to the provincial Legislative Assembly and 6 to the House of Commons in Ottawa. Mayor Tom Alsbury, elected in December 1958 with the endorsement of both labor groups and the Civic Voters' Association, immediately demanded provincial assistance in 1959 for education, health services, social welfare, and roads. The City Council raised a protest by barring press and public from administrative meetings and by increasing taxes to meet its 1959 budget of $56,207,721.

An elected board of 9 members, administering 92 elementary and secondary schools, as well as trade schools, will spend an estimated $24 million in 1959, $2 million more than in 1958. Approximately 22,000 students attend night classes. The University of British Columbia registered 10,570 in September 1959.

Vancouver's 120 parks, comprising 2,890 acres, are supervised by an elected, unpaid board of 7 members, which recommended in 1959 that new park land be added either inside or outside the city. The question of whether Boundary Bay, to the south and east, should be developed for industrial or recreational use was also under debate.

Building permits issued to Sept. 30, 1959, amounted to $48,653,175, an increase over 1958, and completed projects included a $10 million shopping center; the General Hospital's $8 million, 500-bed addition; and 5 university buildings costing almost $6 million. Strikes in 1959 delayed construction on a $3 million medical building, a $2.5 million office building, and a $1 million sewage disposal plant.

Incoming cargoes to the port were down in 1958 to 4,409,154 tons; due to strikes, outgoing tonnage was also down to 7,220,477. Grain shipments for the season were also lower, with 146,419,067 bushels being sent to Japan, Germany, the Netherlands, South Africa, and the Soviet Union. Lumber was again second in importance.

Polluted beaches were resanded in 1959, and enforcement of litter laws resulted in cleaner city streets. In July a crowd of 420,000 watched Canada's greatest jet airplane show over the city. Queen Elizabeth II and Prince Philip made a one-day visit to Vancouver on July 15 in the course of their summer tour of Canada. The queen opened the $6 million, 2,800-seat theater named in her honor and first used by the second annual Vancouver International Festival during its five-week summer program of musical, dramatic, and artistic events. Her Majesty also officially declared open the $23 million Deas Island Tunnel under the Fraser River, part of a four-lane freeway that will extend from Vancouver to the United States border (see also BRITISH COLUMBIA; TUNNELS). Prime Minister John Diefenbaker visited the city in August.

Again in 1959 the need for a coliseum was indicated, as well as for additional bridges, tunnels, and freeways to solve growing metropolitan traffic problems.

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VANGUARD SATELLITES. See SPACE FLIGHT.

VANIER, George Philias, Canadian governor general: b. Montreal, Quebec, Canada, April 23, 1888. Approved as governor general of Canada on Aug. 1, 1959, by Queen Elizabeth II, George Philias Vanier is the first French Canadian to hold that post. Succeeding Vincent Massey, he took office on September 15.

After attending Laval University, where he received his LL.B. degree in 1911, he practiced law in Montreal until the outbreak of World War I. During the war he served in France with the Royal 22d Regiment. Twice seriously wounded, he lost his right leg as a result of his second injury. By the end of World War II he had been elevated to the rank of major general.

General Vanier served twice as an aide-de-camp to his country's governors general, in 1921–22 and 1926–28. In the latter year he became Canada's representative to two commissions of the League of Nations: the Permanent Advisory Commission for Military, Naval and Air Questions and the Preparatory Disarmament Commission. In 1930 he was a Canadian delegate to both the London Naval Conference and the League of Nations.

In 1931, Vanier was appointed secretary to the high commissioner for Canada in London, and in

Maj. Gen. George P. Vanier, installed as Canadian governor general (succeeding Vincent Massey) on Sept. 15, 1959.

WM. NOTMAN & SON

1939 he was named Canadian minister to France, but served only until the spring of 1940, when France fell to the Axis. During the remainder of that year he was a member of the Canadian section of the Permanent Joint Board on Defense of Canada and the United States. In 1941–42 he commanded the 5th Military District, with headquarters at Quebec.

In January 1943, Vanier became minister to the Allied governments-in-exile in London. Later in the year he was appointed to the French Committee on National Liberation, an assignment which took him to Algiers in 1944. In November 1944 he returned to Paris as ambassador to France, remaining in that post until his retirement on Jan. 1, 1954.

VARNISH. See PAINTS, VARNISHES, AND LACQUERS.

VATICAN CITY. An independent papal state within the city of Rome. Area, 108.7 acres; pop. (est. 1952), 651 citizens and 296 residents. Vatican City includes the Basilica of St. Peter, Vatican Palace, the Vatican Gardens, the Vatican Observatory, and some detached palaces and churches. Vatican City was recognized by Italy as an independent state, with the pope as its head, by the Lateran Treaty of 1929. The treaty, slightly modified, was included in the Italian Constitution of 1947.

The pope exercises sovereignty with complete executive, legislative, and judicial powers, in accordance with canon law and pontifical rules. Pope John XXIII (Angelo Giuseppe Roncalli, b. 1881) acceded to the papal throne on Nov. 4, 1958. Executive power is exercised through a governor responsible to the pope. The Holy See has ac-

credited diplomatic representatives in some 40 countries. The city-state has its own currency, railway station, stamps, newspaper, postal system, radio station, and also certain buildings and facilities within Rome proper and outside Rome enjoying extraterritorial rights. The Pontifical Swiss Guard, which serves for ceremonial purposes and also bears the chief responsibility for security in Vatican City, was reduced from 133 to 100 in 1959, by order of Pope John XXIII.

The pope received President Dwight D. Eisenhower in a private audience on Dec. 6, 1959. Other papal audiences during 1959 included those with Queen Mother Elizabeth and Princess Margaret of the United Kingdom (April 22), King Hussein of Jordan (April 30), President Giovanni Gronchi of Italy (May 6), President Sukarno of Indonesia (May 14), King Paul and Queen Frederika of Greece (May 22), President Celal Bayar of Turkey (June 11), President Charles de Gaulle of France (June 27), and President Habib Bourguiba of Tunisia (July 19). (See also RELIGION—*Catholicism;* ROMAN CATHOLIC CHURCH.)

VEGETABLE OILS. See FATS AND OILS.

VEGETABLES. Production of vegetables in the United States declined in 1959. The Agricultural Marketing Service reported that the total for 28 crops of vegetables and melons produced for the fresh market was 206,533,000 cwt., 3% below 1958 and near average. Output of the 10 principal vegetables for processing fell 8% below the preceding year to 6,928,000 tons, but was 9% above average.

U.S. PRODUCTION OF COMMERCIAL VEGETABLES AND MELONS FOR FRESH MARKET
(In 1,000 cwt.)

Crop	Average 1949–57	1958	1959
Vegetables:			
Artichokes	317	329	376
Asparagus	1,132	1,314	1,254
Green lima beans	472	328	276
Snap beans	5,301	4,449	4,387
Beets	707	530	470
Broccoli	1,983	2,192	2,260
Brussels sprouts	556	570	590
Cabbage	22,007	21,166	19,043
Carrots	14,920	15,215	13,615
Cauliflower	4,616	4,646	4,120
Celery	14,367	14,069	15,227
Sweet corn	11,532	13,169	13,307
Cucumbers	3,777	4,047	3,658
Eggplant	476	422	498
Escarole	650	758	938
Garlic	162	218	272
Kale	202	162	175
Lettuce	30,597	32,697	33,011
Onions	22,242	23,742	25,561
Green peas	529	237	273
Green peppers	2,583	2,412	2,578
Shallots	155	86	62
Spinach	1,998	1,654	1,564
Tomatoes	19,015	18,824	19,609
Total vegetables	160,296	163,236	163,124
Melons:			
Cantaloups	11,814	12,601	12,733
Honeyball melons	26	...	...
Honeydew melons	1,449	1,285	1,239
Watermelons	28,841	36,306	29,437
Total vegetables and melons	202,426	213,428	206,533

(Source: Agricultural Marketing Service, U.S. Department of Agriculture.)

A 29% smaller watermelon crop accounted for most of the drop from 1958 in the fresh market total, though production of cabbage and carrots also was down considerably. New production records were set by onions, sweet corn, escarole, and garlic. Value of the 28 crops was estimated at $792,435,000, compared with $762,395,000 in the preceding year. Tomatoes ranked first in value at $143,182,000, followed by lettuce at $126,971,000, and onions at $60,143,000. Fresh market crops were harvested from 1,917,980 acres in 1959, 5% fewer than in 1958.

WIDE WORLD

Britain's Queen Mother Elizabeth (right center) and Princess Margaret, photographed after papal audience at Vatican City on April 22, 1959. The royal party is accompanied by Count Giovanni Chiassi (in uniform, at left) and Papal Ceremonial Secretary Msgr. Beniamino Nardone (in frock, at right), and is flanked by members of the famed Swiss Guards.

California, the leading vegetable-producing state, accounted for 22% of the fresh market crop, a third of total vegetable and melon production, and 40% of the total value. Florida had 12% of production; Texas, 8%; Arizona, 7%; and New York, 6%.

Changes in production of vegetables for processing from 1958 were sharp, ranging from an increase of 25% for spinach to a decline of 31% for cabbage. The 10 crops were harvested from 1,563,720 acres, 68,590 more than in 1958. Production was valued at $259,443,000, compared with $280,297,000 the preceding year. The tomato crop was worth $86,222,000; green peas, $41,406,000; and snap beans, $39,550,000. California accounted for a third of total production; Wisconsin, a tenth; and Minnesota, Illinois, and New York, between 5 and 6% each.

U.S. PRODUCTION OF VEGETABLES FOR COMMERCIAL PROCESSING
(In tons)

	Average 1948–57	1958	1959
Asparagus	105,830	111,300	118,300
Lima beans (shelled)	93,300	88,800	82,700
Snap beans	290,700	364,500	368,700
Beets (for canning)	153,300	153,200	142,000
Cabbage (for sauerkraut)	200,700	203,000	141,000
Sweet corn (in husk)	1,376,400	1,329,900	1,578,800
Cucumbers (for pickles)	293,500	356,800	335,200
Green peas (shelled)	449,800	485,800	471,200
Spinach	124,700*	121,700	151,800
Tomatoes	3,298,300	4,287,400	3,538,300
Total	6,386,530	7,502,400	6,928,000

* Average for 1949–57. (Source: Agricultural Marketing Service, U.S. Department of Agriculture.)

Annual consumption of vegetables, which has fluctuated around 200 pounds (fresh equivalent) per person during the last decade, declined slightly in 1959, reflecting lower production. While total consumption has been relatively stable for several years, significant shifts have occurred in the form in which vegetables are consumed. Use in fresh form has declined and in 1959 was 18% less than the 1947–49 average. Consumption of canned vegetables was 14% higher. Use of frozen vegetables rose 172% over the decade, but amounted to only about 15 pounds per person. Use of potatoes, after declining for many years, has tended to stabilize, and in 1959 was 10% below 1947–49. Consumption of sweet potatoes has dropped 45% over the decade, while use of dry beans was up 15% and use of dry peas was up 17%.

Potatoes.—Production in 1959 fell 9% below 1958, but the total of 242,998,000 cwt. was 6% above the 1949–57 average. Production by seasons was as follows: winter, 4,005,000 cwt.; early spring, 3,144,000; late spring, 23,558,000; early summer, 14,215,000; late summer, 32,916,000; and fall, 165,160,000. The total acreage from which potatoes were harvested in 1959 was 1,392,200, 5% below 1958, and the average yield per acre of 174.5 cwt. was 6.6 cwt. below the 1958 record (but still third highest). Leading producing states in 1959 were: Idaho, 40,222,000 cwt.; Maine, 34,606,000; California, 27,528,000; New York, 15,937,000; and North Dakota, 12,000,000.

Sweet Potatoes.—The downward trend in production was reversed in 1959 when the crop rose 8% above 1958 to 18,703,000 cwt., though it still was 4% below average. Yields per acre reached a new record of 68 cwt., 2.6 cwt. above 1958, but the acreage harvested declined 3% to 275,100. States producing the largest crops were: Louisiana, 5,022,000 cwt.; North Carolina, 2,560,000; Virginia, 1,958,000; Texas, 1,495,000; and New Jersey, 1,360,000.

Dry Beans.—The fifth largest crop on record—18,212,000 bags (100 pounds each, cleaned)—was harvested in 1959, but output was 5% below the 1958 record. Acreage harvested totaled 1,477,000, down 8% from 1958. The average yield of 1,233 pounds per acre was a record. The leading classes in 1959 were pea (navy), 5,778,000 bags; pinto, 4,259,000; and Great Northern, 2,130,000. The largest state crop was produced by Michigan (5,974,000 bags), followed by California (3,718,000), Idaho (2,592,000), Colorado (1,602,000), and Nebraska (1,188,000).

Dry Peas.—Production rose sharply in 1959; the 4,375,000 bag (100 pounds each, cleaned) total was 76% larger than in 1958 and 37% above average. The estimate excludes Austrian peas. Output of all classes increased, with the largest totals shown by Alaskas and other smooth green peas (2,718,000 bags), and Canadas and other smooth white and yellow varieties (889,000 bags). The United States crop was harvested from 300,000 acres, 96,000 more than in 1958. Yield reached a new record of 1,458 pounds per acre. Most of the crop was produced in Washington (2,190,000 bags) and Idaho (1,827,000).

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VENEREAL DISEASES. Venereal Disease Morbidity.—During the fiscal year ending June 30, 1959, 359,670 cases of venereal disease were reported by state health departments in the United States. This total comprised 119,981 cases of syphilis, 237,318 cases of gonorrhea, and 2,371 cases of minor venereal diseases.

The most infectious stages of syphilis showed a significant increase. In 1959, 8,178 cases of primary and secondary syphilis were reported, as compared with 6,661 cases in 1958, an increase of 23%. Twenty-nine states and the District of Columbia recorded increases in 1959 in primary and secondary syphilis. Increases in infectious syphilis were reported by both clinics and private physicians, and occurred in Negroes and whites and in both sexes.

Reported case rates of venereal disease are much higher in large cities than in rural areas in the United States. In fact, the large cities accounted for most of the current increases in infectious syphilis.

The other venereal diseases—chancroid, lymphogranuloma venereum, and granuloma inguinale—accounted for 2,371 cases, less than 1% of all reported venereal disease cases.

Venereal Disease Among Teen-agers and Young Adults.—In 1959, teen-agers and young adults (15 to 24 years of age) accounted for 54% of the primary and secondary syphilis and gonorrhea cases reported in the United States. One out of five infectious venereal disease cases reported was among teen-agers. More females were infected with a venereal disease at 18 years of age than any other age.

Activities of Health Departments.—During the year ending June 30, 1959, venereal disease clinics in the United States examined 1,911,557 persons suspected of having a venereal disease and found 251,023 to be infected. Another 66,943 persons named as sex contacts by infected patients were given prophylactic treatment as a preventive measure against the development of the disease.

Health department nurses and investigators interviewed 158,252 civilian patients to learn their sex contacts and obtained identifications of 207,096 contacts. Public health workers completed 431,823 field investigations of sex contacts and other venereal disease suspects. About 80%, or 344,352, of these contacts and suspects were located and examined. Of those examined, 111,581 were found to be infected and were given treatment.

Selective blood testing surveys conducted in 32 states included 801,465 persons, of whom 60,463 had positive test results.

The new "cluster testing" case-finding method, which extends the contact investigation process to include blood testing of associates of patients and of contacts, was conducted in 25 states during the year. The number of infectious syphilis cases found by this method was about 25% greater than that found by routine contact investigation in the same states.

Private Physician Participation.—Venereal disease control personnel made an intensive effort during 1959 to increase private physician participation in venereal disease control work, particularly in the epidemiology of early syphilis. Progress has been noted in better case-reporting by private physicians, and more of their infectious cases are being interviewed for sex contacts by trained interviewers from the health department.

Research.—The Venereal Disease Experimental Laboratory at Chapel Hill, N.C., and the Venereal Disease Research Laboratory at Chamblee, Ga., continued to conduct research studies in the laboratory aspects of the diagnosis of venereal disease. The Venereal Disease Research Laboratory serves as a World Health Organization Serological Reference Center.

One of the more significant advances in venereal disease control in recent years was the application of the flourescein-tagged antibody technique to the diagnosis of gonorrhea in the female.

In 1959 a cooperative study to evaluate the incidence of reactors to penicillin therapy was initiated in the public clinics of some 20 states in the United States. Preliminary results based on some 22,000 cases treated indicate an incidence rate of 9 reactions per 1,000 cases treated.

An antibiotic evaluation study, designed to determine the effectiveness of other broad-spectrum antibiotics in the treatment of syphilis, was started in 32 participating clinics in 26 states in the United States during 1959.

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VENEZUELA. Located on the northern coast of South America, Venezuela is bordered by the Car-

ibbean Sea on the north, Colombia on the west, British Guiana on the east, and Brazil on the south. Its area is 352,141 square miles, divided geographically into four regions: the eastern spur of the Andes where most Venezuelans live; the Maracaibo Basin; the Orinoco Basin, or llanos; and the Guiana Highlands.

Population.—Natural increase and heavy immigration (about 50,000 annually) account for the 3.66% annual growth of Venezuela's population, which in 1959 was estimated at 6,877,064. About 70% of the people are mestizo (mixed Indian and white), and 10% are mulattoes and zambos (mixed Indian and Negro). There were 105,000 tribal Indians in 1950. Immigrants (estimated at 850,000 in 1959) are primarily Italian (31%) and Spanish (28%). Urban growth has increased almost 7% per year, while there has been a small decline in the rural population; within the past decade urban population has risen from less than half to more than two thirds of the total. The estimated population of metropolitan Caracas, the capital, in December 1959 was 1,100,000. Maracaibo (424,357) and Barquisimeto (206,242) are the next largest cities. Spanish is the official language.

Government.—A federal republic, presently operating under the constitution of April 15, 1953, Venezuela is divided into 20 states, 2 territories, a federal district, and 72 island dependencies. The president, Rómulo Betancourt, was inaugurated for a five-year term on Feb. 13, 1959. A newly elected bicameral Congress convened on Jan. 19, 1959; the Senate of 51 members (including 2 from each state and territory) and the Chamber of Deputies of 133 members (one for every 50,000 persons) were empowered to approve the country's 23d constitution since its independence in 1822. The left-of-center Democratic Action Party has a substantial majority in both houses of Congress (32 senators and 73 deputies), followed by the left-of-center Democratic Republican Union (URD) with 11 senators and 34 deputies. Six senators and 19 deputies are members of the moderate Christian Socialist Party (COPEI), and there are 2 Communist Party members in the Senate and 7 in the Chamber of Deputies. A coalition cabinet, which has excluded Communists, serves the president.

Education and Religion.—The 1959–60 budget for education totaled 463 million bolivares, 390% above 1957–8.[1] The new educational program resulted in a record school attendance for the year 1959–60. Primary school enrollment reached 1,100,000, leaving 100,000 rural children without school facilities. A total of 103 primary schools were readied for occupancy in September 1959, and an additional 106 were under construction. High school attendance increased by 20% to 85,000. Most of the 330 high schools were private, although 22 new public secondary schools had been constructed during the year.

The number of public school teachers had doubled since the last years of the Marcos Pérez Jiménez dictatorship, reaching 16,000 in September 1959, and there were another 14,000 private school teachers; but the rapid expansion of school facilities had resulted in a teacher shortage. High school graduates were given special training to teach in the primary schools; 150 high school teachers from Chile, Costa Rica, and Puerto Rico were employed; and teachers colleges were being expanded as were literacy programs for the more than 2 million Venezuelans who could not read and write.

Normal school enrollment had increased by 50% to 9,480 students, who were attending 57 schools; 4 of these schools commenced operations in September 1959, and 4 more were under construction. Government-supported universities had increased from 3 to 5; together with 2 private colleges, they were training more than 10,000 students. Roman Catholicism is the prevailing religion, and most of the private schools were run by the church.

Finance.—In 1959–60, an ordinary and a special budget called for total expenditures of Bs.6,134 million (50% above the previous year), of which 31% was devoted to public works. The special budget of Bs.1,065 million was not covered by anticipated income, and would have to be financed through the sale of bonds issued by the government or autonomous agencies. Heretofore, there was no long-term government debt.

The gross national product in 1958 was estimated by the U.N. International Monetary Fund to have increased 12% over 1957, reaching $6.4 billion; the U.N. Economic Commission for Latin America, however, reported a 2% decrease in the 1958 gross national product. The estimated per capita income of $916–$973 was the highest in Latin America. Although the daily wage of field petroleum workers averages $13, labor in small factories receives only $1.80, and farm workers earn between $100 and $280 a year.

New foreign investment in Venezuela's petroleum industry dropped significantly in 1958 over the previous two years. Accumulated net foreign investment in 1957 reached $2.74 billion dollars, of which 63.6% was from the United States, 23.1% from the Netherlands, and 10% from the United Kingdom. The Central Bank's gold and foreign exchange holdings recovered from a low of $1,050 million in the last quarter of 1958 to reach $1,082 million in May 1959. The cost-of-living index (1953 = 100), which averaged 105 in 1958, increased again to 107 in June 1959.

Transportation and Communications.—Venezuela's 1959–60 highway construction program includes the development of 800 miles of new highways and the paving of all unpaved roads (to be completed by 1964). In 1958 a total of 15,000 miles of roads, 8,000 of which were all-weather, traversed the nation. There were 212,745 passenger cars and taxis and 108,566 commercial vehicles registered in September 1958.

The modernization and extension of the country's 17 local railway lines of 590 miles are being carried out. The first line of the new system, extending 109 miles from Puerto Cabello to Barquisimeto, was placed in service in January 1959. Another 17-mile line was transporting coal from Naricual to the port of Guanta in February. Five scheduled and nine nonscheduled Venezuela airlines, together with 11 foreign airlines, provide freight and passenger service. The Venezuelan merchant marine ranks fourth in South America in both gross tonnage and number of vessels (there are 48 vessels, 31 of which are tankers).

Venezuela's network of telephones, estimated at 146,334 in 1958, were 95% automatic; and connected Caracas with Maracaibo and 10 other cities. The government provides radio telephone connections with 30 interior towns, and telegraph service to all towns and cities. In 1958 Venezuela had three television stations, all located in Caracas, and 200,000 television receivers. About 70 radio broadcasting stations serviced 900,000 receivers.

Petroleum Industry.—Since 1955, Venezuela has been the world's largest oil exporter (20% of the total in 1958) and, as a producer, is second only to the United States. Petroleum, therefore, is the basis of the nation's economy, supplying about 75% of the government's revenues and 97% of its foreign exchange in 1958. Less than 2% of the employable population (46,000) were directly employed in the industry. Oil production increased from a daily average of 2.6 million barrels in 1958 to 2.8 million barrels in the January–July period of 1959, despite the voluntary restriction of exports to the United States market. In 1958 local refineries handled more than 25% of production, having a daily barrel capacity of 793,370. The Netherlands Antilles (Curaçao and Aruba) refine most Venezuelan oil. While more than half of the natural gas is burned off, there were 30 gas injection plants, with a capacity of 710 million cubic feet daily, for the recovery of petroleum in January 1958. A 200-mile gas pipeline, Anaco-Caracas, with a daily capacity of 6.2 million cubic meters, began servicing a thermoelectric plant in July 1959; this was the first section of a 1,000-mile network to be completed at a cost of $448 million.

Other Mineral Industries.—Commercial mining in Venezuela is confined at present to iron ore, diamonds, gold, coal, asbestos, and salt. Other known mineral resources include phosphates, magnesite, mercury, antimony, nickel, manganese, lead, copper, and sulfur. With the exception of iron ore and asbestos enterprises, the mining industry is Venezuelan owned.

About 80% of the 15,484,543 metric tons of iron ore produced in 1958 was mined at Cerro Bolivar by a subsidiary of the U.S. Steel Corporation (iron ore production January–June, 1959 reached 7,975,150 metric tons). A long rainy season lowered the production of diamonds by 37% in 1958 to 89,565 carats. Gold output in 1958 was down 15% to 2,364,129 grams. Venezuela's 1958 production of asbestos was up 8% to 8,267 metric

Clouds of tear gas hug the pavement of a Caracas, Venezuela, plaza, following riot of unemployed workers on August 4 in which 4 persons were killed and 46 wounded. Series of riots was set off by governmental labor measures.

WIDE WORLD

[1] A rate of 3.335 bolivares per U.S.$1 applies to nonpetroleum exports, and rates of Bs.3.09 to Bs.3.05 per U.S.$1, to petroleum exports. The rate of Bs.3.35 per U.S.$1 applies for all imports.

tons—more than in any other Latin American country. There were 88,210 metric tons of salt and 36,450 metric tons of coal produced in 1958.

Political disturbances temporarily slowed construction activities in 1958; cement production accordingly dropped 2% to a total of 1.7 million tons.

Agriculture.—Venezuela's growth in other sectors of its economy was not matched by food production in 1958 (food imports cost more than $20 per person). The principal agricultural products are coffee, cacao, sugar, rice, corn, tobacco, cotton, plantain, and sisal. To supplement domestic production, 15 to 20% of Venezuelan foodstuffs are imported; $135 million was paid for food imports in 1958. Dried milk, wheat, canned fruit, eggs, and meat were supplied from abroad in 1958 and 1959.

Estimated rice production for 1959 totaled 30,000 metric tons, 6,000 tons below consumption needs. Self-sufficient in corn, Venezuela also produced 50% of the wheat and flour it consumed in 1959; coffee, cocoa, and occasionally sugar are exported.

A five-year, $180 million program for the development of beef cattle (the cattle population in 1959 was 6,674,000 head) was inaugurated in August 1958 with the shipment of beef cattle from the United States. Credits and technical assistance increased sugar and milk production in 1959, and were expected to triple the supply of coffee within the next few years.

Foreign Trade.—In 1958, Venezuela's exports totaled Bs.7,776.8 million, and imports, Bs.4,798.1 million. This represented decreases over the previous year of 2% and 28%, respectively. In the first five months of 1959 (as compared with the same period for 1958), imports fell 13% to $368.4 million, while exports rose 6.3% to $454.4 million. Petroleum and iron ore continued to lead export goods in 1958, with 91% and 5%, respectively; coffee, cacao, and diamonds followed in that order.

The nation's dominant trading partner is the United States, which accounted for 36.8% of Venezuela's exports and 57.8% of its imports in 1958. Other sources of imports are West Germany (8.4%) and Great Britain (7.3%). A significant decrease in the country's leading imports of machinery and articles for metals manufacture resulted from the decline in the construction industry and the large inventories of construction machinery.

Principal Events, 1959.—Venezuela inaugurated its first democratically elected president in a decade, Rómulo Betancourt, on February 13, one year and 21 days after the discredited dictator, Pérez Jiménez, had been ousted. The new coalition cabinet contained representatives of the three dominant political parties. The administration adopted a moderate, left-of-center policy, avoiding authoritarian army rule as well as demagogic appeal to the masses.

The problem of a depleted public treasury was in part solved by a new tax law of Dec. 19, 1958, which in effect upset the traditional 50–50 division of oil profits (enacted when Betancourt was provisional president in 1945) to provide a 60% share for the government. The tax law increased the rates on all corporation profits above $9.5 million from a range of 1½–26% to 2–45% (retroactive to Jan 1, 1958), and lessened the already light tax burden elsewhere. The law would cost United States oil men an estimated $170 million additional taxes a year, of which the Creole Petroleum Corporation which produced 41% of Venezuela's crude oil, would pay $90 million.

A firm stand was taken against street demonstrations by the unemployed (of which there were an estimated 150,000) and against trade union strikers whose expectations had been raised by the revolution. The most serious of these, on August 4–5 in Caracas, caused four deaths, 46 injured, and extensive property damage; as a result, the government suspended the rights of assembly and freedom from arrest for 30 days. The unemployed rioters had been recently deprived of government doles, and were alarmed by the resignation of the popular director of public works (Celso Fortoul) who had championed their cause.

The government was slow in adopting measures of social and economic reform. Following the August riots, a Bs.150 million program was announced to relieve unemployment. The agricultural reform bill of July 23 would give work and direction to 700,000 impoverished rural families. The law provided for the division of large estates only if they were unproductive; considerable government-owned reserves were to be sold on a long-term basis to the poor, who would also receive credit and technical aid. Included in this Bs.21 billion program were the construction of 10,000 farm homes, along with rural schools, sanitation centers, and 2,000 kilometers of highways.

Communists were excluded from the cabinet, and were condemned by the president when they criticized the suspension of constitutional guarantees in August. Operating as a legal party, they had won 6% of the popular vote in the December 1958 election; reportedly they held influential positions in mass media and high schools, and were second to the Accion Democratica Party (AD) in the oil workers unions.

The Betancourt administration welcomed the overthrow of the Batista dictatorship in Cuba by Fidel Castro and criticized the Organization of American States (OAS) on January 3 for being indifferent to the existence of such authoritarian regimes. Venezuelan relations with the Dominican Republic deteriorated after the Trujillo dictatorship refused to grant safe conduct from the country for 13 Dominicans who had taken refuge in the Venezuelan embassy on January 22; diplomatic relations between the two countries were broken on June 12. In July, charging Trujillo with genocide and asking that the Dominican Republic be excluded from the OAS, the Venezuelan delegate was able to mobilize support against a Dominican-inspired request for an OAS investigation of a purported Venezuelan and Cuban invasion of that island.

Having recently introduced its own petroleum tax law, the Venezuelan government did not protest vigorously about the new United States policy of March 12 which limited Venezuelan residual oil imports to 535,000 barrels a day, even when these "voluntary" quotas were lifted for Canada. Relations with the United States were improved after the U.S. Immigration and Naturalization Service ordered the exiled Venezuelan dictator, Pérez Jiménez, to leave the country on March 27, and again on August 25 responded to a Venezuelan request for extradition of Pérez Jiménez. The former dictator's lawyer predicted that it would be two to three years before all legal devices were exhausted and his client would be forced to leave the United States.

(See also BRIDGES.)

MARTIN B. TRAVIS,
Associate Professor of Political Science, Stanford University.

VERMONT. New England state, United States; admitted to the Union, March 4, 1791. The "Green Mountain State" ranks 43d in area and 47th in population among the 50 states.

Area and Population.—Area: 9,609 square miles (land, 9,278; inland water, 331), divided into 14 counties. Population: (1950) 377,747; (est., July 1, 1958) 372,000. Towns (defined as civil divisions) and urban places with 1950 populations above 7,500 are:

Barre city	10,922	Montpelier city[2]	8,599
Bennington town	12,411	Rutland city	17,659
Bennington village	8,002	Springfield town	9,190
Brattleboro town	11,522	St. Albans city	8,552
Brattleboro[1]	9,606	St. Johnsbury town	9,292
Burlington city	33,155		

[1] Unincorporated. [2] Capital.

Executive.—Chief state officers in 1959:
Governor: Robert T. Stafford (Republican)
Lieutenant Governor: Robert S. Babcock
Secretary of State: Howard E. Armstrong
Treasurer: George H. Amidon
Attorney General: Frederick M. Reed
Auditor: David V. Anderson
Commissioner of Education: A. John Holden

Constitution and Judiciary.—The present constitution went into effect in 1793. The Supreme Court comprises 5 justices; chief justice in 1959: Benjamin Hulburd.

Legislature.—The General Assembly comprises a 30-member Senate (in 1959, 22 Republicans and 8 Democrats) and a 246-member House of Representatives (199 Republicans and 46 Democrats, and one other), which meet in regular session in odd-numbered years, commencing the first Wednesday after the first Monday in January.

The 1959 General Assembly, after 152 days in session, adjourned on June 11. In a new and historic action, it was to reassemble on Jan. 12, 1960, to provide fuller discussion of three issues: the recommendations of the so-called "Little Hoover Commission" for changes in the state government, the financing of highways, and a review of the budget.

Gov. Robert Stafford had asked for an "austerity" budget for the biennium, reducing General Fund requests from $61,500,000 to $53,000,000, but the legislature added $1,200,000. The total figure reached was $98,814,727, including bond issues. The legislature generously backed a $2,100,000 university library bond issue, to be wholly paid from student fees.

A 3% tax on rooms and meals was authorized for two years, as was a 2-cent-per-package cigarette tax, bringing the latter to 7 cents. A 20% tobacco tax was levied, and a statewide referendum on parimutuel betting was authorized for November 1960. A nine-volume revision of the state statutes was adopted, and provision was made for an earlier selection of political party officers and committees.

Tempers flared in a debate on a defeated "right-to-work" bill and, amid ribald comments, nudism was not forbidden in the state. A resolution on national security was passed, generally conceded to be Governor Stafford's opening gun in a campaign for election to Congress. The question of a need for a general sales tax continued to dominate Vermont legislative politics.

Another landmark was fixed when the Committee on State and Court Expenses held continuous hearings on the Little Hoover Commission bills from September 15 until the opening of the 1960 session. Other committees held shorter hearings on proposed highway financing measures and some budget changes.

Finance.—In the 1958–59 fiscal year, state revenue of $72,616,194.18 comprised $38,734,199.95 from state tax sources, $17,101,741.59 from the federal government, and $16,780,252.64 from other sources. Tax revenue consisted of $9,545,571.92 from individual income taxes, $2,002,393.93 from corporate income taxes, $8,243,341.99 from motor fuel taxes, $8,156,326.58 from licensing, and $10,786,565.53 from other sources. Expenditures of $88,513,121.74 comprised $14,256,358.44 for education, $20,881,701.13 for health, welfare, and safety, $35,617,055.85 for highways, and $17,758,006.32 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $29,831,000.

Banking.—As of June 10, 1959, the state's 32 national banks had $222,731,000 in assets, $121,925,000 in time deposits, and $76,613,000 in demand deposits. The 33 state banks (June 30, 1959) had assets of $322,748,895.03, time deposits of $231,546,745.03, and demand deposits of $48,451,844.68.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive, or on completion of the eighth grade. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $20,990,129.04 ($278.28 per pupil). Of the total, 78% came from local school districts, 21% from the state, and 1% from the federal government. Outlays for construction and improvements amounted to $5,635,914.84. Teachers' salaries (1958–59) averaged $4,135 (high school, $4,628; elementary, $3,835).

VERMONT SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (k-8)	398	2,016	50,953
Public junior high (7–8)	34	169	4,202
Public senior high (9–12)	79	932	15,906
Junior colleges	4	...	969
Teachers colleges	3	...	774
Colleges and universities	12	...	6,836
Other higher institutions	1	...	7

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from federal and state funds (excluding institutional costs) totaled $5,871,269, including $3,833,256 for the aged, $1,429,966 for dependent children, and $93,190 for the needy blind. A monthly average of 8,075 persons received assistance.

Labor Force.—The state's labor force averaged 148,000 persons in 1958. Nonagricultural employment of 108,000 in June 1959 was up from 104,400 a year earlier and the 103,900 average for the 12 intervening months. Of nonfarm workers in mid-July 1959, 32.1% were in manufacturing, 18.4% in trade, and 17.6% in service industries. Estimated July unemployment of 4,150 compared with 7,425 a year earlier.

Manufacturing.—There were an estimated 3,978 manufacturing establishments in the state in 1958 employing 67,673 workers who received $251,968,607 in wages. Value added by manufacture (1957) totaled $265,272,000, and outlays for new plant and equipment amounted to $21,660,000. Production workers averaged $76.52 for an average workweek of 42.8 hours in August 1959.

Major industries are nonelectrical machinery, which in 1957 employed 7,387 persons who received $34,802,000 in wages, and which added $58,292,000 in value by manufacture; food and kindred products (2,712; $10,189,000; $25,572,000); and stone, clay, and glass products (4,082; $15,843,000; $25,020,000).

Mining.—In 1958 Vermont ranked 44th among the states in the value of its minerals, with 0.12% of the national total. It was first in the output of asbestos, of which it produced 23 different grades, and second in output of dimension slate and crushed and broken slate.

VERMONT MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Copper (recoverable content of ore)	475	$ 250,000
Sand and gravel	1,881,990	1,316,000
Silver (troy ounces)	5,101	5,000
Stone	808,169	15,789,000
Other minerals	...	4,106,000
Total	...	$21,443,000*

* Totals adjusted to eliminate duplication in value of stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 increased to $90,575,000 from $85,807,000 for the corresponding period of 1958. For the full year 1958, income comprised $103,431,000 from livestock and livestock products (chiefly dairy products, $80,760,000), $10,870,000 from crops, and $1,211,000 from government payments.

VERMONT CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	867	1,070	860
Corn (1,000 bu.)	2,947	3,120	3,172
Hay (1,000 tons)	1,210	1,204	1,127
Maple sirup (1,000 gal.)	674	567	390
Oats (1,000 bu.)	686	456	559
Potatoes (1,000 cwt.)	540*	368	297

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 16,900 farms in 1958. Total acreage (1954) of 3,318,000 included 799,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 423,000 cattle and 978,000 chickens (excluding commercial broilers). There were 31,946 family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1954.

Transportation and Communications.—State and federal funds disbursed for Vermont highways in the 1958–59 fiscal year totaled $33,539,456, and 89.3 miles of new construction were completed.

Highways and roads on June 30, 1959, totaled 13,650 miles (3,880 surfaced). Registered *motor vehicles* numbered 142,055 on March 31, 1959, including 129,166 passenger cars. There were (1958) 11 *railroads* operating 817 line miles; (1959) 2 regularly scheduled *airlines;* and (1958) 18 *airports and airfields* (7 commercial and municipal, 1 commercial-military, and 10 private).

Communications media (1959) included 14 AM *radio stations;* 1 VHF *television station;* 9 daily *newspapers* and 21 other newspapers; and (January 1) 32,900 business and 89,700 residential *telephones.*

Principal Events, 1959.—The major nonpolitical event was the year-long celebration of the 350th anniversary of the discovery of Lake Champlain by Samuel de Champlain. Joining forces with New York, and with assistance from Canada, Vermont held many pageants and historic celebrations, chief of which was a month-long canoe cavalcade in specially built birch-bark canoes, which began in Canada and recreated Champlain's trip down the lake in his famous battle with the Iroquois. The chief failure of the year involved the Friendship Fountain on the breakwater in Burlington. Its installation was delayed until the end of the tourist season, and the 200-foot column spurted water for only a few days before mechanical difficulties caused it to cease.

The abrupt announcement in late fall of the almost immediate abandonment of the Ethan Allen Air Force Base threatened economic stability in the Burlington area, and meant the loss of the only military installation in the state. The furor resulting from the announcement, which was made only a short time after Vermont's senators had been assured that deactivation would not take place before June 1962, caused a postponement until May 1960.

A kidnaping and death in late 1957, in Newbury town on the Connecticut River, resulted in late 1959 in the most dramatic Vermont murder trial in years. Inadequate legal preparation, town silence, and passive resistance resulted in a directed verdict of acquittal for one defendant and the dropping of the charge against a second. New investigations and lie detector tests served only to exacerbate already lacerated feelings, and at year's end Newbury was a divided town.

In political developments the Republican mayor of usually Democratic Burlington, who had been elected in 1957, was replaced by a Democrat in 1959. Criticism—and support—of Vermont's first Democratic congressman in 107 years raised political tempers and presaged vigorous political battles in 1960.

No other question in recent years has held so much sustained interest as the report and recommendations of the Vermont Little Hoover Commission. Appointed in 1957, it reported to the General Assembly in January 1959. A four-month series of hearings by a legislative committee kept the issue alive and augured well for action in the adjourned 1959 session of the General Assembly, which was to reconvene in January 1960. A committee to propose constitutional changes to the General Assembly was appointed, but at year's end had not yet met.

Legislature and Principal Events by:
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VETERANS ADMINISTRATION. An independent agency of the United States government since 1930, the Veterans Administration is charged with administering benefits provided by law for veterans and their dependents.

In September 1959 the nation's population of living veterans was 22,644,000, of whom 67%, or about 15,235,000, had served in World War II. Some 5,455,000, including 945,000 of the World War II group, had seen service during the Korean conflict period between June 27, 1950, and Jan. 31, 1955, the delimiting date established by presidential proclamation. The remainder had served in earlier American wars and during time of peace.

The benefits administered by the VA for veterans and their dependents may be conveniently grouped in three broad categories: those to help veterans in their readjustment to civil life after time spent in service; rehabilitative and compensatory benefits for veterans disabled as a result of service; and benefits for the families of deceased veterans.

Two major benefits designed to help veterans in their return to civilian life are an education and training program and a program of guaranteed or insured loans for homes, farms, and businesses. These are included in a Korean GI Bill (1952), which also provides for other benefits: unemployment compensation, mustering-out pay, and job-finding assistance. Only the training and loan programs are administered by the VA.

Education and Training.—Under the Korean GI training program, a veteran may be entitled to 1½ days of training for each day spent in service during the Korean conflict period. The maximum is 36 months. While in training, he receives an education and training allowance from the government to help him meet his expenses.

Rates for veterans in full-time training in schools and colleges are $110 a month if they have no dependents, $135 if they have one dependent, and $160 if they have more than one dependent. Those in training less than full time, as well as those in on-the-job and on-the-farm training, receive lower monthly rates.

By Sept 1, 1959, seven years after the enactment of the Korean GI Bill, two out of every five veterans who served during the Korean War period —or more than 2,280,000—had taken some form of Korean GI training. The figure represents about a fifth of the male civilian labor force in the age group 25–34 years. More than half of the trainees went to college, and most of these elected highly skilled or professional occupational objectives. The program, which has made a substantial contribution toward providing trained workers for critical shortage occupations, is scheduled to come to an end on Jan. 31, 1965.

War Orphans Schooling.—The largest number of students in training under this program in the school year which ended in June 1959 was 7,800. The monthly average of students in training was 4,485. By far the greater number of these were enrolled in institutions of higher learning. The program, however, provides opportunity for training in a wide variety of schools below the college level: technical institutes, business schools, some vocational or trade schools, normal schools, institutions offering training in medical and related fields, and junior colleges.

To be eligible, the young man or woman must be a child of a person who died of a wartime service-connected injury or illness and who generally is between age 18 and 23. A law passed in late 1958 gave handicapped children of deceased war veterans the right to begin special types of war orphans training when they reach age 14. Eligible students may take up to 36 months of schooling and receive a $110 monthly allowance if attending full time.

GI Loans.—Both the World War II and Korean GI bills contain GI loan programs for veterans. Loans may be used to buy, build, or improve a home; to buy a farm, farmland, or farm equipment; or to go into business.

GI home loans are guaranteed for up to 60% of the loan, but the guaranteed portion may not exceed $7,500. Other real estate loans may be guaranteed up to 50%, with a $4,000 maximum guarantee. Non-real-estate loans, such as business loans, may be guaranteed up to 50%, with a $2,000 guarantee ceiling.

By Sept. 1, 1959, more than 5,665,000 World War II and Korea veterans had obtained GI loans. About 95% bought homes. The loans totaled $47.2 billion, of which the VA guaranteed $25.5 billion.

World War II veterans have until July 25, 1960, to apply for GI loans, and up to a full year after that to complete loan arrangements. For Korea veterans, the deadline is Jan. 31, 1965. (See also HOUSING.)

Unemployment Benefits.—A Korea veteran may be eligible for unemployment pay under the Korean GI Bill or, if he left service after Oct. 27, 1958, under a new law passed in 1958. Both benefits are administered by the U.S. Department of Labor through state employment agencies. Job-finding help, consisting of counseling and placement services, is offered by the U.S. Employment Service. (See also BUREAU OF EMPLOYMENT SECURITY.)

Benefits for the Disabled. *Vocational Training.*—As of Sept. 1, 1959, more than 675,000 disabled World War II and Korea veterans had taken training to help them overcome the handicaps of their disability. Some 614,000 World War II veterans were trained under the Vocational Rehabilitation Act (Public Law 16), which virtually expired in 1959, and the remainder under Public Law 894, as amended. During the fiscal year 1959 more than 1,100 disabled World War II veterans and upward of 5,400 Korea veterans entered training for the first time. Of the 675,000 who have taken training, 60% have either completed or are still pursuing their training.

While in training and for two months afterward, disabled trainees get a subsistence allowance ranging from $65 to $120 a month, depending on the type of training and on the number of the trainee's dependents. These payments are in addition to the usual monthly disability compensation.

Disabled Korea veterans discharged before Aug. 20, 1954, must finish training by Aug. 20, 1963. Those discharged after Aug. 20, 1954, must complete their training within 9 years from separation or from Jan. 31, 1964, whichever comes first. Hardship cases are permitted an additional 4 years in which to complete their training.

Disability Compensation and Pensions.—In the fiscal year 1959 the VA paid out more than $3.225 billion in disability compensation and pensions to 2,934,247 living veterans and to the dependents of 915,822 deceased veterans. About $1.152 billion was for pensions alone. It is estimated that in the fiscal year 1960 this sum will be increased by at least $309 million, as a result of the Veterans Pension Act of 1959, effective July 1, 1960. This provides a sliding scale formula for pension benefits, based to a greater extent than before on need, for all veterans and dependents who go on the VA pension rolls on or after the July 1 date. Pensioners on the rolls prior to that date have a choice of remaining under the earlier pension system, in some cases more advantageous to them, or of coming under the new law, which will allow higher pensions to those who have little or no income. Pensions will be lower for those with more outside income.

As an example of payments under the new law, veterans with no dependents get $85 a month if their income is less than $600, $70 if it is $600 to $1,200, and $40 if it is $1,200 to $1,800.

Widows and orphans of World War II and the Korean War who formerly, to establish eligibility for pension, were required to show that the veteran at time of death had some degree of service-connected disability, are now eligible on the same basis as widows and orphans of World War I veterans. They need only show that the veteran was in active service 90 days or more and was discharged under other than dishonorable conditions.

Veterans with service-connected disabilities incurred either during wartime or peacetime service may qualify for monthly compensation payments.

For wartime service, compensation rates range from $19 a month for a disability rated at 10% to $225 for a disability with a 100% rating. Additional statutory awards are payable to veterans with severe disabilities such as blindness or loss of limb.

Medical and Hospital Services. *Care.*—As of Sept. 1, 1959, the VA was operating a network of 170 hospitals for the treatment of ill and disabled veterans. In addition, some beds were available on a contract basis for veterans in non-VA hospitals. In March 1959 the president approved a new 125,000-bed policy for the VA system, giving the administrator of veterans affairs authority to shift beds or hospitals from one type of use to another, in keeping with advances in medical treatment and changes in veteran population. During the fiscal year 1959 the average daily patient load was more than 114,000 veterans in both VA and non-VA hospitals. More than half were being treated for mental illness.

Veterans of all wars are entitled to VA hospital care under the following priority system: first, veterans suffering from injuries or disabilities that resulted from, or were aggravated by, their wartime military service; and second, veterans with injuries or disease not connected with service in the armed forces. These veterans must state under oath that they are unable to pay for private hospitalization; must submit a financial statement listing their liabilities and assets; and are admitted as soon as a bed becomes available.

As a result of newer drugs and other methods of treatment which have shortened periods of hospital stay, the VA in 1959 was able to redesignate five of its hospitals from tuberculosis to general medical hospitals. During the year, in the continuing program of hospital modernization and replacement, cornerstones were laid for a new 1,000-bed hospital in Brecksville, Ohio, and one in Downey, Ill.

Research.—The VA in 1959 installed at its Omaha (Nebr.) hospital a nuclear reactor especially designed for medical use, the first of its type and the first ever used in a VA hospital. During the year, the VA, with the National Bureau of Standards (q.v.), developed a method of utilizing electronic data processing for the study of information obtained by electrocardiography. The VA also established a division of epidemiology, which will use records from VA hospitals in every state to pinpoint the geographic distribution of multiple sclerosis and other diseases, and set up a division of research in aging, to coordinate the VA's many studies in this field and to begin new research on the aging process itself. The VA set forth the aims of the new division in a publication, *VA Prospectus: Research in Aging,* obtainable for $1.50 from the Government Printing Office, Washington 25, D.C.

In other research the VA completed large-scale control studies of tranquilizers and also of the newer drugs in use against high blood pressure. In cooperation with the armed forces it continued its study of newer drugs for treatment of tuberculosis. A large group of VA hospitals carried forward cooperative studies in the National Cancer Chemotherapy program, under the National Institutes of Health. The VA in 1959 made possible for the first time the preservation of living bone marrow cells in a frozen state for life-saving use in persons exposed to radiation.

Insurance.—The VA administers two systems of insurance: U.S. Government Life, for World War I veterans, and National Service Life, for World War II and Korea veterans. Except for insurance for disabled Korea veterans, no new insurance was being issued under either program.

On Sept. 1, 1959, more than 5,300,000 World War II veterans held GI insurance policies valued at $35.022 billion; 336,000 World War I veterans had policies valued at $1.475 billion; and 669,000 Korea veterans had special National Service Life insurance totaling $5.992 billion. A law passed in 1958 permits Korea veterans, previously ineligible for this benefit, to convert term insurance to one of VA's permanent plans, and other recent legislation authorizes an increase to $10 a month per $1,000 of insurance in payments made to veterans who carry the total disability income rider.

Other Benefits.—The VA administers a number of other benefits for veterans and their dependents. Among these are programs providing cars for the seriously disabled; "wheelchair housing" grants for other disabled veterans; and a guardianship service.

SUMNER G. WHITTIER,
Administrator of Veterans Affairs.

VETERANS ORGANIZATIONS. See specific names of organizations under SOCIETIES AND ORGANIZATIONS.

VETERINARY SCIENCE. The 16th International Veterinary Congress was held in Madrid, Spain, in May 1959. An attendance of approximately 2,500 veterinarians from all parts of the world and presentation of some 2,000 scientific papers, many translated into German, French, and English, attested to the international character of the meeting. The congress brought to a focus advances made in all branches of veterinary science during the four-year interval since the previous meeting.

Another notable gathering of veterinarians in 1959 was the joint Pan American–American Veterinary Medical Association Meeting held at Kansas City, Mo., in August. It brought together nearly 5,000 veterinarians from Central and South America, Canada, and the United States.

Recent Trends.—In recent years a greater share of production of livestock has shifted from the smaller to the larger operating farm unit. Another trend has been an increase in the concentration of numbers of livestock and poultry produced per acre or per unit of space. One result of these trends has been an increase in the hazard from disease and parasites. This hazard has in turn affected the type of service rendered by many veterinarians. There is now more concern with maintaining and protecting the health of an entire herd or flock than with treatment of individual sick animals. Increasing emphasis is thus given to prevention rather than cure of disease.

Increasing attention also has been given by veterinarians to control and prevention of zoonoses, diseases of animals that are transmissible to man. In this connection, the Pan American Zoonoses Center in Azul, Argentina, was officially inaugurated in April 1959. It was established in 1956 to serve the Americas in a broad program of study on zoonoses. The number of known zoonoses now exceeds 100. Q fever, a disease affecting many species, belongs to this group, and is now a serious public health problem.

Antibiotics and Other Feed Additives.—The beneficial effects resulting from the use of tremendous amounts of feed additives, such as antibiotics and other drugs, in animal production and in human and veterinary medical practice, are well recognized. Recently the use of some of these products has been a cause for concern. It is believed that human health might be endangered when some persons consume milk, meat, and animal products containing small amounts of some of these drugs. Recognizing this danger, the federal Food and Drug Administration in 1959 issued an order which permits, with restrictions, the continued sale and use of food or feed additives that are now approved, but forbids the sale of any new compound for this purpose until such a product has been adequately tested to establish its safety.

Research, Treatment, and Prevention.—Advances in 1959 in the treatment and prevention of disease and in supporting research were varied. A large increase occurred in the use by veterinarians of tranquilizing drugs for clinical purposes, but more clinical and research data are needed to determine whether some of the claims made for these products are justified. Veterinary medicine also continued in 1959 to be a widening field for the use of radioisotopes.

Critical evidence appeared to be accumulating which demonstrates a close relationship between certain viruses that cause some types of respiratory disease in man and so-called shipping fever of cattle.

In other developments of 1959, compulsory post-mortem inspection of poultry intended for interstate commerce was started, and the incidence of brucellosis in dairy and swine herds was further reduced. With respect to swine, 30 states now ban the use of live virus for their immunization against hog cholera. In another advance, some organic phosphorous compounds were found to be effective against roundworms.

Education.—In 1959 there were approximately 22,000 trained veterinarians in the United States and Canada. Along with the steady increase in their numbers and a broadening of the scope of veterinary science, a noteworthy development in the profession has been the attention given to the improved education of future veterinarians.

All veterinary medical colleges in the United States and Canada now require at least two years of preveterinary training at the college level and four years of professional training for the doctor of veterinary science degree. Continued expansion of training was reflected in the fact that Purdue University enrolled its first class in veterinary science in 1959.

JESSE SAMPSON,
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VIETNAM. A country of Southeast Asia, bordered by China on the north, and by Laos and Cambodia on the west. Estimated area, 125,882 square miles; pop. (est. 1958), 27,800,000. Formerly under French rule, Vietnam was divided by an armistice line, roughly along the 17th parallel, by the Geneva agreements of 1954 ending the Indochinese War. The Republic of Vietnam (South Vietnam) rules the area south of the demarcation line; the Democratic Republic of Vietnam (North Vietnam), the area to the north. The Geneva agreements called for consultations between the two regimes on national elections and reunification, but such consultations have never taken place.

South Vietnam has an area of about 65,958 square miles and a population of approximately 12.8 million. The capital is Saigon (est. pop. of Saigon-Cholon urban area, 1.8 million). Other cities include Tourane (100,978), Hue (90,682), and Nha Trang (60,000). North Vietnam has an area of about 59,924 square miles and a popula-

tion of approximately 15 million. Hanoi (est. 1958, 500,000) is the capital, and Haiphong (est. 1953, 188,600) the second largest city. The majority of the population in both the north and the south are Annamese, who are related to the Chinese ethnically and linguistically. There is a sizable Chinese minority (estimated at 850,000 in South Vietnam, mainly in the Saigon-Cholon area). The Annamese language has been Romanized. French is widely spoken in the larger cities of the south.

Government. *South Vietnam.*—The Republic of Vietnam was proclaimed on Oct. 26, 1955, by Premier Ngo Dinh Diem, following a popular referendum. At the same time, Ngo Dinh Diem assumed the office of president. A Constituent Assembly of 123 members was elected on March 4, 1956, and on October 26 a constitution was promulgated concentrating government power in the presidency. The president is popularly elected by persons over 18 years of age for a 5-year term and may be re-elected for 2 years. The legislature is elected for 3 years. The Constituent Assembly constituted itself as the first National Assembly. Elections to the second assembly took place on Aug. 30, 1959, resulting in the following party seating: National Revolutionary Movement, 78; Vietnamese Socialist Party, 4; Social Democratic Party, 3; Vietnamese Restoration Party, 2; Democratic Liberties Party, 2; independents, 32; opposition independents, 2.

North Vietnam.—The Democratic Republic of Vietnam has a Communist-type regime controlled by the Lien Viet (National Union Front), in which the Communist Lao Dong (Workers' Party) is the leading force. The National Assembly, based on an election in 1946, has served mainly to approve measures presented by the Communist leadership. Ho Chi Minh, veteran Communist leader, has been president since the inception of the regime. Pham Van Dong has served as premier and foreign minister since 1955.

Education and Religion.—In South Vietnam, public and private elementary schools had 768,000 pupils in 1958; secondary schools, 98,000. South Vietnam's 2 higher institutions are the University of Saigon (2,841 students in 1956) and the University of Hue, established in 1957 (800 students in 1959). The chief religion of the Annamese is Buddhism, with strong influences of Confucianism and Taoism. In South Vietnam there are certain politico-religious sects, such as the Cao Dai and the Hoa Hao, but their political power has been considerably reduced by the Saigon government. Roman Catholics, estimated at 2 million, were formerly concentrated south of the Red River Delta, but many fled to South Vietnam following the establishment of the Communist regime in the north.

Finance.—The draft estimate for South Vietnam's 1958 budget placed expenditure at 14,375 million piastres; revenue, 8,701 million (at the official rate, 35 piastres equal the dollar; on the free market, the average 1958 rate was 72.45 piastres to the dollar). Aggregate public expenditure in 1958 (including local budgets and other public institutions) totaled 16,704 million piastres, up 2% from 1957. United States aid makes up the budget deficit, as well as the heavy imbalance in foreign trade. In the period from July 1, 1954, to June 30, 1958, a total of $976.6 million in United States economic and technical aid was allotted to South Vietnam ($191.6 million for the fiscal year 1958).

Transportation and Communications.—The Mekong River in the south and the Red River in the north are important arteries of transport. The government-owned railroad system in South Vietnam has about 673 miles of main and branch lines, although service has not yet been completely restored throughout. South Vietnam's road network totals about 8,660 miles, of which about 20% is asphalt surfaced and 45% macadamized. Air Viet-Nam is the only scheduled national flag carrier in South Vietnam; several international lines operate scheduled flights into Saigon, the chief airport. Passenger cars in South Vietnam numbered 47,391 in 1958; commercial vehicles, 21,371; telephones, 13,445. In North Vietnam, railroads in operation at the end of 1957 were reported to total 422 miles. A considerable portion of the road network (8,384 miles in 1952) has been restored with Chinese aid. A Chinese airline operates scheduled flights between North Vietnam and Peking.

Production.—About 80% of the population in South Vietnam is agricultural, although agriculture provides less than a third of gross domestic product. The Saigon government's land reform program has reduced large landholdings and increased the number of small holders by distributing land to landless peasants, and has eliminated some of the abuses of tenancy by limiting rentals to 25% of the principal crop. Under a 1958 agreement, France provides financial aid to the South Vietnamese government for the repurchase of over 200,000 hectares of paddy land owned by French nationals. The government has also extended irrigation and reclamation, spread modern techniques, encouraged crop diversification, and made credit available to farmers.

Rice, the chief crop, is the staple of diet and (in good harvest years) an important export. Output in 1958 was estimated at 3.2 million metric tons of paddy, down about 10% from the bumper yield of 1957. Rubber, the principal export, is grown mainly on French-owned plantations in the central plateau area; production on plantations of over 500 hectares (normally accounting for over 80% of output) totaled 62,372 metric tons in 1958. Secondary crops are corn, copra, tobacco, and sugar; and minor crops: tea, coffee, pepper, jute, kapok, peanuts, manioc, and sweet potatoes. Industry, which is on a small scale and mostly for the home market, provides about 13% of national output. Manufactures include cotton cloth, metal products, chemicals, matches, sugar, footwear, soap, brick, tile, and wood products. Government policy is to encourage the gradual development of light industries, rather than to seek rapid industrialization of the economy.

In North Vietnam, rice cultivation is also of basic importance, but minerals are more abundant, and industrialization, which had proceeded further under French rule than in the south, has been made a prime objective of the Communist regime's development plans. The government's agricultural policy has been likened to that of the Chinese Communists in its early stages. The initial phase of "land to the tillers" has been succeeded by a drive to organize farm cooperatives, and on Jan. 19, 1959, President Ho Chi Minh declared that North Vietnam had no plans as yet to follow Communist China in the organization of communes. The Hanoi radio on Sept. 3, 1959, claimed a bumper rice crop of 4.7 million tons in 1959.

In early 1958, Premier Pham Van Dong stated that output in large industries had attained to only 76% of the prewar level, but in the radio report of Sept. 3, 1959, industrial production was said to have risen by 64% in 1958 and by an even greater percentage in 1959. State enterprise is predominant, although private enterprise still exists in small industries, handicrafts, and retail trade. Manufactures in North Vietnam have included engineering and construction products, textiles, chemicals, bicycles, silk, beer, tobacco products, soap, and other consumer goods, but new industries have been founded under the industrialization drive. Coal (1957 output, 1,112,000 metric tons), iron ore, manganese ore, bauxite, and zinc ore are the chief minerals. Chinese financial and technical aid has played an important role in the industrialization program.

Foreign Trade.—South Vietnam's exports in 1958 totaled 1,925 million piastres (down 32% from 1957); imports, 8,125 million (down nearly 20%). Chief exports were: rubber, 67,500 metric tons (1,242 million piastres); and rice, 117,106 (488 million). Imports are mainly machinery, petroleum products, textiles, foodstuffs, pharmaceuticals, and other consumer goods. France purchased about 54% of 1958 exports (mainly rubber); the United States, 9%. France provided 25% of imports; the United States, 24%; Japan, 19%. North Vietnam's chief trading partner is Communist China, which provides capital goods, textiles, and other manufactures, in exchange for North Vietnamese agricultural products, minerals, and timber.

Principal Events, 1959.—The division of Vietnam into two regimes separated by an armistice line continued in 1959, and no steps were taken to implement the provisions of the 1954 Geneva

agreements calling for discussions toward reunification. Despite the impasse on reunification, there were no major instances of overt armistice infractions in 1959, although South Vietnam continued to charge the Hanoi regime with responsibility for terrorism and subversion in the south, and North Vietnam again complained to the International Supervisory Commission (set up under the Geneva agreements) that United States arms shipments for the South Vietnamese Army violated the armistice provisions.

South Vietnam.—At the opening of the National Land Reform Congress on July 1, it was stated that 343,017 hectares of expropriated land had been distributed to former tenant farmers under the land reform program, and over 800,000 tenancy contracts had been signed, reducing rents and carrying provisions for tenants' security. Under the project for the settlement of the central plateau area, some 42,000 settlers had been given land and homesteads by early 1959.

According to the Saigon government, Communist agents in South Vietnam were making every effort to defeat the land program by sabotage, assassination of Saigon officials, and intimidation of peasants. On July 8, two United States servicemen of the U.S. Military Assistance Advisory Group were killed by terrorists at Bienhoa, near Saigon. In late October, crack units of the South Vietnamese Army, trained by the United States advisory group, completed an anti-guerrilla campaign in the Camau Peninsula of the extreme south. Several hundred Communists were reported killed or captured, with only slight losses to the army.

An agreement on South Vietnam's withdrawal from the franc zone was reached with France on April 27. On May 13 a reparations agreement with Japan was signed in Saigon, providing for Japanese payment of the yen equivalent of $39 million, most of which will be used in the construction of a power station, and for the Japanese extension of an additional $16.6 million in loans and credits. Agreements with Laos were signed in Saigon on May 25 regarding trade, payments, goods in transit, immigration, and frontier regulation. Talks between Cambodian Premier Norodom Sihanouk and President Ngo Dinh Diem in Saigon, August 2–5, reportedly achieved some progress toward the settlement of trade and border problems.

In the South Vietnamese elections to the National Assembly on August 30, a reported 86% of the electorate went to the polls. President Ngo Dinh Diem's National Revolutionary Movement won 78 of the 123 seats, and almost all other successful candidates were said to be backers of the president, but the conditions of the election afforded only a limited means for the expression of an opposition.

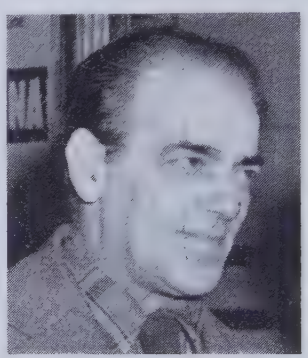
North Vietnam.—The North Vietnamese government was accused of flagrant aggression on September 4, in a complaint to the United Nations by Laos. In a note to the United Nations on September 7, North Vietnamese Premier Pham Van Dong termed the Laotian complaint a fabrication and accused the Laotian government of fomenting civil war by seeking to eliminate the Communist movement in Laos, in violation of the Geneva agreements. A United Nations investigation subcommission report, made public on November 6, declared that no evidence had been found of direct participation in the Laotian fighting by North Vietnamese forces, although there was some evidence of North Vietnamese arms and materials support of the Laotian rebels. (See also FAR EAST; LAOS.)

An agreement was signed in Peking on February 18, whereby Communist China will provide the equivalent of $168,775,000 in loans and grants for the construction of 49 new industrial and communications enterprises in North Vietnam, including iron and steel plants, coal mines, shipyards, fertilizer plants, and other facilities. On March 7 an agreement with the Soviet Union was signed in Hanoi, providing for Soviet economic and technical aid in the construction of North Vietnamese industrial installations. President Ho Chi Minh visited Burma on February 26 and Indonesia from February 27 to March 11, and toured the USSR and Communist China from July 12 to August 25.

A new constitution for North Vietnam was adopted by the National Assembly on Dec. 31, 1959. A resolution accompanying the adoption called for the holding of national elections in 1960.

M. J. G.

VILLA-LOBOS, Heitor (72?), Brazilian composer: b. Rio de Janeiro, Brazil, March 5, 1887 (?); d. Rio de Janeiro, Nov. 17, 1959. He produced music so prolifically, in such a plethora of styles and forms, as to suggest the vast, continental variety of



Heitor Villa-Lobos (1887?–1959)

UPI

Brazil itself. His individual compositions are said to number between 1,000 and 2,000; it is doubtful either that Villa-Lobos could recall everything that he had written or that the entire body of his music can ever be familiar to any single listener.

Having studied the cello with his father, Villa-Lobos began his career as a theater and café instrumentalist. At an early age he traveled throughout much of northern Brazil, becoming notably familiar with its Portuguese-Negro-Indian folk music, which was to be reflected and often quoted in his later compositions. Mostly self-taught, he earned excited attention in 1915 with a Rio de Janeiro concert of his early works. In 1918, the pianist Artur Rubinstein, visiting Brazil, became interested in Villa-Lobos' music and a few years later helped to make possible the composer's first European visit, which began with his telling his colleagues that he had not come to study, but to show them what he had done, and which lasted eight years.

From 1930 on, in São Paulo and then in Rio de Janeiro, as director of musical education in the schools, Villa-Lobos reorganized the public teaching of music along bold new lines. While continuing to compose with astounding fecundity, he made choral arrangements of Brazilian folksongs, elaborated a system of hand signals for instructing and conducting musical illiterates, led gargantuan choruses of children, and founded (1942) a National Conservatory of Orpheonic Song.

Villa-Lobos visited the United States for the first time in 1944, conducting symphony orchestras. During the next year he founded in Rio de Janeiro the Brazilian Academy of Music. Thereafter, he made numerous journeys to Europe and

the United States, conducting his compositions, and even composing (in Los Angeles in 1948) a musical comedy, *Magdalena,* which later had a brief run in New York. He attracted notice, too, by a trick of forming melodies by placing notes along profiles of photographs—of mountains, of the New York skyline—superimposed on musical staffs.

Energetic, abounding, more interested in putting musical ideas down than in reworking them formally, Villa-Lobos is difficult to evaluate. His finest compositions, perhaps particularly some of the pieces he called *Chôros* and *Bachianas brasileiras,* aptly fuse exotic harmony, melody, rhythm, and instrumentation with sophisticated modern adaptations of formal patterns. Much of his huge output, however, remains formless, improvisatory, and dilute. His masterworks aside, his historic importance resides in the intense stimulus he gave to musical life in Brazil.

The multiplicity of Villa-Lobos' compositions can only be suggested here. He composed operas, ballets, and oratorios; at least 12 symphonies, mostly with descriptive titles; 15 *Chôros;* 9 *Bachianas brasileiras;* numerous other pieces for orchestra; at least 15 string quartets; a large amount of other chamber music; many choral pieces; quantities of solo songs; and a whole library of piano works. Vasco Mariz' *Heitor Villa-Lobos* (Rio de Janeiro, 1948), a detailed biography, lists the compositions to that year.

HERBERT WEINSTOCK,
Music Editor and Reviewer; Author of "Music as an Art" and other works.

VIRGIN ISLANDS, British. See BRITISH VIRGIN ISLANDS.

VIRGIN ISLANDS OF THE UNITED STATES. This West Indian insular possession of the United States, situated approximately 40 miles east of Puerto Rico, forms part of the chain of islands which extends between the Caribbean Sea and the Atlantic Ocean. The islands were purchased from Denmark for $25 million in 1916, and were proclaimed a United States possession on Jan. 25, 1917.

Area and Population.—Having an area of 133 square miles, the Virgin Islands comprises three main islands (St. Thomas, 32 square miles; St. Croix, 82; and St. John, 19) and approximately 50 small islets and cays (mostly uninhabited), included statistically with the larger islands. The population (1950 census) was 26,665 (St. Croix, 12,103; St. Thomas, 13,813; and St. John, 749). Charlotte Amalie (11,469) on St. Thomas is the capital and chief port; on St. Croix are the cities of Christiansted (4,112) and Frederiksted (1,961). On July 1, 1955, the U.S. Bureau of the Census estimated the total population of the islands at 24,000.

Government.—Since the enactment of the Revised Organic Act of the Virgin Islands on July 22, 1954, legislative power has been vested in a unicameral Legislature of the Virgin Islands, composed of 11 senators elected for two years (5 representing three electoral districts and 6 elected at large). The administration is headed by a governor, John D. Merwin, who assumed this office in September 1958. Other ranking officials in 1959 included Government Secretary Roy W. Bornn; U.S. District Judge Walter A. Gordon (appointed in September 1959); Walter I. M. Hodge, president of the Legislature; and U.S. Attorney Leon P. Miller.

The executive branch is composed of ten departments, nine of which are headed by commissioners appointed by the governor and confirmed by the legislature. The tenth, the Department of Law, is headed by an attorney general.

Significant legislation enacted during 1959 included: (1) authorization for the publication of the *Virgin Islands Reports,* two volumes of which were published containing the opinions of the District Court of the Virgin Islands, the U.S. Court of Appeals for the Third Circuit, and the Supreme Court of the United States from 1917 through 1953; (2) an authorization for the sale of the Virgin Islands Telephone System, a government-owned institution, to private interests; and (3) an authorization for the construction of emergency housing projects to house, temporarily, the large number of persons and families unable to find decent accommodations.

Finance.—Government operations are financed jointly from revenues collected locally and from federal matching funds from the United States, which are obtained under provisions of the internal revenue laws of the United States on articles produced in the Virgin Islands and transported to the mainland. Separate federal grants-in-aid are made for emergency purposes and essential public projects only. Subsequent to the revised Organic Act, a single Treasury of the Virgin Islands was created, replacing the system of two separate municipal treasuries, and the Department of Finance was reorganized into tax, treasury, and accounting divisions.

For the fiscal year ending June 30, 1959, total revenue from real property taxes, income taxes, miscellaneous revenues, matching funds, grant-in-aid funds, and miscellaneous federal contributions amounted to $9,827,953.25.

Banking.—On June 30, 1959, there were two banks: the Virgin Islands National Bank, with assets of $15,751,542.81, and the West Indies Bank and Trust Company, with assets of $11,249,075.11. The West Indies Bank and Trust Company in 1959 opened the first branch bank on the island of St. John. Later in the year, a most important development in banking occurred when the Chase Manhattan Bank of New York purchased the latter bank's assets and liabilities, and went into operation as the first continental American bank to be established in the Virgin Islands.

Education.—School attendance is compulsory between the ages of 5½ and 15, inclusive. In 1959 the three major islands had 29 public schools, including (in addition to kindergartens) 7 city elementary schools, 13 rural schools, 1 junior high school, and 2 junior-senior high schools. Total public school enrollment was 6,466 at a per capita cost of $216.97 (exclusive of adult education and community services). There were also 10 parochial and 4 private schools with a total enrollment of 2,355. The budgetary allotment for the Department of Education in the 1958–59 fiscal year was $1,544,349.94.

Social Welfare.—The Department of Social Welfare administered $335,749.36 in public assistance payments during the 1958–59 fiscal year, including principally old-age assistance, $160,258.31, and aid to dependent children, $105,233.28. Average monthly assistance payments per recipient were: old age assistance, $23.40; aid to dependent children, $12.06; aid to the blind, $26.81; aid to the disabled, $25.64; and general assistance, $23.53. Three homes were maintained for the aged and indigent, and there was one training school for boys. Approximately $1,925,428.45 in federal grants and local appropriations was available to the Department of Health during the 1958–59 fiscal year.

Agriculture, Industry, and Trade.—There are approximately 750 farms in the Virgin Islands, which, according to the 1950 federal Census of Agriculture, covered 73,753 acres, of which 16,461 had been in cropland harvested the previous year. The appraisal value of privately owned land and buildings in 1959 was $28,045,665.62, and of lands, buildings, and structures owned by the Virgin Islands Government, $10,741,571.86. Agricultural activities center on the raising of sugarcane (almost 5,000 acres are devoted to its cultivation) and the breeding of livestock.

While much of the revenue of St. Croix is obtained from agriculture, that of St. Thomas is derived largely from the manufacture of rum and handicrafts and from tourism, trade, and shipping. During the year ending June 30, 1959, income from tourists was estimated at $21,738,000. There are 55 hotels and guest houses, the majority of which are on St. Thomas and St. Croix.

For the calendar year 1958, the value of exports from the Virgin Islands to the United States was $3,106,835; the value of imports to the Virgin Islands from the United States was $18,053,605.

Communications and Transportation.—There is daily airmail and passenger service between St. Thomas and St. Croix and between the Virgin Islands and Puerto Rico, and daily boat mail and passenger service between St. Thomas and St.

John. Caribbean Atlantic Airlines, Inc., and British West Indian Airways, Ltd., served St. Thomas in 1959. St. Croix was served by Caribbean Atlantic Airlines, Inc., and Pan American World Airways, Inc., the latter making four flights weekly. Eighty-nine large cruise ships carrying approximately 37,000 passengers made St. Thomas a port of call. There are four daily newspapers with a combined circulation of about 3,500.

In 1959, St. Croix had 180 miles of highways serving the island's 2,420 motor vehicles, and on St. Thomas and St. John, the islands' 90 miles of roads served 2,780 motor vehicles. On the three islands there were 3,113 telephones, two cable offices, and two radio stations.

JOHN D. MERWIN,
Governor of the Virgin Islands.

VIRGINIA. South Atlantic state, United States; one of the original 13 states. The "Old Dominion State" ranks 36th in area and 15th in population among the 50 states.

Area and Population.—Area: 40,815 square miles (land, 39,893; inland water, 922), divided into 98 counties and 31 independent cities. Population: (1950) 3,318,680; (est., July 1, 1958) 3,905,000. Urban places with populations above 10,000 (as estimated by the Bureau of Population and Economic Research, University of Virginia, for July 1, 1958) are:

Alexandria	87,926	Newsome Park-Hilton Park[2]	14,960[3]
Bristol	18,263	Norfolk	299,244
Charlottesville	30,992	Petersburg	36,063
Covington	11,195	Portsmouth	86,472
Danville	48,582	Richmond (*capital*)	238,303
Falls Church	11,028	Riverview[2]	14,215[3]
Fredericksburg	13,406	Roanoke	102,078
Hampton	82,640	South Norfolk	22,483
Harrisonburg	12,240	Staunton	24,510
Hopewell	18,975	Suffolk	12,177
Lynchburg	53,771	Waynesboro	15,241
Martinsville	19,034	Winchester	14,537
Newport News[1]	105,874		

[1] Merged with Warwick on July 1, 1958. [2] Unincorporated. [3] 1950 federal census.

Executive.—Chief state officers in 1959:
Governor: J. Lindsay Almond, Jr. (Democrat)
Lieutenant Governor: A. E. S. Stephens
Secretary of the Commonwealth: Martha Bell Conway
Treasurer: E. B. Pendleton, Jr.
Attorney General: Albertis S. Harrison, Jr.
Auditor: J. Gordon Bennett
Supt. of Public Instruction: Davis Y. Paschall

Constitution and Judiciary.—The present constitution went into effect in 1902. The highest tribunal, the Supreme Court of Appeals, comprises seven justices; chief justice in 1959 was John W. Eggleston.

Legislature.—The Virginia General Assembly comprises a 40-member Senate (in 1959, 37 Democrats and 3 Republicans) and a 100-member House of Delegates (96 Democrats and 4 Republicans), which meet for a regular session in even-numbered years commencing the second Wednesday in January. (See below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $563,773,995.29 comprised $285,433,254.86 from state tax revenue, $80,977,982.81 from the federal government, and $197,362,757.62 from other sources. Tax revenue consisted of $71,308,309.52 from individual income taxes, $24,261,522.38 from corporate income taxes, $74,033,271.13 from motor fuel taxes, $47,474,385.11 from licensing, and $68,355,766.72 from other sources. Expenditures of $591,372,108.91 (excess of which over revenue was covered by balance from previous fiscal year) comprised $160,136,008.13 for education, $78,386,050.54 for health, welfare, and safety, $145,774,058.06 for highways, and $207,075,992.18 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $9,118,508.33.

Banking.—As of June 10, 1959, the state's 130 national banks had $1,920,734,000 in assets, $1,069,150,000 in demand deposits, and $670,438,000 in time deposits. The 179 commercial banks had assets of $1,441,095,000, demand deposits of $743,843,000, and time deposits of $559,680,000.

Education.—Operating expenditures for public elementary and secondary education in the 1958–59 school year totaled $181,265,612 ($242.67 per pupil), comprising $87,851,633 from local school districts, $74,454,678 from the state, and $18,959,301 from the federal government. Outlays for construction and improvements amounted to $51,393,169, and debt service payments totaled $17,246,066. Teachers' salaries averaged $3,956 (high school, $4,172; elementary, $3,823).

In the 1958–59 school year, public elementary schools had 18,046 teachers and 587,575 pupils, and public secondary schools had 11,083 teachers and 234,675 pupils. College and university enrollment totaled 54,104. (See also below, *Principal Events, 1959.*)

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from federal and state funds (excluding institutional costs) totaled $19,794,946, including $6,712,461 for the aged, $8,502,744 for dependent children, and $3,008,871 for the permanently and totally disabled. A monthly average of 71,453 persons received assistance.

Labor Force.—The state's labor force numbered 1,433,875 persons in July 1959, including 165,850 agricultural workers. Nonfarm employment of 984,200 in the same month was higher than both the figure of 946,600 of the previous July and the 953,400 average for 1958. Manufacturing accounted for 26.9% of nonfarm employment, trade for 21%, and government for 18.8%. Unemployment in July 1959 dropped sharply to 59,425 from 80,350 a year earlier.

Manufacturing.—Manufacturing plants in the state in 1958 employed 256,900 persons, paid $975,886,000 in wages, and added $2,014,247,000 in value by manufacture. Outlays totaling $117,483,000 went for new plant and equipment in 1958, and during the year 62 new plants employing approximately 1,700 workers went into operation. In August 1959, production workers averaged $70 for an average workweek of 40.7 hours.

MAJOR VIRGINIA MANUFACTURES, 1958[1]

Product or industry	Average no. of employees	Salaries and wages	Value added by mfr.[2]
		(thousands of dollars)	
Chemicals and allied products	31,900	$165,373	$418,173
Tobacco manufactures	14,200	53,746	265,143
Food and kindred products	33,800	110,036	232,047
Textile mill products	34,900	113,263	178,576
Transportation equipment	16,900	93,630	166,171
Paper and allied products	11,000	53,574	118,644
Furniture and fixtures	15,200	51,697	85,507
Lumber and wood products (excluding furniture)	23,300	52,788	76,648
Stone, clay, glass products	7,900	29,373	69,387
Apparel and related products	21,500	52,419	66,906

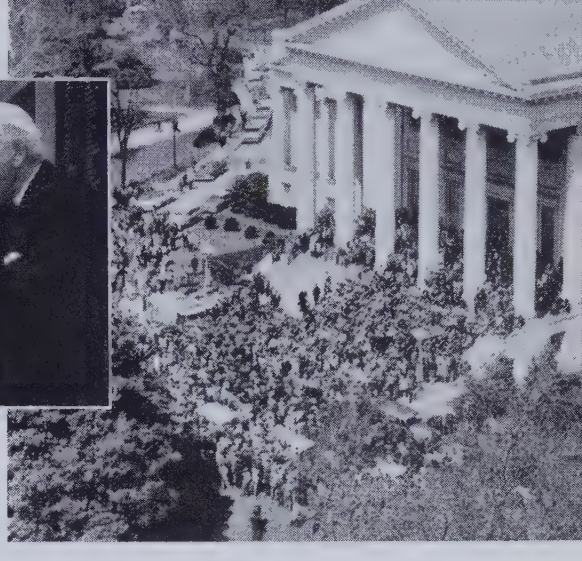
[1] Preliminary. [2] Value of products less cost of materials, supplies, fuel, electric energy, and contract work. (Source: Virginia Department of Labor and Industry.)

Mining.—In 1958 Virginia ranked 19th among the states in the value of its mineral production, with 1.23% of the national total. The state was second in output of pyrites, third in dimension slate, and fifth in crushed and broken slate. Virginia was the nation's sole producer of aplite and one of two states that produced kyanite.

VIRGINIA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	1,153,000	$ 1,143,000
Coal	26,826,000	130,319,000
Coke	153,828	2,280,945[1]
Lead (recoverable content of ore)	2,934	687,000
Lime	471,000	5,533,000
Manganese ore	8,128	647,000
Natural gas (1,000 cu. ft.)	2,521,000[2]	681,000[2]
Sand and gravel	7,158,000	10,834,000
Stone and slate	15,413,000	27,504,000
Zinc (recoverable content of ore)	18,472	3,808,000
Other minerals	...	25,428,000
Total	...	$203,226,000[3]

[1] Values for processed materials are not included in the total. [2] Preliminary. [3] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)



WIDE WORLD

(*Left*) Gov. J. Lindsay Almond, Jr., addresses session of Virginia General Assembly on April 6 to support Perrow Commission plan giving localities choice between adopting limited integration and abandoning public schools. (*Right*) "Bill of Rights Crusaders," at state capitol in Richmond on March 31, assemble to protest against school integration.

Agriculture.—Cash farm income for the first nine months of 1959 rose to $277,336,000 from $271,971,000 for the corresponding period of 1958. For the full year 1958, income comprised $260,773,000 from livestock and livestock products, $199,591,000 from crops, and $9,646,000 from government payments. Principal cash sources in 1958 were dairy products, $79,355,000; tobacco, $78,004,000; and cattle, $64,969,000.

VIRGINIA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	9,220	11,100	10,900
Corn (1,000 bu.)	35,357	40,969	38,410
Hay (1,000 tons)	1,640	2,034	1,783
Peaches (1,000 bu.)	1,315	1,950	1,500
Peanuts (1,000 lb.)	217,107	220,500	194,250
Potatoes (1,000 cwt.)	3,866*	3,747	3,401
Soybeans (1,000 bu.)	3,274	6,052	5,966
Strawberries (1,000 lb.)	8,141*	7,200	7,440
Sweet potatoes (1,000 cwt.)	1,332*	1,700	1,958
Tobacco (1,000 lb.)	158,403	137,678	141,095
Wheat (1,000 bu.)	7,184	6,162	6,462

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 138,000 farms in 1958. Total acreage (1954) of 14,686,000 included 3,158,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,367,000 cattle, 670,000 hogs, 350,000 sheep, and 6,023,000 chickens (excluding commercial broilers). There were 180,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $221,940,000, and 2,256 miles of new construction were completed.

Highways and roads on Jan. 1, 1958, totaled 55,895 miles (32,954 surfaced). Registered *motor vehicles* numbered 1,352,428 on July 31, 1959, including 1,044,487 passenger cars. There were (1959) 27 *railroads* operating 4,125 line miles; 5 regularly scheduled *airlines;* and 155 *airports and airfields* (68 commercial and municipal, 14 military, 43 private, and 30 other).

Communications media (1959) included 92 AM and 11 FM *radio stations;* 1 UHF and 10 VHF *television stations;* 34 daily *newspapers* (circulation, 269,849) and 114 other newspapers (1,178,045); and (January 1) 340,200 business and 832,300 residential *telephones.*

Principal Events, 1959.—The year was marked by the collapse of Virginia's "massive resistance" to school integration and the recognition that some degree of integration was inevitable. Following the outlawing of the "massive resistance" laws by the highest Virginia and federal courts on January 19, Gov. J. Lindsay Almond, Jr., summoned the General Assembly into emergency session for January 28. The legislature hastily approved the governor's stopgap program to ease the impact of court-ordered integration. He particularly desired to prevent any child from being forced to attend an integrated school. The compulsory school attendance law was repealed, and tuition grants of $250 annually were provided for attendance at private nonsectarian schools. Heavy penalties were provided for threatened bombings of schools, churches, homes, and other buildings. The assembly adjourned on February 2 to reconvene two months later when a special legislative commission would present a long-range program aimed at permitting as little integration as possible.

Shortly after adjournment the governor appointed a commission headed by state Sen. Mosby G. Perrow, of Lynchburg, and made up of four state legislators from each of the 10 congressional districts. Its recommendations, signed by 31 of its members, were made public early in April. In urging the enactment of the entire program, Almond admitted that some integration could not be avoided and that in practice a state "cannot interpose its authority or power between the federal government and the object of a federal law or decree."

The Perrow commission's plan was outlined in 15 bills, and parts of it met sharp opposition from a sizable minority in the legislature. As finally enacted, the program was designed to minimize integration and to preserve public schools. Statewide massive resistance was to be replaced by a "freedom of choice" policy on a local option basis. Localities were enabled to support public schools with limited integration, to abandon public schools, or perhaps ultimately to accept general integration. The $250 tuition grant was also to be used for attending public schools outside the community where the pupil lived, as well as for private nonsectarian schools. A weak compulsory attendance law was to be in force only after affirmative action by the governing body of a locality. The chief controversy centered on the pupil assignment bill. Under a compromise the 1956 state Pupil Placement Act was to remain in effect until March 1, 1960, unless sooner rendered useless by the courts. After that date a locality might vote whether pupil assignments should be made by local officials or by a state board. After this program was enacted, Governor Almond reasserted, in June, the necessity of supporting public schools for the 800,000 children of school age and permitting private schools where public opinion will not tolerate mixed schools.

In the Democratic primary elections to the General Assembly on July 14 the "massive resist-

ance" forces suffered a setback. Almond's "containment" forces showed a gain of 5 or 6 in the Senate and only a slight reduction of their majority in the House.

Segregation was breached quietly and calmly in February when 51 Negroes began attending normally white schools in Alexandria, Arlington, Norfolk, and Warren County. Warren County High School, which normally had 1,000 students, operated the second semester with only 21 Negroes attending. No white pupils enrolled. By October, 86 Negroes were attending 16 schools with approximately 20,000 white students in Alexandria, Arlington, Charlottesville, Norfolk, and Warren County. In all cases the Negroes had been admitted under pressure or direct orders from the federal courts.

In Norfolk, in November, the State Pupil Placement Board was forced to agree to the assignment of four Negroes under threat of consequences for contempt of court. Private schools that had been set up in Charlottesville and Warren County for white children, when public schools in those communities were closed in September 1958, were continued on a more permanent basis in September 1959. In the five localities where integration had occurred, 1,283 pupils were receiving state tuition grants which had been provided as an escape from compulsory integration.

On May 5 the Fourth U.S. Circuit Court of Appeals reversed a district court's decision to delay actual desegregation until 1965 in Prince Edward County and ordered the county to admit Negroes to its high school by September 1959. It was also ordered to make plans to admit Negro pupils to all its elementary schools by "the earliest practical day." A month later Prince Edward County became the first community in the South to close all its public schools, both white and Negro, rather than accept integration. The action obviously had the overwhelming support of its white citizens. In September about 1,500 white pupils attended eight private schools in 16 buildings set up and sponsored by the Prince Edward School Foundation. To avoid possible legal difficulty it was decided not to take advantage of the tuition grants. There were no schools for the county's 1,700 Negro children. Toward the end of the year a group of white citizens planned a system of private schools for Negroes, but Negro leaders urged noncooperation.

In the field of higher education in Virginia, 48 Negroes were attending classes with white students at four state colleges and two church schools.

At the University of Virginia, Colgate W. Darden, Jr., retired as president and was succeeded by 41-year-old associate professor of English, Edgar F. Shannon, Jr. Francis P. Gaines retired after 29 years as president of Washington and Lee University and was succeeded by Fred Carrington Cole, academic vice president of Tulane University. (See also EDUCATION.)

Principal Events by: ALLEN W. MOGER,
Professor of History,
Washington and Lee University.

VIRUSES. See Index entry.
VISION. See OPHTHALMOLOGY.
VITAL STATISTICS. See Index entry.

VITAMINS. "Nature put the vitamins in foods; man has been doing a good job in taking them out." This aptly describes the high degree of food refinement currently prevalent. But science, which has unlocked the energy in the atom, has yet to understand how nature puts together in natural foods the vitamins necessary for utilizing such foods.

Antivitamins.—Equally enigmatic is the presence in some natural foods of antivitamins or vitamin antagonists, substances which counteract or antagonize the nutritional effects of vitamins, causing nutritional deficiencies. An example of this phenomenon is the B_1 or thiamine antagonist, found in certain raw fish and identified as the enzyme thiaminase, responsible for a paralysis in fur-bearing animals subsisting on a diet composed largely of raw fish. Pyrithiamine, another thiamine antagonist derived from thiamine, was the first antivitamin to be described (by Wooley in 1940). Since an antivitamin usually has a chemical structure closely resembling that of a vitamin, it can replace or compete with the vitamin biochemically in its specific enzyme systems.

Another classic example of vitamin antagonism is that of folic acid and aminopterin. Their supposedly only slight difference in chemical structure, however, is of profound importance since it has led to some new concepts in the currently active studies of antimetabolites and some new theories on the causes and treatment of certain diseases. In fact, aminopterin is being used with some success in the treatment of childhood leukemia.

Almost every known vitamin may have one or more antagonists, either structurally related or totally unrelated to it. Thus, vitamin A, under certain conditions such as in the cooking of foods, can undergo isomerism, a structural change which reduces its vitamin activity as much as 50%; and pyridoxine, or vitamin B_6, is antagonized by a close relative, desoxypyridoxine. The normal blood coagulation factor, vitamin K, is effectively antagonized by the chemically related dicumarol, the substance present in "spoiled sweet clover hay," responsible for the fatal hemorrhagic disease in cattle eating large amounts of such hay. Also, a number of the water-soluble vitamins can chemically react with each other to reduce their vitamin activity.

A number of investigations have been reported in 1959 into the many chemical substances known to destroy vitamin B_{12}, including the vitamins ascorbic acid and combinations of thiamine and niacin, and some common foods such as glucose. (A lengthy discussion of antivitamins is given in a review on antimetabolites in the March 5, 1959, issue of *Science.*)

Most nutrition specialists believe that a daily supplement of prepared vitamins or a more careful selection of fresh foods in the diet can insure against the losses caused by antivitamins.

New Research.—During the past year, there have been a number of important contributions to our knowledge of the role of the vitamins in health and disease. New work presented by Dr. George Wald of Harvard may well lead to understanding the role of vitamin A in the function of sight and the prevention of night blindness and some types of permanent blindness. The role of vitamin A in reducing incidence of goiter in children and in protecting chicks against an infectious respiratory disease are other highlights.

Further work on the role of B_6 in normal functions of the brain, and the increased requirements of some children for this vitamin was reported from the National Institute of Mental Health. The role of B_6 in reducing oxalic acid excretion is of interest in the study of kidney stone formation. The vital coenzyme A factor in liver is reported decreased in B_6 deficiencies.

The direct role of vitamin B_{12} in prevention and treatment of mental disturbances was reported independently by two hospital research centers,

and the indirect role of this vitamin in protein synthesis was described in reports from the National Institute for Medical Research. A number of studies on the absorption of vitamin B_{12} with and without intrinsic factor were reported during the year, as was the indication that growth-retarded children on an apparently adequate diet can benefit from B_{12} supplementation.

The use of vitamins in massive doses for treating deficiency diseases unresponsive to normal or maintenance dosage is gradually being adopted. This type of therapy, known as "metabolotherapy," is based on the theory that vitamins in large doses have therapeutic effects beyond those known to apply to normal metabolic functions, and thus compare to the action of other known metabolites such as the hormones. This extension of metabolotherapy may well be the beginning of a new "vitamin age."

(See also BIOCHEMISTRY; NUTRITION; and the Index entry, *Vitamins.*)

LOUIS FREEDMAN,
Vice President in Charge of Research,
U.S. Vitamin Corporation.

VOCATIONAL EDUCATION. See EDUCATION; OFFICE OF EDUCATION, U.S.

VOCATIONAL GUIDANCE AND REHABILITATION. See Index entry, *Vocational Guidance.*

VOICE OF AMERICA. See UNITED STATES INFORMATION AGENCY.

VOLCANOLOGY. See Index entry.

VOLLEYBALL. See SPORTS, GAMES, AND SHOWS.

VOLTAIC REPUBLIC. See UPPER VOLTA.

WAGES AND HOURS. Weekly earnings and hours of work in most nonfarm industries made a strong recovery in 1959 from the depression levels of the previous year. In manufacturing industries, for example, weekly hours had risen to 40.7 in June, a full 1.5 hours more than during the comparable month of 1958. Weekly earnings of factory workers over the same span of months rose from $83.10 to $91.17. An estimated two thirds of the increase in the workweek among factory employees during the first half of 1959 represented overtime work at premium rates which greatly influenced weekly pay.

By October 1959, both earnings and hours in manufacturing industries, especially among those using steel, had receded somewhat, but they were still substantially above recession lows. October earnings averaged $89.06 per week, compared with $85.17 a year earlier (see Table 1). The average, however, concealed the diversity of a range spreading from $56.15 in finished textiles and apparel to $116.35 in petroleum products.

With inclusion of nonmanufacturing industries, the highest average weekly earnings in October 1959 were received by bituminous coal miners ($124.21), although hours worked by them during the month averaged only 38.1. Lowest paid workers were in laundries ($46.96), where hours averaged 39.8. Of the 41 separate industry listings in Table 1 for which data were available, 25 reveal weekly earnings in excess of $90 (including 15 in excess of $100). Each of the 41 showed an increase over October 1958 except nonbuilding

Table 1—AVERAGE WEEKLY HOURS AND GROSS EARNINGS, BY INDUSTRY[1]

Industry group and industry	Average weekly hours in October 1959	Average weekly hours in October 1958	Average weekly earnings in October 1959	Average weekly earnings in October 1958
Mining	41.1	40.0	$109.33	$102.40
Metal mining	40.3	38.7	98.74	98.30
Anthracite mining	30.0	29.7	82.50	77.52
Bituminous coal mining	38.1	35.8	124.21	107.76
Petroleum and natural gas production (except contract services)	40.3	40.3	112.84	107.60
Nonmetallic mining and quarrying	44.2	45.2	97.68	95.37
Contract construction	37.0	38.1	117.66	115.82
Nonbuilding	40.6	42.7	117.74	118.71
Building	36.1	36.8	118.05	115.18
Manufacturing (total)	40.3	39.8	89.06	85.17
Durable goods	40.8	40.1	96.29	91.83
Ordnance and accessories	41.0	41.2	105.37	103.00
Lumber and wood products (except furniture)	40.7	41.1	81.81	80.15
Furniture and fixtures	41.8	41.0	76.49	73.39
Stone, clay, and glass products	40.8	41.0	90.58	86.51
Primary metal industries	40.1	38.9	105.86	106.59
Fabricated metal products (except ordnance, machinery, and transportation equipment)	41.2	40.8	98.06	93.02
Machinery (except electrical)	41.5	39.5	104.17	94.41
Electrical machinery	40.9	39.9	91.21	85.79
Transportation equipment	40.0	40.0	108.80	102.00
Instruments and related products	41.2	40.4	94.35	89.28
Miscellaneous manufacturing industries	40.7	40.3	77.33	74.56
Nondurable goods	39.7	39.4	80.19	76.83
Food and kindred products	41.0	40.9	86.51	81.80
Tobacco manufactures	39.8	39.6	62.09	60.19
Textile-mill products	40.4	40.1	64.24	60.95
Apparel and other finished textile products	36.7	36.0	56.15	55.08
Paper and allied products	42.6	42.7	94.57	91.38
Printing, publishing, and allied industries	38.6	37.9	104.99	99.68
Chemicals and allied products	41.7	41.0	102.17	95.94
Products of petroleum and coal	40.4	40.2	116.35	110.15
Rubber products	41.2	40.7	102.18	97.27
Leather and leather products	37.0	37.0	59.57	58.46
Transportation and public utilities:				
Class I railroads	[2]	42.6	...[2]	103.52
Local railways and bus lines	42.4	42.5	94.13	90.53
Telephone	39.7	39.0	88.13	81.51
Telegraph	42.1	41.7	95.57	93.41
Gas and electric utilities	41.2	40.9	108.36	102.66
Trade:				
Wholesale trade	40.4	40.3	91.71	87.85
Retail trade (except eating and drinking places)	37.7	37.9	66.73	64.81
Finance, insurance, and real estate:				
Banks and trust companies	37.6	37.6	68.81	66.93
Security dealers and exchanges	[2]	...[2]	105.41	115.41
Insurance carriers	[2]	...[2]	85.52	82.97
Service and miscellaneous:				
Hotels, year-round	40.5	40.4	48.20	45.65
Laundries	39.8	39.4	46.96	44.92
Cleaning and dyeing plants	39.9	39.4	55.46	52.80
Motion-picture production and distribution	[2]	...[2]	113.67	102.32

[1] Coverage includes production and nonsupervisory workers only.
[2] Not available. (Source: U.S. Department of Labor, Bureau of Labor Statistics.)

construction (which suffered a reduction in the average workweek of more than 2 hours), primary metals (heavily weighted by the basic steel industry), and the relatively minor group of security dealer and exchange employees.

Average hourly earnings in factories, at $2.21, were at an all-time high for October, and all component major industry groups except primary metals and finished textiles were at similar peaks (see Table 2). Average hourly earnings in 15 of the 21 groups were more than $2. The range was from $1.52 in textiles and apparel to $2.87 in petroleum products.

Table 2—AVERAGE HOURLY EARNINGS IN MANUFACTURING[1]

Industry	Average hourly earnings in month of October			
	1959	1958	1957	1956
All manufacturing	$2.21	$2.14	$2.09	$2.02
Durable goods	2.36	2.29	2.23	2.15
Ordnance and accessories	2.57	2.50	2.38	2.25
Lumber and wood products (except furniture)	2.01	1.95	1.84	1.79
Furniture and fixtures	1.83	1.79	1.77	1.73
Stone, clay, and glass products	2.22	2.11	2.09	1.99
Primary metal industries	2.65	2.74	2.55	2.42
Fabricated metal products (except ordnance, machinery, and transportation equipment)	2.36	2.28	2.22	2.13
Machinery (except electrical)	2.52	2.39	2.33	2.25
Electrical machinery	2.24	2.15	2.08	2.02
Transportation equipment	2.70	2.55	2.47	2.37
Instruments and related products	2.30	2.21	2.13	2.05
Miscellaneous manufacturing	1.90	1.85	1.81	1.77
Nondurable goods	2.02	1.95	1.90	1.83
Food and kindred products	2.11	2.00	1.94	1.84
Tobacco manufactures	1.59	1.52	1.46	1.38
Textile-mill products	1.58	1.52	1.51	1.49
Apparel and other finished textile products	1.52	1.53	1.49	1.49
Paper and allied products	2.23	2.14	2.08	1.98
Printing, publishing, and allied industries	2.72	2.63	2.53	2.45
Chemicals and allied products	2.43	2.34	2.24	2.14
Products of petroleum and coal	2.87	2.74	2.71	2.57
Rubber products	2.48	2.39	2.32	2.20
Leather and leather products	1.61	1.58	1.55	1.51

[1] For coverage, see footnote 1 to Table 1.

Overtime hours of work in manufacturing underwent an almost steady rise from 2.3 in January 1959 to 3.0 in September, dropping back to 2.9 in October and 2.6 in November. For October and November 1958 the respective figures were 2.4 and 2.6. Exceptionally long hours of overtime work were noted in lumber and wood products (over 3 hours per week in 9 of the first 10 months of the year), paper and allied products (over 4 hours in each of the first 10 months), and rubber products (between 3 and 4 hours in 6 months and over 4 in the remainder).

The growth in overtime work among factory workers in 1959 was only one factor contributing to the high earnings level. Other influences included rate increases negotiated in 1959 or applied during the year as the result of automatic increases agreed to in prior years (see LABOR). Cost-of-living escalator clauses also served to advance wage rates as the Consumer Price Index rose about 2 points between January and November (see COST OF LIVING).

Purchasing power of spendable weekly earnings[1] in manufacturing rose between October 1958 and October 1959. Comparable figures for a worker with no dependent and one with 3 dependents were $57.78 and $63.77 for 1959 and $56.43 and $62.45 for 1958.

LAWRENCE R. KLEIN,
Editor-in-Chief, "Monthly Labor Review."

[1] Gross earnings expressed in 1947–49 dollars after deduction of social security and income taxes.

WAKE ISLAND. A United States possession consisting of a coral atoll and three islets in the mid-Pacific, 2,100 miles west of Honolulu, Hawaii. Area, 3 square miles; pop. (1950), 349. Wake serves as a transpacific airlines stop, and is under the jurisdiction of the U.S. Navy.

WALES. Forming a peninsula extending westward into the Irish Sea, this principality of Great Britain comprises 13 counties (area, including Monmouthshire, 8,006 square miles; 1956 est. pop., 2,607,500). The chief cities (1957 est. pop.) are Cardiff (251,300), Swansea (162,300), Rhondda (106,900), Newport (104,700), and Merthyr Tydfil (59,300). Some 29% of the population speak Welsh (1951). Four fifths of the population live in highly industrialized areas in South Wales given over to steel plants (Wales produces 89% of Britain's sheet steel), tinplate mills, coal mines, chemical works, and factories. Agriculture employs about 80,000 people.

Wales returns 36 members to the House of Commons, and the British cabinet includes a Minister for Welsh Affairs (Baron Brecon, appointed in 1957). The Council for Wales and Monmouthshire advises the government on such matters as the depopulation of rural Wales, unemployment, and other economic questions. The erection of a nuclear power station at Trawsfynydd Lake was sanctioned in 1958. The four colleges of the University of Wales had 5,744 students in 1958–59.

WALNUTS. See NUTS.

WASHINGTON. City, District of Columbia. See DISTRICT OF COLUMBIA.

WASHINGTON. Northwestern coastal state, United States; admitted to the Union, Nov. 11, 1889. The "Evergreen State" ranks 20th in area and 24th in population among the 50 states.

Area and Population.—Area: 68,192 square miles (land, 66,786; inland water, 1,406), divided into 39 counties. Population: (1950) 2,378,963; (est., July 1, 1958) 2,770,000. Urban places with populations above 10,000 (as estimated by the State Census Board for July 1, 1958) are:

Aberdeen	20,250	Pullman	11,650
Bellevue	11,250	Puyallup	11,300
Bellingham	36,600	Renton	15,680
Bremerton	28,700	Richland	21,809*
Everett	35,000	Seattle	575,000
Hoquiam	11,200	Spokane	188,500
Kennewick	13,650	Tacoma	157,500
Longview	23,300	Vancouver	40,500
Moses Lake	11,000	Walla Walla	25,600
Olympia (*capital*)	17,500	Wenatchee	16,700
Pasco	14,000	Yakima	44,000
Port Angeles	11,700		

* 1950 census figure.

Executive.—Chief state officers in 1959:
Governor: Albert D. Rosellini (Democrat)
Lieutenant Governor: John A. Cherberg
Secretary of State: Victor A. Meyers
Treasurer: Harry (Tom) Martin
Attorney General: John J. O'Connell
Auditor: Cliff Yelle
Supt. of Public Instruction: Lloyd J. Andrews

Constitution and Judiciary.—The present constitution went into effect in 1889. The Supreme Court comprises nine justices; chief justice in 1959 was Frank P. Weaver.

Legislature.—The Washington Legislature, comprising a 49-member Senate (in 1959, 35 Democrats and 14 Republicans) and a 99-member House of Representatives (66 Democrats and 33 Republicans), held its regular 60-day session on Jan. 12–March 12, 1959, and a special session on March 13–28. It adopted a record budget of $2 billion for the 1959–61 biennium, including General Fund appropriations of $834 million. Of the latter, $352 million was allocated to public schools (compared with $264 million for 1957–59) and $84 million for higher education. Tax laws were passed to provide $112 million in additional revenue. The state sales tax was raised from 3½% to 4%, the tax on car purchases from 1½% to 2%, the liquor tax from 10% to 15%, and the cigarette tax from 5 to 6 cents per package. Business and occupation taxes were also increased slightly, and a 25% tax was imposed on tobacco products other than cigarettes.

Other major legislation provided for a strict code of ethics for state officials; revamping of the state's budget and accounting systems; increases in salaries of all elected state officials except the governor (Governor Rosellini ve-

toed that section of the bill raising the governor's salary); increases in the debt limits and revenue-raising powers of cities; ratification of the Western Interstate Corrections Compact; establishment of a $1-per-hour minimum wage; and extension of unemployment benefits.

Finance.—In the 1958–1959 fiscal year, state revenue of $680,684,914 comprised $565,087,851 from state tax sources and $115,599,063 from the federal government. State tax sources include a 3⅓% sales tax (raised to 4% in 1959), motor fuel taxes, and licensing. Expenditures of $641,982,266 went chiefly for education, health, welfare, and safety, and highways. Long-term indebtedness on June 30, 1959, amounted to $314,991,000.

Banking.—As of June 10, 1959, the state's 24 national banks had $2,573,913,000 in assets, $1,584,712,000 in demand deposits, and $746,946,000 in time deposits. The 63 commercial banks and 4 mutual savings banks had assets of $747,886,119.18, demand deposits of $148,176,490.60, and time deposits of $487,149,473.13.

Education.—School attendance is compulsory between the ages of 8 and 15, inclusive. Operating expenditures for public elementary and secondary education in the 1957–58 school year totaled $202,741,402 ($354.75 per pupil). These comprised $70,148,525 from local school districts, $123,469,514 from the state, and $9,123,363 from the federal government. Outlays for construction and improvements amounted to $47,042,132, and teachers' salaries averaged $5,044 (high school, $5,302; elementary, $4,914).

WASHINGTON SCHOOL STATISTICS, 1957–58

Type of school	No.	Teachers	Students
Public elementary (1–8)	1,131	11,796	337,069
Public junior high (7–9)	133	3,010	82,339
Public senior high (9–12)	291	4,475	101,751
Junior colleges	10	338	14,908

Note.—College and university enrollment in the 1958–59 school year totaled 57,385.

Public Assistance.—In the 1958–59 fiscal year state and federal expenditures for public assistance (excluding institutional costs) totaled $119,467,808, including $49,187,557 for the aged, $19,963,744 for dependent children, and $6,270,137 for disability assistance. A monthly average of 137,032 persons received assistance.

Labor Force.—The state's labor force totaled 1,108,700 persons in July 1959, including 128,300 agricultural workers. Nonagricultural employment of 805,700 was up slightly over the figure of 795,300 for the previous July and also above the 792,100 average of the 12 intervening months. Of the total 1959 nonfarm force, 28.8% were engaged in manufacturing, 21.4% in trade, and 19.5% in government. Unemployment of 48,500 in July 1959 was well below the July 1958 figure of 65,100. (See also below, *Principal Events, 1959.*)

Manufacturing.—The state's 5,607 manufacturing establishments in 1958 employed an average of 219,306 persons who received $1,191,303,000 in wages. Value added by manufacture (1958) was an estimated $2,168,171,460, and outlays for new plant and equipment (1957) amounted to $236,553,000. Production workers averaged $101.63 for an average workweek of 39.7 hours in August 1959.

MAJOR WASHINGTON MANUFACTURES, 1958

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Aircraft and parts	65,304	$396,311	$594,447
Lumber and wood products	42,279	201,510	322,416
Paper and allied products	16,803	90,632	290,022
Food and kindred products	27,249	129,074	219,425
Smelting, refining, casting	10,498	66,389	179,250
Chemical and allied products	10,823	73,166	146,332
Printing, publishing, and allied industries	8,202	42,142	71,641
Fabricated metal products	6,407	35,776	60,819
Stone, clay, glass products	4,969	27,398	49,316
Nonelectrical machinery	4,812	27,242	40,863
Ship & boat building & repairs	4,765	26,771	40,156

* Estimated value of products less cost of materials, supplies, fuel, electric energy, and contract work. (Source: Bureau of Business Research, University of Washington.)

WIDE WORLD

A section of main highway leading east from Seattle is washed out by the raging Snoqualmie River, November 23. Heavy rains brought severe floods to western Washington.

Mining.—In 1958 Washington ranked 34th among the states in the value of its mineral production, with 0.37% of the national total. It produced the entire United States output of strontium, and was first in aluminum capacity, second in olivine output, and third in peat and byproduct arsenic. Washington ranked fifth in uranium production, with 9 operating mines in 1958, compared with four in 1957.

WASHINGTON MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Aluminum	311,417	$156,376,362[1]
Clay	196,000	183,000[2]
Coal	252,000	1,968,000
Copper	52	27,000
Gold (fine ounces)	...[3]	...[3]
Iron ore, usable (long tons)	4,000	...[3]
Lead	9,020	2,111,000
Peat	34,642	116,000
Pumice and pumicite	...[3]	...[3]
Sand and gravel	24,389,000	20,086,000
Silver (fine ounces)	...[3]	...[3]
Stone	7,837,000	9,991,000
Zinc	18,797	3,835,000
Other minerals	...	24,226,000
Total	...	$ 60,897,000[4]

[1] Value of processed minerals not included in total. [2] Excludes certain clays, value of which is included in "Other minerals." [3] Figure withheld to protect individual company's confidential data. [4] Total has been adjusted to eliminate duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in the state in 1958 totaled 164,987,000 pounds valued at $25,426,000, including principally salmon (54,363,000 pounds valued at $14,833,000).

Agriculture.—Cash farm income for the first nine months of 1959 was down to $380,098,000 from $399,089,000 for the corresponding period of 1958. For the full year 1958, income comprised $219,166,000 from livestock and livestock products, $353,862,000 from crops, and $6,547,000 from government payments. Principal income sources in 1958 were wheat, $120,071,000; cattle, $78,344,000; dairy products, $76,810,000; and apples, $75,035,000.

The state had 66,000 farms in 1958. Total acreage (1954) of 17,641,000 included 4,343,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,178,000 cattle and 5,864,000 chickens (excluding commercial broilers). There were 77,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

WASHINGTON CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	25,951	29,800	23,040
Apricots (tons)	13,310	14,000	14,000
Barley (1,000 bu.)	12,183	22,144	27,066
Beans, dry edible (1,000 bags)	431	1,365	940
Cherries (tons)	21,390	20,400	14,600
Cranberries (bbl.)	53,460	57,300	98,000
Grapes (tons)	33,040	54,000	57,000
Hay (1,000 tons)	1,559	1,646	1,524
Hops (1,000 lb.)	23,193	28,310	30,504
Oats (1,000 bu.)	7,590	6,560	5,695
Peaches (1,000 bu.)	1,492	2,200	2,200
Pears (1,000 bu.)	5,438	4,700	4,350
Peas, dry (1,000 bags)	1,588	1,071	2,190
Potatoes (1,000 cwt.)	7,843*	11,040	10,520
Prunes (tons)	18,130	13,500	21,000
Strawberries (1,000 lb.)	31,512*	39,000	44,800
Sugar beets (1,000 short tons)	551	813	785
Wheat (1,000 bu.)	70,871	69,957	73,323

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal spending for highways in 1958 totaled $133,273,148, and 409 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 59,058 miles (18,244 surfaced). Registered *motor vehicles* numbered 1,398,233 on the same date, including 1,031,078 passenger cars. There were (1958) 17 *railroads* operating 6,023 line miles; (1959) 10 regularly scheduled *airlines;* and (1959) 178 *airports and airfields* (104 commercial and municipal, 12 military, and 62 private).

Communications media (1959) included 79 AM and 9 FM *radio stations;* 10 VHF and 3 UHF *television stations;* 22 daily *newspapers* (approximate circulation, 880,000) and 166 other newspapers (524,899); and (January 1) 315,200 business and 793,200 residential *telephones.*

Principal Events, 1959.—Washington's economic recession halted in the first part of 1959 as employment of the state's largest employer, Boeing Airplane Company, rose to 75,000. However, as the year wore on, a number of developments served to replace the heady optimism with a note of concern. A prolonged machinists' strike, together with the subsequent nationwide steel strike and west coast shipyard strike, checked the improving employment picture. Boeing's employment declined steadily during the year from 75,000 to 58,000 as the company began its shift from the construction of airframes to the design and production of missiles and weapons systems. As a result of these developments, manufacturing payrolls were lower during the second half of 1959 than they were during the comparable period of 1958.

The original plans for Seattle and the state government to stage an international scientific exposition and world's fair in the summers of 1961 and 1962 were revised to limit the exposition to 1962. After the federal government appropriated $9 million to finance the construction of buildings and scientific exhibits, the decision was made to apply to the Bureau Internationale des Expositions in Paris for official authorization of a world's fair. The fair, to be known as the Century 21 Exposition, will be held from April 21 through October 21 in 1962. Land acquisition for the site of the fair was completed during 1959, and 95% of the land had been cleared by the end of the year. The construction of the Century 21 Coliseum was scheduled to begin in January 1960. President Eisenhower will issue invitations to 84 nations to participate in the exposition.

Seattle and state authorities continued to stand each other off on the feasibility of, and location of, a second floating bridge to span Lake Washington. A possible break in the deadlock came when a King County (Seattle) commissioner proposed to pledge a portion of the road funds available to his district as a guarantee to the bond holders who would provide financing of a bridge at Evergreen Point. The legality of such a procedure was being investigated at year's end.

A new floating bridge neared completion across Hood Canal. The 6,470-foot bridge, which will provide a new link between Olympic Peninsula and central Washington, will cost $17,500,000. Constructed of floating concrete pontoons anchored to the floor of Puget Sound, it will be one of the longest floating bridges in the world. (See also BRIDGES.)

Heavy rains and unseasonably warm weather (which melted mountain snows) combined in November to produce the most devastating floods in the history of western Washington. The rampaging Snoqualmie River, high in the Cascade mountains, severed the main arterial highway connecting the Puget Sound country with eastern Washington and the rest of the nation. Coupled with temporary closure of the other passes over the Cascades, the Snoqualmie washout revived interest once again in a proposed all-weather Naches Pass tunnel through the Cascade mountains.

Principal Events by: WARREN W. ETCHESON,
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WATCHMAKING. Watch sales in the United States in 1958 amounted to an estimated $595 million. In spite of the recession in the early part of the year, sales were about $20 million greater than they were in 1957. The increase came largely from sales of inexpensive watches sold in large numbers by non-jewelry store outlets.

Of the estimated total of 19 million watches purchased in 1958 by slightly over 11% of the country's population, retail jewelers sold 8,785,366 (45.3%); while discount houses, department stores, catalogue companies, and a wide variety of miscellaneous distributors sold 10,568,971 (54.7%).

Of all watches sold, 10,939,781 (51.8%) were priced at less than $30 retail, and 9,323,556 (41.17%) were priced from $30 up. Of high-quality, jeweled-lever watches, retail jewelers distributed more than 7 million, with gross sales of $397,762,615 (66.78% of the gross value of all watches sold). Total sales of jeweled-lever watches were $470,039,520 (78.91% of the gross value of all sales).

Estimates of 1959 sales were rendered uncertain by three factors: the possible effect of the steel strike on business in the last quarter of the year; the competition between retail jewelers and other outlets; and the possibility that inexpensive, pin-lever watches might supplant more of the jeweled-lever watch market than in preceding years. Despite these factors, it was expected that both unit volume and gross sales would surpass 1958 figures, and that watch sales in the United States would reach at least $600 million.

ORVILLE R. HAGANS,
Editor and Publisher,
"American Horologist and Jeweler."

WATER SPORTS. See SPORTS, GAMES, AND SHOWS.

WATER SUPPLY. See SANITARY ENGINEERING and the Index entry, *Water.*

WEALTH. See INCOME.

WEAPONS. See Index entry.

WEATHER. See METEOROLOGY AND CLIMATOLOGY.

WEIGHTLIFTING. See SPORTS, GAMES, AND SHOWS.

WELFARE. See CHILD WELFARE; OLD AGE; SOCIAL WELFARE.

WEST AFRICA, British. See BRITISH WEST AFRICA.

WEST INDIES. An archipelago extending some 2,500 miles from Florida to the coast of Venezuela, composed of three island groups: Greater Antilles (Cuba, Hispaniola, Jamaica, and Puerto Rico); Lesser Antilles or Caribbees (Virgin Islands, Leeward Islands, Windward Islands, Barbados, Trinidad and Tobago, and the Dutch and Venezuelan islands in the southern Caribbean Sea); and the Bahamas. Politically, the West Indies include three republics (Cuba, the Dominican Republic, and Haiti); Puerto Rico, a self-governing commonwealth in close association with the United States; the Virgin Islands of the United States, a United States possession; and territories of Great Britain (Bahamas, British Virgin Islands, and The West Indies federation), France (the overseas departments of Guadeloupe and Martinique), the Netherlands (Netherlands Antilles), and Venezuela (Margarita Island and several smaller offshore islands). The West Indies federation, which came into being in 1958, includes Antigua, Barbados, Dominica, Grenada, Jamaica, Montserrat, St. Kitts-Nevis, St. Lucia, St. Vincent, and Trinidad and Tobago. (See separate articles on the political components of the archipelago.)

WEST INDIES FEDERATION (officially THE WEST INDIES). Aspiring to membership in the Commonwealth of Nations, this autonomous Caribbean federation, forming a chain of islands extending from the Bahamas to Venezuela (area, 7,996 square miles; pop., 1958 est., 3,165,403), was established Jan. 3, 1958, with 10 members grouped in 5 British colonies as follows: Barbados, Jamaica, the Leeward Islands (Antigua, Montserrat, and St. Christopher–Nevis-Anguilla), Trinidad and Tobago, and the Windward Islands (Dominica, Grenada, St. Lucia, and St. Vincent). The British Virgin Islands (q.v.), in the Leeward Islands, have not joined the federation; provision has been made for British Guiana and British Honduras to do so. Port of Spain, Trinidad, is the seat of government.

Particulars of government, education, trade, and communications in each territory are treated separately below.

Colony	Area (sq. mi.)	Population (1958 est.)	Capital
Barbados	166	236,812	Bridgetown
Jamaica	4,674[1]	1,667,899[2]	Kingston
Leeward Islands[3]	355	129,821	St. John's
Trinidad and Tobago	1,980	801,000	Port of Spain
Windward Islands	821	329,871	St. George's
	7,996	3,165,403	

[1] Colony, 4,411 square miles; Turks and Caicos Islands, 170 square miles; Cayman Islands, 93 square miles. [2] Includes Jamaica, 1,651,493; Turks and Caicos Islands, 7,000; Cayman Islands, 9,406. [3] Excluding British Virgin Islands (area, 67 square miles; pop., 7,600), which are not part of the federation.

Government.—The governor general and commander in chief is Lord Hailes, who took office Jan. 3, 1958. The legislature comprises a nominated Senate of 19 members and an elected 45-member House of Representatives. The colonies are represented in the lower house as follows: Jamaica, 17 members; Trinidad and Tobago, 10; Windward Islands, 8; Leeward Islands, 5; and Barbados, 5. In 1959, party seating in the chamber was: Federal Labour Party, 23; Democratic Labour Party, 19; Grenada United Labour Party, 2; Barbados National Party, 1. Ten ministers (7 from the lower house and 3 from the Senate) form the Council of State; Sir Grantley Adams was elected first federal prime minister on April 18, 1958.

To bring less advanced territories into line with the larger units (Barbados, Jamaica, and Trinidad) in respect to self-government, and thus to move more rapidly to sovereignty for the federation, a number of constitutional changes affecting the Leeward Islands and Windward Islands were agreed upon by British Colonial Secretary Alan Lennox-Boyd and representatives of 7 member territories on June 26, 1959.

Finance.—The federal government's main source of revenue for the first 5 years is a mandatory levy not exceeding BWI$9,120,000 in any one year (the currency unit is the British West Indian dollar, equivalent to U.S.$0.5833). In addition, funds are administered for Colonial Development and Welfare projects formerly handled by the United Kingdom government. Authorized expenditure for 1959 was BWI$10,740,423; Colonial Development and Welfare funds totaled BWI$545,132.

Education.—The University College of the West Indies (chartered in Jamaica on Jan. 10, 1949) is supported by all of the member territories and is seeking full university status by 1963 (see below, *Principal Events*). General education is the responsibility of each member of the federation. In 1959 the federal Ministry of Education actively promoted the training of teachers and administrators for technical schools and workshops.

Defense. —From March 31, 1958, the Jamaica Regiment formed the nucleus of defense forces, these consisting principally of the reconstituted West India Regiment (800 men, all ranks).

Communications.—A number of international airlines serve the region, which has its own inter-island air services. An aggregate of BWI$20 million is being spent by federal territories on the further development of airports. Two ships (a gift of the Canadian government) used by the federal shipping service carried 4,720 persons and over 15,000 tons of cargo during the 12 months from Jan. 3, 1958.

Economy and Development.—From the 17th century, sugar has dominated the agricultural economy of the islands. In recent years, however, such crops as bananas (grown principally in Jamaica and the Windward Islands), coconuts, cotton, tobacco, and citrus fruits have been grown for export. Fishing, forestry, and a thriving tourist industry also are important to the economy.

On Feb. 25, 1959, an agreement was signed at Port of Spain between the federation and the U.S. International Cooperation Administration to provide for the establishment of technical projects in the region. A recently inaugurated U.S. Operations Mission, with headquarters in Trinidad, will administer the agreement.

Principal Events, 1959.—Under a second agreement signed at the federal capital on June 30 between The West Indies and the U.S. International Cooperation Administration, provision was made for a United States contribution toward development of $450,000, distributed as follows: (1) machinery and equipment for the Jamaica Institute of Technology, $100,000; (2) equipment and buildings for two technical institutions to be established in the eastern Caribbean, $200,000; (3) road development in the Windward and Leeward groups, $100,000; and (4) West Indies–American Cooperative Service, $50,000.

A program of Canadian aid to the federation for development purposes has been launched, including a proposed survey of natural resources, beginning with Dominica, where a forest inventory is to be taken and plans laid for water and soil conservation projects.

A Regional Council of Ministers was established at a meeting at Port of Spain on January 12; delegates included representatives of British

Guiana. A conference on revising the constitution was held at Trinidad on September 28–October 7; the delegates reportedly failed to agree on Jamaica's demands for increased representation in the legislature.

In 1959 the federal government opened discussions with unit governments looking to the implementation of the Cato report on the University College of the West Indies, which recommended that the institution should seek to acquire full independent university status by 1963. (Dr. A. S. Cato of Barbados was chairman of a committee appointed in May 1957 to review the policy of the college; its report was submitted to the governor general on Dec. 2, 1958.)

The government initiated plans in 1959 for the establishment of a federal central bank.

Barbados

This most easterly of the Caribbean islands (continuously a British possession since 1605) lies 102 miles east of St. Vincent (Windward Islands). Its population—in density one of the highest in the world—was 236,812 in 1958, of which about 93% was Negro. Bridgetown (pop., 18,650 in 1957) is the capital and chief port. A governor (Sir John Stow, appointed in October 1959) is assisted by an Executive Council, whose members, together with not less than 1 from the 15-member Legislative Council and not less than 4 from the elected 24-member House of Assembly, form the Executive Committee. A cabinet system of government was inaugurated Jan. 2, 1958.

The currency unit is the British West Indian dollar (equivalent to U.S.$0.58). The 1959–60 budget estimated revenue at BWI$23,761,769, and expenditure at BWI$20,723,431.

In 1958–59, there were 116 primary and 4 secondary modern schools (aggregating 39,248 pupils) and 10 grant-aided secondary schools (3,836 pupils); BWI$3,254,840 was spent on education.

Sugarcane is the principal crop. In 1959 some 46,960 acres produced 184,153 tons of sugar, including the equivalent of 4,092,406 wine gallons of fancy molasses. The government-aided fishing fleet caught some 7 million pounds of fish, valued at BWI$1,500,000, in 1958. Besides sugar factories (19 in 1959) there are 7 sirup plants, 3 rum distilleries, 2 iron works, a cigarette factory, and a brewery.

In 1958, total imports were valued (in sterling) at £15,300,000; total exports, at £8,310,000. Imports included foodstuffs, £2,742,212; electric motor vehicles and parts, £896,528; metal manufactures, £529,524; cotton piece goods, £358,262; and paper and paper manufactures, £348,708. Principal domestic exports were sugar, £5,526,681; molasses, £1,010,851; rum, £468,552; margarine, £95,571; sugar confectionery, £50,108; soap, £34,925; lard, £27,976; and building lime, £24,321.

Barbados is served by British West Indian Airways, British Overseas Airways Corporation, Trans-Canada Air Lines, Air France, Linea Aeropostal Venezolana, Pan American Airways, and St. Vincent Government Airways. Nearly 29,440 passengers disembarked in Barbados in 1958.

There are 675 miles of roads, including 578 miles of all-weather roads. By June 1959 there were 36,700 miles of telephone line and 8,440 telephones.

Jamaica

The territory is situated some 90 miles south of Cuba in the Greater Antilles. Under recent United Kingdom parliamentary legislation, the Turks and Caicos Islands and the Cayman Islands are administered separately from Jamaica; orders in council of May 13, 1959, provided increased self-government for both these groups. The population of Jamaica was estimated in 1958, at 1,651,493, most of whom are of Negro stock.

With the coming into effect on July 4, 1959, of the Jamaica (Constitution) Order in Council, the colony attained complete internal self-government within the framework of The West Indies. Under a governor (Sir Kenneth William Blackburne, who took office in 1957), the new constitution provides for a 45-member House of Representatives; a 20- or 21-member Legislative Council (membership in 1959 was 21); a cabinet consisting of the premier and not less than 11 other ministers (of whom not less than 2 nor more than 3 must be members of the Legislative Council); and three parliamentary secretaries to assist cabinet ministers. Most of the reserved powers of the governor have been removed. After a general election held on July 28, 1959, the governor appointed as premier Norman Washington Manley, leader of the (Jamaican) People's National Party and of the Federal Labour Party.

The 1959–60 budget calls for an estimated expenditure of £27,192,841; revenue was estimated at £34,570,971.

In December 1958 there were 707 public primary schools (246,865 pupils), and 36 secondary and high schools (13,200 pupils). There are also 3 rural secondary technical schools for boys and 1 for girls; 5 teacher-training colleges; and a college of arts, science, and technology. Expenditure on education for 1958–59 was £4,332,991. The federal government has now assumed full responsibility for the University College of the West Indies at Mona, St. Andrew, which has faculties of medicine, science, and arts; a department of education; and an affiliated teaching hospital.

Mining and agriculture are basic in the economy. The principal items of export in 1958 were bauxite, 4,799,037 tons (£12,597,482); alumina, 373,108 tons (£9,131,816); sugar (unrefined), 267,461 tons (£9,952,195); and bananas, 5,824,257 count bunches (£5,187,616). Exports (including re-exports) were valued at £47,383,592 in 1958; imports at £64,659,860. In 1958, visitors numbered 169,447 and spent an estimated £10 million in the territory.

Jamaica has 2,644 miles of main roads, and 4,438 miles of parochial roads. The government operates 249 miles of railway. British West Indian Airways and 9 other airlines serve the territory.

Cayman Islands.—Comprised in this island group are Grand Cayman (pop., 7,646 in 1958), on which are Georgetown (the capital; pop., 1,780 in 1958), West Bay, Boddentown, East End, and North Side; Cayman Brac (pop., 1,728 in 1958); and Little Cayman (pop., 32 in 1959). Grand Cayman is situated some 150 miles west-northwest of Jamaica; Cayman Brac lies 79 miles east-northeast of Grand Cayman. Under a new constitution effective July 4, 1959, the islands are administered under the governor of Jamaica by an administrator (Major Alan H. Donald), assisted by an Executive Council of 5 persons, all drawn from the 18-member Legislative Assembly. Free education is provided in 11 elementary schools (average attendance, 650 in 1958); there are 2 private secondary schools. Most of the male population are engaged in seafaring, including turtle fishing off Nicaragua, some 1,500 live turtles being exported to the United States annually. The manufacture of rope from thatch palm is a cottage industry.

There is a growing tourist industry, most visitors coming from the United States. British West Indian Airways and Líneas Aéreas Costarricenses link Grand Cayman with Miami, Fla., Jamaica, and Central America. Cayman Brac Airways provides interisland service. A road improvement project has completed an asphalt highway from West Bay through Georgetown to Boddentown.

Turks and Caicos Islands.—This group (total population in 1958, 7,000), located 450 miles northeast of Jamaica, comprises 30 or more islands (8 inhabited), including Grand Turk (est. pop., 2,000), which is the seat of government and the site of a cable relay station, a guided missile observation post, and a naval facility. Under a new constitution, effective May 13, 1959, an administrator (G. C. Guy) is assisted by a 15-member Legislative Assembly (including 3 official, 3 nominated, and 9 elected members), and by an advisory Executive Council of 5 members (2 official, 1 nominated, 2 elected). Education is free at the 13 government schools (average attendance, 1,239 in 1958). Revised budget figures balanced revenue and expenditure at £170,724 in 1958. Principal exports are salt (produced by solar evaporation), sisal (supplied to Jamaica), crawfish (to Miami, Fla.), and conchs (to Haiti and Miami).

Leeward Islands

This island group, lying north of the Windwards, formed a federation of 4 colonial presidencies until the passage by the British Parliament in 1956 of legislation enabling them to join The West Indies as independent units; all have done so except the British Virgin Islands (q.v.). The population in predominantly Negro.

	Square miles	Population	Capital	
Antigua[1]	170.5	56,777	St. John's	(13,500[2])
St. Kitts-Nevis[3]	152	58,579	Basseterre	(15,000[4])
Montserrat	32.5	14,465	Plymouth	(2,500[2])
Total	355	129,821[5]		

[1] Antigua (108 square miles) and dependencies: Barbuda (62 square miles) and Redonda (0.5 square miles). [2] 1956. [3] St. Kitts or St. Christopher (68 square miles)-Nevis (50 square miles), and dependent Anguilla (34 square miles). [4] 1957. [5] As of Dec. 31, 1958; this total excludes the British Virgin Islands (q.v.).

Sir Alexander Thomas Williams (who took office Feb. 21, 1957) served as governor through 1959. Constitutional reforms applying alike to the Leeward Islands and Windward Islands were adopted June 26, 1959, with effect from Jan. 1, 1960. The office of governor was in either case abolished and its powers transferred to an administrator for each of 7 territories. An Executive Council in each territory, headed by an appointed chief minister chosen from the Legislative Council, was charged with the general control of government and made responsible to the Legislative Council, in which in each case the elected members were to be increased by 2, except in Dominica and St. Vincent (see below, *Windward Islands*).

The unit of currency is the British West Indian dollar (equals U.S.$0.58). Trade is principally with the United Kingdom. In terms of sterling, total imports (including the British Virgin Islands) were £5,370,000; total exports, £2,870,000, in 1958.

Antigua.—An administrator (I. G. Turbott) is assisted by an Executive Council and a 13-member Legislative Council (8 elected members in 1959). Revenue in 1958 was BWI$8,788,351; expenditure, BWI$8,446,009. In 1958 there were 42 primary schools (32 government and 10 private), and 7 secondary schools (4 government grant-aided and 3 private).

The sugar crop in Antigua dropped from 31,985 tons in 1957 to 19,348 tons in 1958, of which 17,086 tons were exported. Rum and molasses were also manufactured. On Barbuda, cotton is the chief crop, of which about 80% is produced by peasant agriculture. The estimated value of total exports in 1958 was BWI$5,198,576; imports, BWI$12,882,144. There are about 64 miles of main roads and 85 miles of secondary roads. Coolidge Airfield, at a United States-leased base, is used by Pan American World Airways, British West Indian Airways, Air France, Leeward Islands Air Transport, and Trans-Canada Air Lines. A 3-story administration building was opened in June 1959, and a new terminal building is under construction.

St. Kitts (or St. Christopher)-Nevis and Anguilla.—The principal instrument of policy is the Executive Council, which includes the administrator (in 1959, Lt. Col. H. A. C. Howard), 2 official members, 1 nominated member, and 4 or 5 members elected by the 14-member Legislative Council (8 elected members in 1959). Revenue in 1958 was approximately BWI$5,692,730; expenditure, about BWI$5,682,909.

In 1958, there were 43 elementary schools (government, 33; private, 9; and denominational, 1) and 5 secondary schools (government, 4; private unaided, 1); the average attendance of elementary schools was 10,100. Chief products of the islands in 1958 were sugar, 39,578 tons (BWI$7,836,031); cotton, 779,841 pounds (BWI-$823,603); molasses, 1,266,259 gallons (BWI$185,411); and salt, 18,637 barrels (BWI$69,351). Exports in 1958 totaled BWI$9,428,093; imports, BWI$11,358,149.

Some 36 miles of light railways are operated by sugar companies on St. Kitts. The aggregate of highways is 79 miles. The colony is served by British West Indian Airways, Leeward Islands Air Transport, and KLM Royal Dutch Airways, using an airport 2 miles north of Basseterre.

Montserrat.—An administrator (A. F. Dawkins) was assisted in 1959 by a 5-member Executive Council and a 9-member Legislative Council (5 elected members). Estimated revenue in 1958 was BWI$2,019,437; expenditure, BWI$2,013,369.

In 1958, primary schools numbered 16 (government, 12; denominational, 2; private, 2), and there was 1 government secondary (senior) school. Pupils in the primary schools totaled 3,329; in the secondary school, 190.

Development projects include banana cultivation, road construction, health clinics, housing, and water supplies. Cotton, tomatoes, carrots, and other vegetables are exported. In 1958, exports totaled BWI$393,672; imports, BWI$1,516,896.

There are about 43 miles of asphalted public roads, and 34 miles of secondary roads. Two passenger vessels serve the colony. Blackburne Airfield on the east coast, opened in 1956, has a total length of 5,000 feet.

Trinidad and Tobago

Lying off the northeast coast of Venezuela, the islands form a colony with an aggregate population estimated at 801,000 at the end of 1958 (Trinidad, 751,700; Tobago, 36,900 in mid-1958). The capital and chief port is Port of Spain (1958 est. pop., 121,150).

The governor is Sir Edward Beetham (appointed Feb. 10, 1955). A cabinet system of government introduced in June 1959 provides for a cabinet of 9 elected ministers and 2 officials, headed by a premier. There is a 31-member Legislative Council, but steps were taken in 1959 to establish a two-chamber legislature and to achieve full internal self-government by 1961.

Government revenue for 1959 was estimated at BWI-$169,967,562, and expenditure at BWI$167,640,400 (the British West Indian dollar equals U.S.$0.58). Enrollment in 422 government and aided primary and intermediate schools was 170,022 in 1958; there were also 155 private primary schools. The 19 government and aided secondary schools and 23 private secondary schools had an aggregate of 17,383 students in 1958.

The third largest producer of crude oil among the Commonwealth countries, Trinidad has 5,256 wells, of which 3,171 were producing in 1958. Production of crude petroleum in 1958 was 5,205,500 tons, compared with 4,797,600 tons in 1957. Imports of crude oil in 1958 amounted to 3,602,473 tons, of which 70% was supplied by Venezuela. Principal agricultural exports in 1958 were (in thousands of pounds): grapefruit, 21,571; cocoa beans, 18,169; bananas, 9,881; oranges, 8,351; and sugar, 1,571,-000 tons. Total exports in 1958 were valued at BWI$393,-539,000 (including BWI$102,385,794 to the United Kingdom); imports, at BWI$412,493,000 (including BWI-$134,947,202 from the United Kingdom). Chief exports by value in 1958 were: petroleum and other mineral fuels, BWI$151.7 million; sugar, BWI$30 million; and cocoa beans, BWI$8.7 million.

Roads aggregate 2,510 miles; there are 109 miles of government railways. A swamp road connecting the Churchill-Roosevelt Highway with Port of Spain was completed in late 1957. Piarco Airport, about 12 miles from the capital, is served by 11 international airlines.

Windward Islands

This group comprises Grenada, St. Vincent, St. Lucia, and Dominica, and forms the eastern barrier to the Caribbean Sea between Martinique and Trinidad. About 95% of the population are Negroes.

Colony	Area (sq. mi.)	Population (1958 est.)	Capital	
Grenada[1]	133	92,000	St. George's	(20,832[2])
St. Vincent	150	81,782	Kingston	(8,171[3])
St. Lucia	233	92,089	Castries	(25,000[4])
Dominica	305	64,000	Roseau	(13,500[4])
Total	821	329,871		

[1] The Grenadines are administered in part by Grenada, in part by St. Vincent; Carriacou (13 sq. mi.; pop., 7,113 in 1949), largest island of the Grenadines, is administered by Grenada. [2] 1956. [3] 1958. [4] 1957 est.

Sir Colville M. Deverell (appointed June 23, 1955) held office as governor through 1959. From Jan. 1, 1960, the governorship was abolished under constitutional reforms applying alike to the Windward and Leeward Islands. Under an administrator in each of the 7 member territories, an Executive Council was made responsible for the general conduct of government. Elected members of the respective Legislative Councils were to be increased by 2 each, except in Dominica and St. Vincent, where they were increased by 3 and 1 members respectively.

The unit of currency is the British West Indian dollar (equals U.S.$0.58). In sterling, the value of total exports in 1958 was £4,870,000; of total imports, £7,-830,000. The aggregate educational enrollment was provisionally estimated in 1958 at 75,900.

Grenada.—Government revenue for 1958 was estimated at BWI$5,041,387; expenditure, at BWI$6,075,068. In 1957, there were 11 government and 43 grant-aided primary schools, with a combined enrollment of 19,487 pupils; and 6 secondary schools.

Total exports were valued at BWI$4,570,750 in 1957, and included cocoa, 23,308 cwt. (BWI$1,387,788); bananas, 568,901 stems (BWI$1,346,148); nutmegs, 3,452 cwt. (BWI$1,046,483); mace, 1,306 cwt. (BWI$601,-520); and raw cotton, 993 cwt. (BWI$57,798). Imports in 1957 totaled BWI$10,629,061, including BWI$4,279,-000 from the United Kingdom. There are 479 miles of roads, of which 256 miles are surfaced. Grenada is served by British West Indian Airways and British Guiana Airways.

St. Vincent.—Revenue in 1958 totaled BWI$6,013,-648 (BWI$1,701,215 from Colonial Development and Welfare funds); expenditure, BWI$5,736,334 (BWI$1,-781,985 on development and welfare projects). Primary schools numbered 50 in 1958 (government, 27; government-aided, 23), and had 19,559 pupils; 4 secondary schools (government, 2; subsidized, 2) had 864 pupils. Two new primary schools have been built since January 1958.

Principal agricultural crops are bananas (35,590,516 pounds exported in 1958, valued at BWI$2,386,210), and arrowroot (8,324,832 pounds exported in 1958, valued at BWI$1,588,766). Coconut production in 1958 from 5,000 acres was 4,892,496 pounds (3,414,162 pounds, valued at BWI$450,083, exported). The value of Sea Island cotton exports (200,211 pounds) was BWI$277,792. Also exported were sugar (1,250 tons), sweet potatoes, peanuts, and other food crops. Imports in 1958 totaled BWI$10,-693,760; exports, BWI$5,766,520. Road mileage aggregates about 426, including 320 miles of graveled roads and 106 miles of oiled roads. Development plans include a deep-water harbor for Kingstown; a new telephone system; and construction of an airfield at Arnos Vale, 2 miles from Kingstown.

St. Lucia.—An increased measure of self-government provided in 1956 for a 9-member Executive Council. The 14-member Legislative Council, reconstituted in 1957 and presided over by the Earl of Oxford and Asquith as administrator, had 8 elected members in 1959.

Revenue in 1958 was BWI$5,193,723; expenditure, BWI$5,285,043. In 1958 there were 51 aided primary schools (17,500 pupils); 1 government school (250 pupils); and 2 aided secondary schools (800 pupils). Government expenditure on primary education was BWI-$635,456 in 1958.

St. Lucia's chief exports in 1958 were sugar (BWI-$1,122,483); bananas (BWI$1,906,075); copra (BWI-$770,328); and cocoa (BWI$253,761). Secondary industries include the manufacture of soap, and the processing of sugar, edible oils, and lime juice. Total exports were valued at BWI$4,284,549 in 1958 (in 1957, BWI$4,608,675). Imports totaling BWI$9,034,106 in 1958 were chiefly flour, machinery, and cotton piece goods.

The colony has 392 miles of roads, and 850 miles of telephone lines. There are no railways.

Dominica.—Constitutional changes announced in 1959 provide for an increase of elected members in the Legislative Assembly from 8 to 11, and a decrease of nominated members from 3 to 2. Government revenue in 1958 totaled BWI$5.1 million, including BWI$1.5 million for Colonial Development and Welfare funds and BWI$1 million for grants-in-aid. There are 47 primary and 4 secondary schools.

Exports in 1958 were valued at BWI$6,721,000, including principally bananas, BWI$3,759,000; lime juice, BWI$1,870,000; lime oil, BWI$539,000; copra, BWI$296,000; and cocoa beans, BWI$206,000. In the first half of 1959, exports totaled BWI$3,021,000; imports were BWI$4,340,000, compared with BWI$3,867,000 for the first six months of 1958. The island has 121 miles of oiled roads, and 258 miles of secondary roads.

DONOVAN ROWSE,
Author and Publicist.

WEST VIRGINIA. South Atlantic state, United States; admitted to the Union, June 20, 1863. The "Panhandle State" ranks 41st in area and 30th in population among the 50 states.

Area and Population.—Area: 24,181 square miles (land, 24,080; inland water, 101), divided into 55 counties. Population: (1950) 2,005,552; (est., July 1, 1958) 1,965,000. Urban places with 1950 populations above 10,000 are:

Beckley	19,397	Morgantown	25,525
Bluefield	21,506	Moundsville	14,772
Charleston[1]	73,501	Parkersburg	29,684
Clarksburg	32,014	South Charleston	16,686
Fairmont	29,346	South Parkersburg[2]	10,808
Huntington	86,353	Weirton	24,005
Martinsburg	15,621	Wheeling	58,891

[1] Capital. [2] Unincorporated.

Executive.—Chief state officers in 1959:
Governor: Cecil H. Underwood (Republican)
Executive Assistant: K. Wayne Swiger
Secretary of State: Joe F. Burdett
Treasurer: Orel J. Skeen
Attorney General: W. W. Barron
Auditor: Edgar B. Sims
Supt. of Free Schools: R. Virgin Rohrbough

Constitution and Judiciary.—The present constitution went into effect in 1872. The highest tribunal, the Supreme Court of Appeals, comprises five justices; president in 1959 was Leslie E. Given.

Legislature.—The West Virginia Legislature consists of a 32-member Senate (in 1959, 23 Democrats and 9 Republicans) and a 100-member House of Delegates (85 Democrats and 15 Republicans). It meets annually commencing the second Wednesday in January.

The 1959 session, which adjourned on March 16, approved General Fund appropriations of $114 million for the 1959–60 fiscal year. To provide $4.5 million in additional revenues, the legislature increased the business and occupational gross receipts tax, tuition fees at state higher institutions, the real estate transfer tax, and license and racing fees. A 1-cent-per-gallon rise in the gasoline tax and increases in automobile registration and license fees and in "road use" tax collections were expected to produce an additional $10 million annually for highways, and road bonds totaling $5 million were authorized.

The legislature also transferred jurisdiction over minors involved in traffic cases from juvenile courts to municipal courts and to justices of the peace, and raised minimum requirements for financial responsibility. A licensing system with an initial charge of $5 was established for vessels of over 5 horsepower, and safety equipment for motorboats was prescribed. The legislature replaced the Planning Board with a 9-member Economic Development Agency, and created a 7-member Water Resources Commission and a Department of Civil and Defense Mobilization. A constitutional amendment providing for the continuance of government in event of an enemy attack was approved for referendum. (See also below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $254,671,447 comprised $153,920,464 from state tax sources, $70,960,551 from the federal government, and $29,790,432 from other sources. Tax revenue consisted of $30,964,247 from a 2% general sales tax, $29,607,978 from motor fuel taxes, $17,487,887 from licensing, and $75,860,352 from other sources. Expenditures of $262,004,735 comprised $83,336,001 for education, $52,220,819 for health, welfare, and safety, $86,337,760 for highways, and $40,110,155 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $138,641,000.

Banking.—As of June 10, 1959, the state's 77 national banks had $717,683,000 in assets, $427,486,000 in demand deposits, and $205,358,000 in time deposits. The 107 state banks (June 30, 1959) had assets of $640,546,641.21, demand deposits of $374,934,097.19, and time deposits of $189,141,318.42.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive. Operating expenditures for public elementary and secondary education in the 1958–59 school year totaled $95,097,926.98 ($222.95 per pupil). Revenues comprised $38,073,608.72 from local school districts, $58,404,749.28 from the state, and $2,748,467.46 from the federal government. Outlays for construction and improvements amounted to $8,866,803.84, and teachers' salaries averaged $3,728.48.

WEST VIRGINIA SCHOOL STATISTICS, 1958–59

Type of school	No.	Teachers	Students
Public elementary (1–8)	2,631	10,432	298,967
Public junior high (7–10)	121	...*	44,447
Public senior high (7–12)	249	6,745	123,566
Private and parochial elementary and secondary	86	593	15,913
Junior colleges	3	69	1,211
Teachers colleges	16	1,338	19,690
Colleges and universities	17	1,362	19,884
Other higher institutions	1	24	374

* Included under senior high.

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from federal and state funds (excluding institutional costs) totaled $33,861,275.91, including $8,124,497.91 for the aged, $20,742,745 for dependent children, and $3,174,016 for the permanently and totally disabled. A monthly average of 52,566 persons received public assistance.

Labor Force.—Nonagricultural employment on June 15, 1959, was 464,500, compared with 455,600 on the previous June 15 and with the 1958 average of 463,500. Agricultural employment engaged 87,000 workers. Major sources of nonfarm employment in 1959 were manufacturing, 27.8%; trade, 17.8%; and mining, 14%. Registered unemployment of 52,733 on June 30, 1959, was well below the figure of 72,946 for the previous June 30. (See also below, *Principal Events, 1959.*)

Manufacturing.—The 128,684 persons employed in the state's manufacturing establishments in 1957 earned $604,434,000. The value added by manufacture totaled $1,219,525,000, and outlays for new plant and equipment amounted to $263,430,000. Production workers in manufacturing averaged $90.32 for an average workweek of 38.6 hours in August 1959.

MAJOR WEST VIRGINIA MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.* (thousands of dollars)
Chemicals and products	23,491	$142,209	$438,038
Primary metal industries	25,497	147,533	264,262
Stone, clay, glass products	24,456	104,096	161,552
Food and kindred products	8,295	31,154	68,174
Electrical machinery	3,484	16,515	56,526
Fabricated metal products	7,619	33,050	55,955
Nonelectrical machinery	3,564	20,225	24,634
Transportation equipment	2,561	12,133	22,700

* For definition see footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 West Virginia ranked sixth among the states in the value of its mineral output, with 4.54% of the national total. It continued to lead the states in production of coal, and was fifth in coke output. A new plant at Ravenswood began production of aluminum in 1958, bringing the state's aluminum capacity to 72,500 short tons.

Agriculture.—Cash farm income for the first nine months of 1959 totaled $77,548,000, compared with $76,312,000 for the corresponding period of 1958. For the full year 1958, income comprised $91,542,000 from livestock and livestock products (including $26,170,000 from cattle and $24,867,000 from dairy products), $20,011,-

WEST VIRGINIA MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	510,000	$ 1,960,000
Coal	119,468,000	635,201,000
Coke	3,289,537	53,007,575[1]
Natural gas (1,000 cu. ft.)	204,581,000[2]	50,734,000[2]
Natural gasoline (bbl.)	664,690	5,643,000
Petroleum (bbl.)	2,186,000[2]	7,629,000[2]
Petroleum gases (bbl.)	5,607,714	12,806,000
Salt, common	627,000	2,784,000
Sand and gravel	5,253,000	11,729,000
Stone[3]	5,599,000	9,990,000
Other minerals	...	13,104,000
Total	...	$749,784,000[4]

[1] Values for processed materials are not included in the total. [2] Preliminary. [3] Excludes certain stone, value of which is included in "Other minerals." [4] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

000 from crops, and $2,090,000 from government payments.

The state had 64,500 farms in 1958. Total acreage (1954) of 7,352,000 included 1,073,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 541,000 cattle, 289,000 sheep, and 2,599,000 chickens (excluding commercial broilers). There were 69,000 family and hired workers engaged in farming during the week of Nov. 22–29, 1959.

WEST VIRGINIA CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples (1,000 bu.)	4,258	5,200	5,700
Corn (1,000 bu.)	8,776	8,305	7,650
Hay (1,000 tons)	982	1,026	933
Oats (1,000 bu.)	1,294	945	1,160
Peaches (1,000 bu.)	616	840	660
Potatoes (1,000 cwt.)	926*	780	770
Tobacco (1,000 lb.)	4,136	3,047	4,000
Wheat (1,000 bu.)	1,111	728	588

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $93,700,000, and 1,523 miles of new construction were completed in 1958.

Highways and roads on Jan. 1, 1959, totaled 36,100.05 miles (23,529.3 surfaced). Registered *motor vehicles* numbered 658,967 in the 1958–59 fiscal year, including 479,433 passenger cars. There were (1959) 24 *railroads* operating 3,692 line miles; 6 regularly scheduled *airlines;* and 39 *airports and airfields* (24 commercial and municipal and 15 private).

Communications media (1959) included 52 AM and 7 FM *radio stations;* 7 VHF and 1 UHF *television stations;* 29 daily *newspapers* (circulation, 450,130) and 93 other newspapers; and (January 1) 116,400 business and 380,300 residential *telephones.*

Principal Events, 1959.—West Virginia's business and industry picture was brighter in 1959, darkened only by a continued downward trend in employment in coal mining, the state's main industry. The number of persons so engaged had dropped 10,000 in 12 months by November, and was 16,000 under the 1958 high of 72,100. The effects of mechanization were made apparent by the prediction in December that the 1958 production figure of 115 million tons would be surpassed despite the continued employment decline. This job loss, coupled with direct and secondary effects of the steel strike, put 50,000 West Virginians on public assistance rolls, with one out of every eight citizens receiving surplus food handouts.

By mid-December, however, other facets of the state's business complex showed encouraging signs of recovery from their 1957–58 lows. Despite the steel strike, tax revenues were running less than $1 million under estimates, with both gross sales and consumers' sales taxes ahead of 1958 figures. Overall unemployment, as high as 149,000 in May 1958, was down to 70,000 in October 1959. Also, a budget containing substantial increases in many departments was proposed for the 1960–61 fiscal year. Still to be met was what most observers felt was West Virginia's primary need—an outlay of as much as $850 million for industrial investment.

The 1959 legislative session considered a liquor-by-the-drink tax law, an increase in the 2% consumers' sales tax, a school-aid levy, an income tax, and severance taxes on natural resources. However, it enacted only relatively minor increases, including a rise in the gasoline tax from 6 to 7 cents per gallon (see also above, *Legislature*). Another legislative session faced with the necessity of raising more revenue loomed on the January 1960 horizon. Also facing legislators in 1960–61 will be a report by a constitutional-revision study committee. Sweeping changes in the judiciary, including nonpartisan selection of judges of all courts of record, were reportedly among the proposals.

The year also saw West Virginia plagued by its worst drought since 1930, an unusually hot, humid summer, and the worst polio year since 1954. One of the state's most prominent politicians died in August, 61-year-old John T. Copenhaver, mayor of Charleston and front-runner for the 1960 Republican gubernatorial nomination. The most colorful news event was a stranger-than-fiction kidnaping plot, in which a demented ex-convict held captive a mother and her three children for more than 20 hours, demanding the head of his "worst enemy," a former cellmate, for their release. After a gunfight he was captured by a posse, his prisoners escaping unharmed.

Principal Events by: DONOVAN H. BOND, *Director of Development and Associate Professor of Journalism, West Virginia University.*

WESTERN EUROPEAN UNION. An international organization for the regulation and coordination of military forces and arms production. The Western European Union (WEU) was established by protocols signed at Paris on Oct. 23, 1954, which came into force on May 5, 1955. An important purpose of the WEU (which supplanted the Brussels Treaty Organization of 1948) was to bring West Germany into the Western defense alliance.

WEU members are Great Britain, France, the Netherlands, Belgium, and Luxembourg (founders of the original Brussels Treaty Organization formed in 1948), and the Federal Republic of Germany and Italy (admitted under the 1954 protocols). Chief WEU organs are the Council (consisting of member nations' foreign ministers or their representatives), the Agency for the Control of Armaments

(Below) View of construction of world's largest steerable radio telescope, being built for the Navy near Sugar Grove, W. Va. Drawing (*right*) shows 600-foot reflector and tracks on which entire structure will rotate.

WIDE WORLD

(responsible to the Council), the Standing Armaments Committee, and the Assembly (composed of representatives of the WEU nations to the Consultative Assembly of the Council of Europe). There are also several committees on social and cultural matters. The permanent secretariat of WEU has its headquarters in London.

At a meeting of the WEU Council in London on Oct. 21, 1959, it was agreed to permit West German manufacture of certain antiaircraft missiles (believed to be the surface-to-air Hawk, and the air-to-air Sidewinder).

WESTERN NEW GUINEA. See NETHERLANDS NEW GUINEA.

WESTERN PACIFIC ISLANDS, British. The principal territories administered by the Western Pacific High Commission are the British Solomon Island Protectorate, the Gilbert and Ellice Islands Colony, and the New Hebrides condominium. Its jurisdiction also extends over the islands of Starbuck, Malden, Flint, Caroline, and Vostok, and over other western Pacific islands not administered by the governor of Fiji, or by Australia, New Zealand, and other nations. The headquarters of the high commissioner (Sir John Gutch) are at Honiara, Guadalcanal Island.

BRITISH WESTERN PACIFIC ISLANDS

Territory	Area (sq. mi.)	Population	Capital
British Solomon Islands Protectorate	11,500	113,000[1]	Honiara
Gilbert and Ellice Islands Colony	369	43,842[2]	Tarawa
New Hebrides (condominium)	5,700	55,713[2]	Vila
Total	17,569	212,555	

[1] Est. 1959. [2] Est. 1958.

British Solomon Islands Protectorate.—Extending over a large ocean area of 375,000 square miles, the southern Solomon Islands constitute a British protectorate, and the northern Solomon Islands lie within the Territory of New Guinea (see PAPUA AND NEW GUINEA, TERRITORY OF). The protectorate includes Guadalcanal, the largest island (area, 2,500 square miles), on which is Honiara, the capital; Malaita, the most populous island (1958 est., 46,000); Florida; Tulagi; San Christobal; Rennell; the New Georgia group; the Santa Cruz Islands; and the northern islands (Santa Isabel, Choiseul, the Ontong Java group, and others). The population consists chiefly of Melanesians (108,000 in 1959).

An Advisory Council of nine Europeans and five natives assists the high commissioner. Tax collection and other local services are provided by some 20 local councils. Estimated revenues in 1959 totaled £1,050,945, and were supplemented by a grant of £434,018 from the United Kingdom; expenditure, £1,471,358. (The medium of exchange is Australian currency.) Education is carried on largely at mission schools, which receive a government subsidy; and there are six government elementary schools (four on Malaita Island, and one each at Honiara and Santa Anna Island), one government secondary school on Malaita, and a teacher and vocational training center on Guadalcanal which was completed in 1959.

The protectorate's exports in 1958 were valued at £A1,825,828; imports, at £A1,646,115. The chief export is copra, which was valued at £A1,481,339 in 1958; other exports are kauri pine and trochus shell (from which pearl buttons are made). Cocoa planted in recent years on Malaiti and the western islands has not been grown in sufficient quantities for export, and copra seed was used mainly in 1959 for replanting. Rice is also cultivated on an experimental basis.

Airfields near the capital which were constructed during World War II are used by Qantas Empire Airways, which supplies a weekly service to Sydney, Australia. A development project to provide better wharfage facilities at Honiara was completed in 1959. The Solomon Islands Broadcasting Service in 1959 installed new transmitters.

Gilbert and Ellice Islands Colony.—Scattered over an area of about 1 million nautical square miles, the colony is administered by a resident commissioner (M. L. Bernacchi). It comprises the following principal islands and groups: the Gilbert Islands (Abaiang; Abemama; Aranuka; Beru; Makin or Butaritari; Little Makin; Kuria; Tarawa, headquarters of the colony and district; Maiana; Marakei; Nonouti; Nikunau or Nukunau; Onotoa; Tabiteuea; Tamania; and Arorae); the Ellice Islands (Funafuti, headquarters of the district; Nanumanga; Nanumea; Niutao; Niulakita or Nurakita; Nui; Nukufetau; Nukulaelae; and Vaitupu); the Phoenix Islands (Birnie, Canton, Enderbury, Gardner, Hull, McKean, Phoenix, and Sydney); Ocean Island; and the Line Islands (Christmas Island, q.v.; Fanning Island, headquarters of the district; and Washington Island). Canton (administrative headquarters of the Phoenix Islands) and neighboring Enderbury have constituted since 1939 an Anglo-American condominium, created for the purpose of administering aviation and communications, including the Canton international airport.

An area of the Pacific Ocean, 900 miles north and south of Christmas Island and 780 miles east and west, was the site of atomic weapons tests conducted by Great Britain in 1957 and 1958.

The colony's ordinary revenue in 1958 was estimated at £A582,555, and recurrent, special, and extraordinary expenditure, at £A553,655. In 1958 there were 18 government primary schools (with 1,137 pupils) and 237 grant-aided mission schools. Tarawa has a government boarding school for boys (enrollment, 120), and a secondary school for girls which was opened in 1959; there is also a technical training school on Ocean Island for boys preparing to work for the British Phosphate Commission. The chief crop is copra, which is raised on Christmas, Fanning, and Washington islands. Copra exports in 1958 totaled 7,590 tons, valued at £A535,091; other exports are phosphate (323,550 tons in 1958) and pandanus fruit. There are about 200 miles of roads, including 40 miles of all-weather roads.

New Hebrides.—Situated about 500 miles west of Fiji and 250 miles northeast of New Caledonia, this Anglo-French condominium consists of 37 islands administered by two resident commissioners (British commissioner, J. S. Rennie; French commissioner, B. M. Favreau), who are responsible, respectively, to the British high commissioner for the Western Pacific Islands and the French high commissioner (who is also the governor of New Caledonia, q.v.). The larger islands include Espiritu Santo, Malekula, Epi, Pentecost, and Efate (Vaté), which contains Vila, the capital (1958 est., 1,900). On Dec. 28, 1959, a cyclone reportedly destroyed much of Vila and caused severe crop damage in the New Hebrides.

Condominium revenue in 1958 (in sterling) was £510,596; expenditure, £494,352. In 1957–58, British service revenue totaled £A10,734, and expenditure, £A108,631; in 1957, French service revenue was £A222,000, and expenditure, £A234,000. Education is provided by 22 British and 15 French mission schools, and by 3 French government and 1 British government-built school. Principal products are copra, coffee, cocoa, kauri timber, sandalwood, and frozen fish. In 1958, exports totaled £2,218,552 (of which £1,665,380 went to France), and imports were valued at £1,463,580 (of which £763,500 was supplied by Australia).

W. R. F.

WESTERN SAMOA. See SAMOA.
WHALING. See FISHERIES INDUSTRY.
WHEAT. See AGRICULTURE; GRAINS.

WHOLESALE SELLING. Sales of United States wholesalers in the first six months of 1959 rebounded sharply from their recessionary level in the corresponding period of 1958. Wholesalers' total sales in the first half of 1959 were $71 billion, or 14% higher than in the first half of 1958, and the largest volume ever recorded. With overall wholesale prices showing a high degree of stability in 1958 and 1959, the physical volume of goods passing through distributive channels was also at a peak rate.

The book value of wholesalers' inventories in mid-1959 totaled $12.4 billion, about $600 million more than their mid-1958 value.

Wholesale establishments dealing primarily in durable goods reported sales of $26.7 billion in the first six months of 1958. The relatively greater sales increase registered by dealers of durable goods than that posted by dealers of nondurable commodities is the typical experience in a period of rapidly rising economic activity.

Among durable goods dealers, the largest relative sales gain from early 1958 to early 1959 was registered by metal distributors. Their sales increase of more than 50% was attributable both to the sizable recovery in business activity and to a substantial amount of inventory building in anticipation of midyear work stoppages in steel and in some nonferrous metals. Dealers in scrap metals posted a 30% increase in sales during this period.

Lumber dealers and construction materials wholesalers experienced a sales increase of 33% during the first half of 1959, a reflection of the peak rate of building activity in this period. Ma-

chinery and equipment distributors' sales were up about 17% as business machinery investment began to recover slowly from the reduced levels of the 1958 recession.

Suppliers of consumers' hard goods, automotive parts and accessories, furniture and homefurnishings, and hardware reported sales advances of about 17% from average sales for the first six months of 1958 to the average for the first six months of 1959. Sales by distributors of electrical and electronic appliances increased 14%.

Wholesalers' sales of nondurable goods totaled $44.3 billion in the first half of 1959—an increase of $3.5 billion, or 9%, from the corresponding period of 1958. This rise represented an all-time high in activity.

Although food prices decreased about 5%, food wholesalers increased their dollar sales by 4% in the first half of 1959. Grocery sales rose moderately, and sales of meat and meat products were up substantially. Wholesalers' sales of poultry and poultry products and of fresh fruit and vegetables both declined somewhat in this period.

WHOLESALERS' SALES, 1957–59
(In millions of dollars)

Category	Full year 1957	Full year 1958	First 6 months 1958	First 6 months 1959
All wholesale trade	135,237	133,163	62,536	71,044
Durable goods establishments	50,450	47,332	21,742	26,746
Nondurable goods establishments	84,783	85,831	40,794	44,298
Merchant wholesalers	117,953[1]	115,561[1]	54,142[1]	61,875[1]
Durable Goods				
Automotive	4,972	5,435	2,522	2,912
Electrical, electronics, and appliances	7,695	7,684	3,500	3,987
Furniture, homefurnishings	2,475	2,468	1,116	1,291
Hardware, plumbing, heating	5,103	4,879	2,247	2,562
Lumber, construction materials	7,026	6,897	2,997	4,011
Machinery, equipment, supplies	13,390	12,307	5,921	7,097
Metals, metalwork (except scrap)	4,788	4,003	1,789	2,712
Scrap, waste materials	4,011	2,820	1,318	1,778
Nondurable Goods				
Grocery, confectionery, meat	19,249	20,249	9,910	10,348
Farm products (edible)	4,757	4,855	2,445	2,353
Beer, wine, distilled spirits	6,271	6,512	2,929	3,171
Drugs, chemicals	4,142	4,185	2,018	2,307
Tobacco	3,579	3,690	1,751	1,849
Clothing, footwear	2,140	2,220	954	1,154
Dry goods	2,370	2,267	1,055	1,261
Paper	3,694	3,758	1,804	1,987
Amusement, sporting goods	1,291	1,259	559	637
Coal	1,280	1,017	519	467
Farm supplies	1,441	1,492	807	891

[1] Totals include data for some kinds of business not shown separately. (Source: U.S. Department of Commerce.)

Coal wholesaling was the only other major trade to experience a sales reduction from the first six months of 1958 to the corresponding months of 1959. Among the other soft-goods lines, wholesalers of industrial chemicals, clothing, and dry goods had the largest relative gains (more than 20%). Suppliers of paper products, drugs, and beer had sales advances of about 10%.

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WILDLIFE. See FISH AND WILDLIFE SERVICE.

WINDWARD ISLANDS. See WEST INDIES FEDERATION.

WINE. United States Production.—A California grape crop larger than normal, but a wine production slightly less than the previous year's, were in prospect for 1959. A worldwide shortage of raisins, induced in part by 1958's rain-shortened crop in California, saw a larger than average tonnage of grapes utilized for raisins in 1959.

The California grape season was early as a result of a mild winter and spring and of good summer growing weather. A favorable sugar-acid balance was achieved and the 1959 wine crop promised to be of outstanding quality.

The December 1 grape forecast estimated the 1959 California grape crop at 2,950,000 tons and the total United States grape crop at 3,228,350 tons. This meant that the California crop was 7.62% above the 1958 yield of 2,741,000 tons and 10.66% above the 10-year (1949–58) average. The national grape crop was 5.68% above 1958 and almost 12% above average.

As a result of the early season in California, the grape crush reached 1,387,410 tons by late December, or near completion. The indicated total for the season in California was approximately 1,400,000 tons, from which a gross wine production of from 138 million to 143 million gallons could be expected, compared with 146,675,000 gallons in 1958. Production in the earlier year had been larger than in 1957 or 1956 and approached the 1955 yield of more than 147 million gallons. The 1958 gross consisted of 44,446,000 gallons of red and white table wines and 102,229,000 gallons of dessert and *apéritif* wines. Beverage brandy production in California totaled 3,500,000 gallons in the 1958 fiscal year and promised to show an increase during the 1959 fiscal year.

California wine shipments through November were running ahead of average and were slightly ahead of those of the first eleven months of 1958. In the like 1959 period, 112,441,391 gallons of California wine had been shipped into distribution channels. This was 1.46% more than the five-year (1954–58) average and 1.50% more than in the comparable period of 1958. Shipments of California wine for the entire 12 months of 1958 reached a total of 122,463,134 gallons.

Distribution of all wines (California, other states, and foreign) reached a new high of 154,633,000 gallons in 1958. Of this total, California wine accounted for 79.1%.

It appeared probable that the 1959 gross wine production in California, lower than the preceding year but still greater than for any other vintage since 1955, would enable orderly replenishing of inventories of aging reserves. The latter had until 1958 undergone recent sharp declines. California inventories totaling 207,241,356 gallons at the end of August were 9.68% above the total of 188,954,682 gallons a year earlier. The increase of wine inventories in the United States was 9.49% from 211,402,447 gallons in October 1958 to 231,462,397 gallons in 1959.

World Production.—World wine production in 1957 (exclusive of that for the USSR) was calculated by the U.N. Food and Agriculture Organization at 4,674,736,000 gallons. Production for principal countries outside the United States was; France, 886,340,570; Italy, 1,129,108,110; Spain, 461,098,960; Algeria, 406,117,690; and Portugal, 254,454,380.

DON W. MCCOLLY,
President, Wine Institute, San Francisco, Calif.

WINNIPEG. The capital of Manitoba, Winnipeg is the fourth most populous city in Canada. The city proper has a population of 255,093 (1956 census), and Greater Winnipeg, 409,121 (1959 est., 420,000). With an area of 15,535 acres of land and 465 acres covered by water, the city lies at an altitude of 760 feet, and is situated at the confluence of the Red and the Assiniboine rivers.

The city government is carried on under a special provincial charter of incorporation, granted in 1873 and subsequently revised and consolidated. The City Council comprises a mayor (elected at large) and 18 aldermen (3 elected annually from each of the three city wards),

all serving 2-year terms. Elections took place on Oct. 28, 1959. The mayor, Stephen Juba, was re-elected to a 2-year term in 1958.

Greater Winnipeg is the industrial center of the Prairie provinces of Canada. Its manufactures include flour milling and other food processing, printing and publishing, and the manufacture of railway rolling stock, clothes, malt products, furniture, and jute, cotton and fur goods. (The total selling value of the metropolitan area's factory shipments in 1957 was estimated at $545,950,000.)

Winnipeg is served by the Canadian Pacific and the Canadian National railways, which have western headquarters in the city, and by the Soo Line, Great Northern, and Northern Pacific railroads, which connect with the United States. Trans-Canada Air Lines and Transair Limited offer intra-Canadian air connections; Northwest Orient Airlines from the United States also serves the area. Winnipeg Transit Commission operates a Greater Winnipeg bus service. There are four radio stations and one television station in Winnipeg, as well as one French-language radio station in adjoining St. Boniface.

Winnipeg's building boom continued through 1959. Although the number of building permits was lower, the total value was $12 million higher than in 1958. Most of the increase was in the industrial-commercial and public building fields. Nonresidential buildings include a $20 million expansion at the University of Manitoba for housing the faculties of commerce, education, and pharmacy. Construction also includes a residential college for the faculty of arts and science, and a new wing to Grace Hospital.

The Great West Life Assurance Company, which has its head office in Winnipeg, now occupies new quarters to accommodate a staff of approximately 1,000. The zoo at Assiniboine Park was enlarged, and a Children's Zoo, containing small farm animals, was added.

Winnipeg supports a symphony orchestra and a ballet, and has the Winnipeg Theatre Centre, a summer theatre, and the outdoor Rainbow Stage Theatre. The annual Musical Festival is the largest in Canada. The Canadian trials for the Pan-American Games were held at Sargent Park during the summer of 1959.

The Greater Winnipeg Investigating Commission's report on a metropolitan system of government was released in 1959, although no action will be taken on its recommendations until 1960. The services to be immediately considered for amalgamation under a metropolitan council include education, sewage and water, transportation, public welfare, power, and assessment and taxation.

MARJORIE MORLEY,
Manitoba Provincial Librarian and Director of Library Services.

WISCONSIN. North Central state, United States; admitted to the Union, May 29, 1848. The "Badger State" ranks 26th in area and 14th in population among the 50 states.

Area and Population.—Area: 56,154 square miles (land, 54,705; inland water, 1,449), divided into 71 counties. Population: (1950) 3,434,575; (est., July 1, 1958) 3,935,000. Towns (defining civil divisions) and urban places with populations above 10,000 (as estimated by local officials for the State Board of Health for 1958) are:

Appleton	44,000	Menasha	12,385[1]
Ashland	11,150	Menomonee Falls	14,000
Beaver Dam	13,000	Milwaukee	799,100
Beloit	36,000	Mt. Pleasant town	11,339[1]
Chippewa Falls	11,551	Neenah	19,000
Cudahy	17,560	Oshkosh	45,000
Eau Claire	38,260	Racine	83,600
Fond du Lac	33,500	Sheboygan	46,000
Glendale-Bayside	11,580	Shorewood	18,570
Granville town	11,784[1]	South Milwaukee	18,630
Green Bay	63,500	Stevens Point	17,000
Greenfield	17,070	Superior	35,325
Janesville	24,899[1]	Two Rivers	13,000
Kenosha	60,000	Watertown	12,500
La Crosse	50,000	Waukesha	28,000
Lake town	18,956[1]	Wausau	32,927
Madison (*capital*)	122,600	Wauwatosa	59,310
Manitowoc	33,000	West Allis	68,740
Marinette	14,178	Whitefish Bay	18,700
Marshfield	14,600	Wisconsin Rapids	16,000

[1] 1950 federal census figure.

Executive.—Chief state officers in 1959:
Governor: Gaylord A. Nelson (Democrat)
Lieutenant Governor: Philleo Nash
Secretary of State: Robert C. Zimmerman
Treasurer: Eugene M. Lamb
Attorney General: John W. Reynolds
Supt. of Public Instruction: George E. Watson

Constitution and Judiciary.—The present constitution went into effect in 1848. The Supreme Court comprises 7 justices; chief justice in 1959: John E. Martin.

Legislature.—The Wisconsin Legislature comprises a 33-member Senate (in 1959, 20 Republicans, 12 Democrats, 1 vacancy) and a 100-member Assembly (55 Democrats, 44 Republicans, 1 Independent), which meet in odd-numbered years, commencing the second Wednesday in January. (See below, *Principal Events, 1959.*)

Finance.—Gross General Fund receipts (1958–59 fiscal year), $590,139,232; gross expenditures, $589,740,326; General Fund balance (June 30, 1959), $428,866; and par value of state investments on July 1, 1959, $570,175,963.

Taxation.—State tax revenues in the 1958–59 fiscal year totaled $405,817,379, comprising $48,441,140 from corporate income taxes, $121,170,860 from individual income taxes, $69,363,068 from motor fuel taxes, $47,096,403 from licensing, and $119,745,908 from other state tax sources.

Banking.—As of June 10, 1959, the state's 97 national banks had $2,031,498,000 in assets and $1,834,129,000 in deposits. The state's 459 other banks, including 5 trust companies and 4 savings banks, had assets of $2,368,062,604, demand deposits of $1,062,458,453, and time deposits of $1,106,160,677.

Education.—School attendance is compulsory between the ages of 7 and 16, inclusive, except for certain handicapped children and those attending vocational high schools. Expenditures for public elementary and secondary education in the 1957–58 school year totaled $287,405,924 ($338.39 per pupil). Overall expenditures for public education, including higher education, amounted to $377,018,089. Salaries of public elementary and high school teachers averaged $4,508 (elementary, $4,250; secondary, $4,950).

WISCONSIN SCHOOL STATISTICS

Type of school	No.	Teachers	Students
Public elementary (1957–58)	4,731	17,883	471,817
Public secondary (1957–58)	440	8,408	182,035
County teachers colleges (1958–59)	22	119	1,400
State colleges (1958–59)	10	813	13,686
Evening schools, state-supervised (1958–59)	...	2,556	92,744
Vocational and adult schools (1958–59)	...	1,151	46,360

In the fall of 1958 there were 67,596 students in 62 institutions of higher learning, including the county and state colleges represented in the accompanying table, private colleges, and the University of Wisconsin.

Social Welfare.—Public assistance expenditures from state and federal funds in the 1958–59 fiscal year totaled $59,924,312, including $33,481,637 for the aged, $16,977,667 for dependent children, and $1,726,874 for the disabled; a monthly average of 105,253 persons received public assistance. Expenditures from executive appropriations for public welfare, correctional, and penal institutions totaled $21,149,461.

Labor Force.—The labor force in September 1959 numbered 1,573,600, including 219,900 agricultural workers. Nonagricultural employment totaled 1,160,000, compared with an average of 1,088,200 for the 12 preceding months. There were 33,700 unemployed workers in September 1959, down from 74,700 a year earlier, and the state paid $56,018,970 in unemployment compensation benefits during the 1958–59 fiscal year.

Manufacturing.—During 1958, manufacturing establishments in Wisconsin employed an estimated 311,500 production workers who received $1,419,430,740 in wages. Value added by manufacture in 1957 totaled $4,165,149,000, and investment in new plant and equipment was $310,713,000. Production workers averaged $87.63 for an average workweek of 40.4 hours during 1958. In August

1959 wages were up to $92.17 for a longer (41.4-hour) workweek.

MAJOR WISCONSIN MANUFACTURES, 1957

Product or industry	Average no. of employees	Salaries and wages (thousands of dollars)	Value added by mfr.[1]
Nonelectrical machinery	97,563	$524,666	$967,022
Food and kindred products	64,728	277,625	564,377
Electrical machinery	42,380	208,996	385,875
Pulp, paper, and products	34,780	177,105	387,715
Fabricated metal products	34,529	163,656	310,676
Transportation equipment	31,618	163,015	349,711
Primary metal industries	30,374	162,562	277,325
Lumber and wood products	22,016	70,199	116,911
Printing and publishing	21,816	98,138	167,636

[1] For definition, see text footnote 1 in the article *Industrial Production.* (Source: *Annual Survey of Manufactures: 1957.*)

Mining.—In 1958 Wisconsin ranked 31st among the states in the value of its mineral output, with 0.43% of the national total. The income from Wisconsin's minerals reached a record peak of $71,334,000 in 1958, from a $68,644,000 total in 1957. Crushed stone and sand and gravel for road construction accounted for most of this gain.

WISCONSIN MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clay	154,000	$ 167,000
Iron ore, usable (long tons)	867,000	...[1]
Lead (recoverable content of ore)	800	187,000
Lime	141,000	2,193,000
Sand and gravel	39,383,000	25,845,000
Stone	13,732,000	23,334,000
Zinc (recoverable content of ore)	12,140	2,477
Other minerals	...	18,109,000
Total	...	$71,334,000[2]

[1] Figure withheld to protect individual company data. [2] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines and the Geological Survey of Wisconsin.)

Agriculture.—Cash farm income for the first 9 months of 1959 was down slightly to $812,356,000 from the $845,119,000 received in the corresponding period of 1958. For the full year 1958, income comprised $1,005,467,000 from livestock and livestock products, $112,208,000 from crops, and $19,683,000 in government payments. The principal source of cash receipts in 1958 was dairy products, valued at $556,710,000, including 290,255,000 pounds of creamery butter and 447,003,000 pounds of American cheese. Other chief sources were cattle, $170,547,000; hogs, $142,070,000; eggs, $65,424,000; and corn, $18,423,000. Greenhouse and nursery products yielded $11,486,000.

The state's 153,558 farms (22,507,288 acres; harvested cropland 9,849,700 acres) averaged 146.6 acres and $14,801 in value of land and buildings in 1954. Livestock on farms (Jan. 1, 1959) included 4,254,000 cattle (2,501,000 milk cows), 1,801,000 hogs, and 13,739,000 chickens (excluding commercial broilers). During the week of Oct. 18–24, 1959, there were 276,000 family and hired workers engaged in farming.

WISCONSIN CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Apples, commercial (1,000 bu.)	1,206	1,100	1,340
Barley (1,000 bu.)	4,746	1,914	1,813
Cabbage (cwt.)	1,976[1]	1,920	1,500
Corn (1,000 bu.)	139,836	140,962	181,480
Corn for canning (tons)	290,000	272,800	414,400
Cranberries (bbl.)	256,100	389,000	440,000
Flaxseed (1,000 bu.)	139	105	105
Hay, tame (1,000 tons)	7,614	7,975	9,467
Lima beans for canning (1,000 lb.)	10,840	7,560	8,800
Oats (1,000 bu.)	131,430	153,178	124,224
Peas for canning (1,000 lb.)	255,600	275,660	201,600
Potatoes (1,000 cwt.)	7,231[1]	7,045	6,720
Snap beans for canning (tons)	22,100	30,400	38,200
Tobacco (1,000 lbs.)	24,279	21,788	25,184

[1] 1949–57 average. (Source: U.S. Department of Agriculture.)

Fisheries.—Wisconsin's commercial fish catch on Lakes Michigan and Superior in 1958 was valued at $2,269,537 for 18,634,423 pounds, including principally chubs, herring, perch, and whitefish.

Transportation and Communications.—State and federal funds spent for highways in the 1958–59 fiscal year totaled $104,213,151, and county and local expenditures amounted to $13,032,278. State aid to counties and municipalities for roads totaled $49,507,365.

Highways and roads on Jan. 1, 1959, totaled 97,152 miles, including 66,385 miles of local roads and streets, 19,329 miles of county trunk highways, and 11,439 miles of state trunk highway system. Registered *motor vehicles* numbered 1,569,528 (1958–59), including 1,265,894 passenger cars. In 1959 the state's *railroads* covered 6,197 miles, and there were 7 regularly scheduled *airlines* and 113 *airports and airfields* (70 municipal and 43 private) and 6 seaplane bases.

Communications media (1959) included 78 AM and 23 FM *radio stations* and 16 *television stations;* (1959) 41 daily *newspapers* (circulation, 1958, 1,109,738) and 295 weekly newspapers; and (Jan. 1, 1959) 365,618 business 862,188 residential, and 180,218 rural *telephones.*

Principal Events, 1959.—The legislature met in biennial session on January 14 and recessed on July 25. It reconvened on November 3 to consider matters put over until then for study and to wait for the governor to act on bills passed in the regular session. There were a number of enactments worthy of mention: passage of a group health insurance plan for state employees, with the state paying up to half of the premium but not over $6 per month; revision of the marriage and divorce portion of the statutes into what is now known as the Family Code; and strengthening of the administration of workloads in the state Supreme Court, the circuit courts, the county courts, and the justice courts by the Court Reorganization Act.

The Federal Power Commission granted authority to the Midwestern Gas Transmission Company to build a natural gas pipeline from Canada into Wisconsin. Final action is dependent on approval by the Canadian government of the exportation of natural gas into the United States.

The U.S. Supreme Court appointed Federal Judge Albert Maris of Philadelphia as a special master to investigate and report on the matter of diversion of water from Lake Michigan by the Metropolitan Sewage District of Greater Chicago (see also CHICAGO).

On April 9, Frank Lloyd Wright (q.v.), Wisconsin's world-famous architect, died at the age of 89 in Phoenix, Ariz. He was brought to Wisconsin and buried at Spring Green, near his home, Taliesin East. One of Wright's most controversial projects, the Guggenheim Museum in New York City (See PAINTING AND SCULPTURE) was opened to the public in October.

The Circus World Museum was opened on July 1 at Baraboo, the former winter headquarters of the Ringling Bros.–Barnum & Bailey Circus and of the Ringling family.

Residents of Wisconsin, and particularly those of the southeastern part of the state, were disturbed in early October by the U.S. Air Force's abrupt cancellation of construction of the Richard Bong Air Force Base near Kansasville in Racine County. Plans were being made to make use of some of the $20 million worth of construction which had been finished or partially completed.

ANTON JACOBSON,
Research Associate,
Office of the Attorney General of Wisconsin.

WOLFRAM. See TUNGSTEN.

WOOD. See LUMBER.

WOOD PULP. See PAPER INDUSTRY.

WOOL. The 1958–59 world wool clip reached a peak of 5⅓ billion pounds, greasy basis—42%

above the low 1945–46 clip. In 1959–60 it was expected to be closer to 5½ billion pounds, with flood damages to South American wool clips offset by expanding clips in Australia, New Zealand, and South Africa.

The United States ranks sixth as a wool producer, but must import 40–50% of its apparel wool requirements and all of its carpet wool. A government incentive price program initiated in 1955 is encouraging increased shorn wool production. In 1959, production of an estimated 305 million pounds was 10% higher than the average annual production in 1948–57.

WORLD PRODUCTION OF VIRGIN WOOL
(In millions of pounds, greasy basis)

Country and type	Average 1934–38	Low year 1945–46	1958–59	1959–60 forecast
Major exporting countries:				
Australia	995	936	1,577	1,690
Argentina	376	481	421	434
New Zealand	299	365	540	565
South Africa	261	217	315	323
Uruguay	114	175	175	150
Total above	2,045	2,174	3,028	3,162
United States	470	428	293	305
USSR	219	231	700	750
Other countries	1,054	932	1,311	1,307
Grand total	3,788	3,765	5,332	5,524
Of which:				
Merino (fine)	1,579	1,443	2,200	2,299
Crossbred (medium)	1,265	1,421	1,938	1,998
Total apparel-type	2,844	2,864	4,138	4,297
Carpet type	944	901	1,194	1,227

(Source: Commonwealth Economic Committee.)

The United States is second only to the United Kingdom as a wool consumer, and in 1958 accounted for 12% of total world consumption. The 1957–58 textile recession reduced its wool consumption to 344 million pounds, clean basis, in 1958: 217 million pounds for textiles, 119 million for carpets, and 8 million for other uses. In the first eleven months of 1959, wool recovered faster than other fibers, showing a 33% gain over the comparable period of 1958—27% in apparel wool and 45% in carpet wool. Other major wool-consuming countries have shown similar trends, and 10 of them registered a 17% gain between the first nine months of 1958 and 1959. Wool prices, which had dropped to the lowest level since the end of World War II, started to recover in April 1959 and averaged slightly higher for the year 1959 than for the year 1958.

United States wool imports of 190 million pounds (clean basis) in 1958 accounted for 10% of world wool imports. Apparel wool (dutiable) imports totaled 67 million pounds, of which 77% came from Australia, New Zealand, and South Africa, and 17% from Argentina and Uruguay. Carpet wool (duty-free) imports totaled 122 million pounds, of which 37% came from Argentina and the remainder from a number of other countries, primarily New Zealand, India, and Pakistan. In January–October 1959, imports of apparel and carpet wool combined were nearly double the corresponding 1958 volume.

Recent technical developments have improved wool's competitive position. These include permanent mothproofing and durable creases and pleats on trousers and skirts. Also, government laboratories have been developing commercial techniques for treating wool textiles to make them machine washable.

(See also TEXTILE INDUSTRY.)

RUTH JACKENDOFF,
Director, Department of Economics and Statistics, The Wool Bureau, Inc.

WORLD BANK. See INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.

WORLD COURT. See the Index entry, *International Court of Justice.*

WORLD HEALTH ORGANIZATION. One of the specialized agencies of the United Nations, the World Health Organization (WHO) in 1959 attained a membership of 90 countries and territories—87 full members and 3 associate members.

The Twelfth World Health Assembly met in Geneva, the organization's headquarters, on May 12–29, when two new members, Guinea and Colombia, were added. A budget of $16,900,000 for 1960 was adopted, including $500,000 for an enlarged research program in which main emphasis will be given to unsolved problems of public health, such as communicable disease. The assembly gave particular attention to international medical research, improved water supplies throughout the world, and smallpox eradication; but the research program also will be devoted to the investigation of factors contributing to the high incidence of heart disease and cancer in many countries.

The assembly recommended that its members give priority to providing their people with safe and adequate water supplies, and that they mobilize all possible resources to further this aim. The assembly also recommended intensive smallpox eradication campaigns.

A world campaign to eradicate still another communicable disease, malaria, was also reviewed. The total cost of this gigantic effort is estimated to be $1,691 million, based on the latest statistics of populations at risk and of the natural population increase expected during the period that probably will be required for the campaign.

The assembly noted that work was progressing well but that funds were lacking to enable WHO to carry out its full responsibilities. Governments, industry, foundations, and others were urged to join the campaign by contributing to the World Malaria Fund.

WHO continued its technical and advisory services during 1959. The central technical services, which mainly originate in Geneva, include the drafting and revision of the International Sanitary Regulations; an epidemiological intelligence service; the drawing up of international classification for uniform registration of disease and deaths in all countries; the standardization of drug specifications; the publication of the *Pharmacopoeia Internationalis,* participation in work for the international control of drug addiction; and research on narcotics, alcoholism, and related topics. WHO publishes documentation on health subjects and on important developments in public health and medicine.

In the various regions, direct assistance was given to governments in 1959, often with the cooperation of the United Nations Children's Fund (UNICEF; q.v.), the United Nations Expanded Program of Technical Assistance, other specialized agencies of the United Nations, and bilateral agencies. Regional activities included the following:

Africa.—The work of the organization, particularly in western Africa, expanded rapidly in 1959. Governments are seeking the advice and assistance of WHO more than ever before, not only to overcome communicable disease but to improve the environment and promote health. To this aim, 117 fellowships were awarded to medical officers and others who could be expected to help strengthen and expand the existing health services.

Considerable progress was made in overcoming the difficulties encountered in carrying out malaria eradication in Africa. Excellent results also were obtained in the eradication of the vector of onchocerciasis in the Belgian Congo and Uganda, and this work is progressing elsewhere. The leprosy campaign made good progress, and of the estimated 2,300,000 cases in Africa more than a million are being treated; the present generation may be the last to suffer from leprosy. WHO was asked to help in several tuberculosis surveys and in several smallpox eradication schemes.

The Americas.—The year 1959 was characterized by continued expansion of a unified program for improvement of health in the Americas. Malaria eradication also received high priority; national commitments in 1959 for this purpose were more than $20 million, while international contributions from all sources were over $11 million. In the Pan American Sanitary Bureau, which acts both as regional office for WHO in the Western Hemisphere and as a secretariat for the Pan American Health Organization, great efforts were made to assist countries to concentrate their efforts on solving health problems, even with the limited technical resources available in the hemisphere. Progress was made in public health administration, environmental sanitation, compilation of health statistics, and maternal and child health services.

Southeast Asia.—Encouraging progress was made in 1959 in communicable disease control and research. The Indian National Tuberculosis Institute was set up in Bangalore, and the first report of the Tuberculosis Chemotherapy Centre in Madras revealed suggestive data about the place of home treatment in the control of tuberculosis. Every country in the region had a malaria eradication campaign by the end of 1959, representing a major advance, and if adequate resources and facilities continue to be forthcoming it should be possible to render a satisfactory account of this costly undertaking. Interest in smallpox control and eradication was renewed, and there were satisfactory developments in the control of leprosy and trachoma. Rural health projects maintained steady progress, and nursing training programs were established throughout the region.

Europe.—There is a growing tendency to seek WHO assistance in solving health problems in the countries of the European region. During 1959 such divergent questions were referred to the Copenhagen office as the revision of national mental health services, health problems arising from the erection of an oil refinery, and a request for emergency assistance in connection with an outbreak of paralysis in Morocco, found by WHO consultants to be due to contamination of cooking oil with triorthocresyl phosphate. (About 10,000 Moroccans were paralyzed, the government reported in November.)

A coordinated effort is being made toward total eradication of malaria from the European continent. An important part of WHO's activity in the European region is concerned with education and training on various levels. The fellowship program was further developed, and Europe continued to be a placement area for graduate students from other regions.

Eastern Mediterranean.—Projects for the control of communicable diseases, begun with WHO assistance, gradually are being taken over by a national staff of the country concerned, and WHO assistance is being diverted to more general programs in public health. Something similar is happening in maternal and child health, and in venereal and communicable diseases.

Education and training covers a wide field, from the training of a single-purpose auxiliary health worker to assistance in highly specialized departments of postgraduate training institutions. Over 300 fellowships were awarded, largely in the field of health organization and services.

In spite of control and eradication measures, 90 million people in the region are exposed to malaria. Moreover, eradication has become even more urgent now that certain countries are developing irrigation schemes, which are also aggravating the bilharziasis problem, a continuing preoccupation of WHO.

Western Pacific.—The general policy of assistance to public health administrations in developing their services was maintained, emphasizing training of health personnel, the control of communicable disease, development of services such as maternal and child health and nursing, and the stimulation of environmental sanitation programs. Progress has been made in malaria eradication, which is placing a heavy load on all governments in terms of money and personnel. The projects in the major yaws areas have continued to progress toward the complete control of the diseases, and in the remaining areas appropriate projects were started or planned. Programs for the preparation of nurses and midwives are now established in most of the countries in the region, and response to recruitment campaigns is improved.

R. L. COIGNEY,
Director, Liaison Office with United Nations.

WORLD POLITICS. See list of references under the Index entry, *World Politics.*

WRESTLING. See SPORTS, GAMES, AND SHOWS.

WRIGHT, Frank Lloyd, American architect: b. Richland Center, Wis., June 8, 1869;[1] d. Phoenix, Ariz., April 9, 1959. One of America's great creative geniuses, who in countless ways was the father of modern architectural design, Frank Lloyd Wright exerted an influence that transcends the boundaries of the particular art through which he expressed his radical and invigorating ideas. His grass-roots origins, his romantic individualism, his colorful personality, and the wonderfully spontaneous nature of his genius all contributed to the strong American flavor of his accomplishments. With Wright, the United States for the first time took the lead from Europe in a branch of the fine arts, definitely breaking with the eclecticism which had gained such a hold upon Western taste in the 19th century.

A major clue to the character of Wright's work lies in his family background. He was of Anglo-Welsh stock, and his forebears, rebels in the best sense, immigrated to the United States in search of freedom from outmoded social, economic, and religious customs. His mother's family settled in southern Wisconsin in the 1840's, and it was with this region, the area of his birth, that the future architect was to identify himself throughout his long life.

Because of lack of funds, Wright's formal education was unimpressive, and he owed little to it. Actually, his most valuable learning was what he gained at home: music from his father, simple good taste and perception from his mother. In 1887, after attending the University of Wisconsin, where he worked under Allen D. Conover, dean of the College of Engineering, Wright went to Chicago, armed with little more than family precept and personal ambition. There he served a brief apprenticeship with J. Lyman Silsbee, an unaffected architect from whom he learned the tricks of free-hand drawing, the practical considerations of house plans, and a certain informality of approach which he was never to lose.

Late in 1887, Wright secured a position as draftsman with the firm of Adler & Sullivan. This was one of the decisive moves of his career, for, until 1893, he was closely associated with Louis Sullivan (1856–1924), then the hero of the progressive element among Chicago architects, and the principal founder of what has come to be known as the Chicago School of architecture. In Sullivan's office, in an atmosphere of vigorous protest against cant and conservatism, Wright's innate rebelliousness expanded and found means of expression. Precisely what Wright drew from Sullivan has never been explained, for their styles are demonstrably dissimilar; yet, certainly, both moved in the same direction—toward a new concept of function and free personal expression in American architecture.

Aside from Sullivan, the important outside influence exerted upon Wright was the art and architecture of Japan. First acquired from Silsbee, Wright's taste for things Japanese was confirmed and fortified by the Japanese exhibit at the Chicago Columbian Exposition of 1893. Here he observed construction and designs from a wholly different culture and found them strangely sympathetic to his own attitudes. Into his architectural style he incorporated the Japanese use of the platform and the great overhanging roof, with the space between opening to the outdoors by means of sliding screens. In addition, these inner spaces, strikingly free of fixed, rigid elements, were defined only by simple, straightforward wood and paper partitions. To these elements add Wright's own ideas—the low mass, the cultivated horizontality, the broad low chimneys, his personal geometry of form and ornament, the suppression of wall, and the running bands of casement windows —and there emerges the "prairie house," Wright's first great contribution to architecture.

[1] Since no birth records were kept in Richland Center at the time, the year is in dispute. Wright himself maintained that he was born in 1869; one of his sisters claimed that the year was 1867.

Frank Lloyd Wright (1869–1959)

THE ARCHITECTURAL FORUM

In 1893, Wright began his independent practice, with headquarters in the Chicago suburb of Oak Park, Ill. The following 16 years of his career were highly productive and significant, for they saw the introduction of the "prairie houses" (including the famous Frederick C. Robie house, Chicago, 1909[2]), of which more than 60 were erected, and, in the Larkin Company Administration Building (Buffalo, N.Y., 1905) and the Unity Church (Oak Park, 1907), the materialization of his radical concepts of both religious and public architecture.

After 1909, when he left his first wife and confirmed a liaison with Mrs. Edwin (Mamah Borthwick) Cheney, the wife of an Oak Park neighbor, Wright's considerable reputation, confined largely to the Midwest, turned into notoriety.[3] This date, beginning more than two decades of insecurity and the ebb tide of his initial success, terminated the so-called Oak Park period. From 1909 to 1911 he lived in Europe, and, on his return, settled at Spring Green, Wis., where he began construction of his famous house and headquarters, Taliesin. In 1914, during a visit by Wright to Chicago, a crazed servant murdered Mrs. Cheney, her two children, and several other persons, and set fire to Taliesin. (Wright rebuilt the structure, which was burned a second time in 1925 and again rebuilt.) From 1916 to 1922, the architect spent long periods in Tokyo, where he had been called to design the celebrated Imperial Hotel.[4] For some years after 1922, his professional life, marred by further domestic scandals, seemed to have ended. It was during this time that he found interest and refuge in the Arizona desert, where he built his first "camp," which was later to blossom into his permanent winter headquarters, Taliesin West (1936), in Paradise Valley, near Phoenix.

The striking irony of Wright's career is that, whereas by 1928 he was virtually forgotten in the United States, his fame abroad grew. The first monograph on his work was published in Berlin in 1910, and this book (*Ausgeführte Bauten und Entwürfe*) instantly affected the work of the young pioneers of modern architecture on the Continent. From Wright they acquired a totally new attitude toward the mass-space relationships in architecture. When, in 1932, New York's Museum of Modern Art organized an exhibit of contemporary European architecture, it was essential that some of Wright's designs be included for their historical significance. Thus it was that Wright was rediscovered by his countrymen, and

[2] In all cases, dates of buildings are for years of completion.

[3] In 1890, Wright was married to Catherine Lee Tobin, from whom he was divorced in 1922. Shortly thereafter he was married to Maude Miriam Noel, a sculptress. This marriage was dissolved in 1927. His third wife, Olga (Olgivanna) Lazovich, whom he married in 1928, is the author of *Our House* (1959), an account of her life with the eminent architect.

[4] This building, the subject of much controversy at the time of its construction because of Wright's unorthodox use of the cantilever, successfully withstood the disastrous Tokyo earthquake of 1923.

Some noted examples of the late Frank Lloyd Wright's architectural designs are: (*below*) the research tower of the Johnson Wax Company buildings, Racine, Wis., completed in 1950; (*upper right*) the Frederick C. Robie house in Chicago, completed in 1909; and (*lower right*) "Fallingwater," the Edgar J. Kaufmann house, Bear Run, Pa., completed in 1936.

CORNING GLASS WORKS; THE MUSEUM OF MODERN ART, N.Y.; HEDRICH-BLESSING

that the second half of his career, more phenomenally successful than the first, was inaugurated. Also in 1932, Wright established the Taliesin Fellowship, whereby young architects were privileged to study under him, first at his studio in Wisconsin and, after 1936, at Taliesin West in Arizona. Through these disciples and the numerous commissions which now came his way, Wright's influence became nationwide in scope.

Strangely enough, Wright's effect on the course of modern architecture is neither direct nor specific, for his style is too personal to permit the formulation of precise rules whereby less inventive men can successfully practice. Yet, certainly, virtually unaided he gave birth to a significant development in architectural history. In his designs, Wright, the romantic, the "rugged individual," demonstrated a startlingly fresh interpretation of the relationship between the inner spaces of a building, the fabric which encloses them, and the structure's natural setting. Herein lies the compelling beauty of his creations.

In addition to the buildings mentioned above, Wright's most important designs include the Midway Gardens (Chicago, 1914), the Aline Barnsdall house (Los Angeles, 1920), the Edgar J. Kaufmann house ("Fallingwater"; Bear Run, Pa., 1936), the Johnson Wax Company buildings (Racine, Wis., 1938–50), Price Tower (Bartlesville, Okla., 1956), and the Solomon R. Guggenheim Museum (New York, 1959). His published writings include *Modern Architecture* (1931), *Autobiography* (1932; rev. 1943), *Architecture and Modern Life* (with Baker Brownell, 1937), *When Democracy Builds* (1945), *Genius and the Mobocracy* (1949), *The Future of Architecture* (1953), *An American Architecture* (1955), *Testament* (1957), and *Drawings for a Living Architecture* (1959).

GRANT CARPENTER MANSON,
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WYOMING. Western state, United States; admitted to the Union, July 10, 1890. The "Equality State" ranks 9th in area and 48th in population among the 50 states.

Area and Population.—Area: 97,914 square miles (land, 97,506; inland water, 408), divided into 23 counties. Population: (1950) 290,529; (est., July 1, 1958) 315,000. Urban places with populations above 7,500 (as estimated by the Division of Business and Economic Research, University of Wyoming, for July 1, 1956, unless another date is given) are: Casper (1957), 35,470; Cheyenne, *the capital*, 35,300; Laramie, 16,900; Rawlins, 8,500; Rock Springs (1958), 11,100; and Sheridan, 11,900.

Executive.—Chief state officers in 1959:
Governor: J. J. Hickey (Democrat)
Secretary of State: Jack R. Gage
Treasurer: C. J. Rogers
Attorney General: Norman B. Gray
Auditor: Mrs. Minnie A. Mitchell
Supt. of Public Instruction: Velma Linford

Constitution and Judiciary.—The present constitution went into effect in 1890. The Supreme Court comprises three justices; chief justice in 1959 was Fred H. Blume.

Legislature.—The Wyoming Legislature (Senate, 27 members; House of Representatives, 56) meets in odd-numbered years, commencing the second Tuesday in January.

At its 1959 session the legislature appropriated $32.5 million for the 1959–61 biennium, including $28.4 million for general operations, and approved tax increase on cigarettes from 3 to 4 cents a pack. Appropriations for education included $11.7 million for the University of Wyoming's building program, $1.25 million for the public school foundation program, $400,000 for community and junior colleges, $75,000 for teacher-training scholarships, and $50,000 for student loans. Other enactments enlarged the state Highway Patrol; raised speed limits on 4-lane divided highways to 70 mph.; created a central purchasing system; proposed constitutional amendments increasing limits on municipal debts and raising tax levy limits for municipalities and school districts; and outlawed trading stamps except for coupons issued by merchants which are redeemable in their own stores. (See also below, *Principal Events, 1959.*)

Finance.—In the 1958–59 fiscal year, state revenue of $104,569,764 included $29,287,000 from state tax sources. Tax revenue consisted of $10,835,015 from a 2% general sales tax, $7,887,625 from motor fuel taxes, $8,263,960 from licensing, and $2,300,400 from other tax sources. Expenditures of $99,247,143 comprised $21,073,000 for education, $10,400,000 for health, welfare, and safety, $37,818,000 for highways, and $29,956,143 for other purposes. Long-term indebtedness on June 30, 1959, amounted to $3,100,000.

Banking.—As of June 10, 1959, the state's 25 national banks had assets of $297,840,000, demand deposits of $179,391,000, and time deposits of $86,986,000. The 27 state banks had $110,673,509.31 in assets, $55,677,778.45 in demand deposits, and $30,794,350.52 in time deposits.

Education.—School attendance is compulsory between the ages of 6 and 16, inclusive. The National Education Association estimated 1959–60 operating expenditures for Wyoming's public elementary and secondary schools to be $31,275,000 ($450 per pupil). Revenue included an estimated $21,500,000 from local school districts, $16,500,000 from the state, and $2 million from the federal government. Outlays for construction and improvements were $10,575,000, and teachers' salaries averaged $4,800 (high school, $5,140; elementary, $4,551).

In the 1959–60 school year there were an estimated 60,200 pupils and 2,495 teachers in public elementary schools, and 18,800 pupils and 1,079 teachers in public secondary schools. College and university enrollment (1958–59) totaled 6,362 students.

Public Assistance.—In the 1958–59 fiscal year public assistance expenditures from federal and state funds (excluding institutional costs) totaled $4,775,068, including $2,651,767 for the aged, $1,082,058 for dependent children, and $394,207 for the permanently and totally disabled. A monthly average of 5,685 persons received public assistance.

Labor Force.—The state's labor force totaled 131,000 on June 30, 1959, including 28,000 agricultural workers. Nonagricultural employment of 103,000 was up from 100,000 on the previous June 30, and also above the 95,900 average for the 12 intervening months. Chief sources of nonfarm employment in 1959 were government, 22.4%; trade, 20.7%; and transportation, communications, and public utilities, 13.3%. Unemployment of 4,250 on June 30, 1959, was below the figure of 6,775 on the previous June 30.

Manufacturing.—The state's 388 manufacturing plants in 1958 employed an average of 7,050 persons who received $32,015,303 in wages. Value added by manufacture (1957) totaled $61,258,000, and outlays for new plant and equipment amounted to $10,426,000. Production workers in manufacturing averaged $90.28 for an average workweek of 37 hours in August 1959. Principal industries are those of petroleum and coal products, which in 1957 employed 2,665 persons, paid $15,033,000 in wages, and added $34,292,000 in value by manufacture; and food and kindred products (1,454; $4,761,000; $11,349,000).

During 1959 the Pacific Power and Light Company built an $18 million addition to its facilities at Glenrock, which will add 100,000 kilowatts of power when the expansion is completed in 1960.

Mining.—In 1958 Wyoming ranked 12th among the states in the value of its mineral output, with 2.24% of the national total. Total 1958 value was up by $17,406,000 over the 1957 figure, chiefly because of an almost 250% increase in uranium ore output and increased petroleum production. The state was first in bentonite (54% of domestic output) and sodium carbonate, and fourth in uranium.

In October 1959, only six months after the start of construction, a $6 million uranium mill, with a minimum daily capacity of 522 tons of uranium ore, began production at Riverton.

WYOMING MINERAL PRODUCTION, 1958
(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	1,075,000	$ 9,968,000[1]
Coal	1,629,000	5,820,000
Iron ore, usable (long tons)	557,000	...[2]
Natural gas (million cu. ft.)	121,682[3]	10,221,000[3]
Natural gasoline (bbl.)	2,474,928	5,666,000
Petroleum (1,000 bbl.)	115,572[3]	301,643,000[3]
Phosphate rock (long tons)	124,000	937,000
Sand and gravel	5,333,000	4,760,000
Stone	1,099,000	1,472,000
Uranium ore	651,790	13,286,000
Other minerals	...	16,884,000
Total	...	$369,938,000[5]

[1] Excludes fire clay, value for which is included in "Other minerals." [2] Figure withheld to protect individual company's confidential data. [3] Preliminary. [4] Includes petroleum gases. [5] Total adjusted to avoid duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1959 totaled $87,580,000, compared with $87,116,000 for the corresponding period of 1958. For the full year 1958, income comprised $135,461,000 from livestock and livestock products (including $100,214,000 from cattle and $18,377,000 from sheep), $32,483,000 from crops, and $5,702,000 from government payments.

WYOMING CROP STATISTICS

Crop (and unit of production)	Average 1948–57	1958	Est. 1959
Barley (1,000 bu.)	3,687	3,811	3,696
Beans, dry edible (1,000 bags)	823	1,155	1,036
Hay (1,000 tons)	1,298	1,663	1,394
Oats (1,000 bu.)	3,938	4,408	3,630
Potatoes (1,000 cwt.)	858*	874	728
Sugar beets (1,000 short tons)	451	596	630
Wheat (1,000 bu.)	5,976	8,120	5,517

* Average, 1949–57. (Source: U.S. Department of Agriculture.)

The state had 11,300 farms in 1958. Total acreage (1954) of 34,980,000 included 1,556,000 acres in harvested cropland. Livestock on farms (Jan. 1, 1959) included 1,140,000 cattle, 2,121,000 sheep, and 452,000 chickens (excluding commercial broilers). There were 25,274 family and hired workers engaged in farming during the week of Sept. 26–Oct. 2, 1954.

Transportation and Communications.—State and federal funds disbursed for highways in the 1958–59 fiscal year totaled $36,893,911.90, and 451.9 miles of new construction were completed.

Highways and roads on Jan. 1, 1959, totaled 53,491 miles (5,624 surfaced). Registered *motor vehicles* numbered 206,461 on the same date, including 128,920 passenger cars. There were (1959) 6 *railroads* operating 2,487.95 line miles; 3 regularly scheduled *airlines;* and 130 *airports and airfields* (34 commercial and municipal and 96 private).

Communications media (1959) included 22 AM *radio stations;* 3 *television stations;* 9 daily *newspapers* (circulation, 69,749) and 35 other newspapers (62,994); and (January 1) 37,400 business and 81,100 residential *telephones.*

Principal Events, 1959.—Three Atlas intercontinental ballistic missiles were delivered to Warren Air Force Base near Cheyenne in the fall after completion of launching Site A. Construction of other sites at the base continued in preparation for the arrival of more missiles.

The Wyoming Legislature met in a 40-day biennial session in January and February. Republicans controlled the Senate (16–11), and Democrats, the House of Representatives (30–26). Democratic Gov. J. J. Hickey stressed economy in government and states' rights, themes which were approved by both parties.

The legislature adopted a resolution (mostly backed by Republican members) which prohibited Wyoming from accepting National Defense Education Act funds, unless the Wyoming Board of Education believed (1) that the federal budget was in balance and (2) that the need could not be met with local and state resources. The Board of Education certified that both qualifications were met, but the decision to accept federal aid brought sharp criticism from Republicans and a spirited defense by the Democratic state superintendent of public instruction.

The legislature approved an $11.7 million building program at the University of Wyoming, with most of the money to come from oil royalties from federally owned lands.

Legislative action to outlaw trading stamps (see above, *Legislature*) encountered trouble in the courts, and the issue was awaiting decision in the Wyoming Supreme Court at the end of the year.

Governor Hickey was authorized by the legislature to appoint a commission to study state government reorganization. No money was provided, however, and the governor failed to obtain expected financing from a private foundation.

Agricultural production declined from the previous year owing to a damp spring, which shortened the growing season, and an unusually dry July. All crops except sugar beets and sorghum forage suffered. Winter wheat production dropped below 5 million bushels, which was less than two thirds of the record 1958 crop.

The state's perennial search for industrial development achieved little. In the southwest, however, a new gas plant was completed at Opal, and hopes were raised for a new coke-making plant. Uranium milling capacity was increased somewhat in Fremont County. Oil production exceeded 100 million barrels, as in 1957 and 1958.

The tourist industry flourished, although a series of earthquakes in August caused some damage to roads in Yellowstone National Park and reduced travel to the park. A new tourist attraction, the Gertrude Vandervilt Whitney Gallery of Western Art, a unit of the Buffalo Bill Historical Center in Cody, was dedicated in April. The gallery's collection features painting and other exhibits which record the life of the early West.

Principal Events by: T. A. LARSON, *Head, Department of History, University of Wyoming; Author of "Wyoming's War Years: 1941–1945."*

X-RAY. With the approach of the 65th anniversary of the discovery of X-rays in 1895 by Wilhelm Konrad Roentgen, considerable progress was made in 1959 in various applications of this type of radiation. Although there may not be startling new discoveries or revolutionary changes in equipment, it can never be said that this science has been or is in a static condition.

Therapy and Biological Effects.—Much of the hysterical fear of radiation (which in 1958 extended even to the medical use of X-rays) has now subsided with the realization of its indispensability to medical science. Bone marrow banks now actually permit extensive destruction of leukemic marrow by whole-body radiation, followed by reinjection of normal material. This technique marks one of the spectacular steps forward in cancer treatment. X-ray machines operating at 1 to 25 million volts (and even up to 100 million volts in the largest medical centers) are the heavy artillery in the war on cancer, and are meeting with increasing success. (See also RADIATION.)

Radiation Chemistry.—This probably constitutes the most active area of research with X-rays and related ionizing radiations, especially if the term is meant to include food preservation studies. Remarkable progress in this field was indicated at an international symposium held in the summer of 1959, which agreed that the future of irradiated foods depends on economics, public acceptance, and wholesomeness of product. The occurrence of off-flavor in irradiated beef pasteurized with X-ray doses above 50,000 rads is the subject of especially intensive research; a factor found thus far only in tomatoes completely prevents this radiochemical deterioration. The great interest in ionizing radiations in physics, chemistry, and biology is demonstrated by the fact that the entire September 1959 issue of *Scientific American* was devoted to the latest developments in this field, in an attempt to learn how man can secure the benefits of ionizing radiation while minimizing the dangers.

Irradiated organic materials such as Teflon and polyethylene, both normally colorless and highly resistant to dyes, will combine with solutions of dye-accepting polymers that can be dyed vivid colors, the publication reported. By cross-linking (resulting when the side chains of polymer fragments are joined), irradiation also vastly improves electrical insulation.

Another phase of radiation research involves intensive investigation into the damage to materials (such as metals and semiconductors) caused by high-energy radiation. X-ray diffraction is the principal technique for discovering this damage, which results when a photon of radiation of sufficient intensity, by a simple billiard-ball type of collision, knocks atoms out of their positions in the crystal lattice. Diffraction techniques have been greatly sensitized and perfected in order to detect these vacancies and interstitial atoms. When clear gelatin is subjected to X-ray irradiation, the sugar rapidly separates in spectacular fashion into spherulitic crystals. (The remarkable progress in evaluation of radiation damage is reported in the August 1959 issue of the *Journal of Applied Physics.*)

Crystallography.—With the advent of exotic boron rocket fuels, it is not surprising that inorganic chemists and crystallographers have been thoroughly investigating compounds of boron, formerly an element of almost purely academic interest. One result of this research has been the proving, by diffraction studies, of the existence of the extraordinary oxide B_7O. Mineralogists have tried to outdo each other in studying the structures of complex borates, many of which have been reported to the American Crystallographic Association. The sale of borax increased by 213% in the first six months of 1958.

Equipment.—A Bone Density Center has been established at Texas Woman's University, Denton, by Pauline G. B. Mack. An entirely automatic apparatus which corrects X-ray absorption by bone to a linear exposure curve gives highly quantitative analyses, valuable in bone disease diagnosis, nutrition studies, and research in anthropology and paleontology.

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YACHTING. See SPORTS, GAMES, AND SHOWS.

YEMEN. An independent state in the southwestern corner of the Arabian Peninsula, Yemen lies between Aden Protectorate and Saudi Arabia and has a short seacoast on the Red Sea. Its area comprises about 75,000 square miles, although the ruler claims most of the territory of Aden Protectorate to his south.

The ruler, Imam Saif al-Islam Ahmed (acceded in 1948), is the spiritual leader of the Zaydi sect of Moslems which makes up about half the population of nearly 5 million. The other half is composed of Ismailis (followers of Aga Khan IV) and orthodox Moslems of the Shāfi'ite group.

Capital cities are San'a and Ta'izz, with populations of 50,000 and 10,000, respectively, but the imam prefers to reside in Hodeida, which therefore serves as a capital when he is in residence. Mocha (Mukha) and Hodeida are the chief ports, the latter presently undergoing considerable modernization and development.

Yemen is a member of the United Nations and the Arab League. On March 8, 1958, an agreement was signed with the United Arab Republic, federating the two states into the United Arab States with Hodeida as the permanent headquarters of the federation.

Although French, Italian, West German, United States, and Czechoslovakian firms have entered Yemen to aid in the economic development of the country, it remains largely underdeveloped. The chief products are wheat, millet, barley, coffee, and a variety of fruits (apricots, grapes, figs, and walnuts), but crops in 1958 were so meager because of drought that in January 1959 the United States agreed to send 15,000 tons of wheat, flour, and animal foodstuffs to alleviate the suffering. In February the Soviet Union also sent foodstuffs to Yemen. In April a joint Yemeni-Egyptian import-export firm and an agricultural company, organized to develop Yemen, were established in Cairo.

Principal Events, 1959.—Yemen objected strenuously in 1959 to the formation of the Federation of the Arab Amirates of the South (see ADEN), and frontier negotiations with Aden Protectorate broke down in April over the question of recognition of the federation. Yemen also charged that the British had attacked El Daleh to seize an Arab sheik who was nationalistic and friendly to Yemen.

A progressive coolness toward President Nasser and the United Arab Republic developed in Yemen as the *rapprochement* between Great Britain and Nasser became a reality in 1959. The imam took steps late in the summer to dismiss Egyptian teachers, financial advisers, engineers, and technicians who had entered the country. He contended that these individuals, along with Communists, were penetrating the country to destroy his regime.

In part, these changes resulted from policies instituted during the summer while the imam was in Italy for medical treatment of arthritis. In his absence, authority was placed in the hands of Crown Prince Saif al-Islam Muhammad al-Badr, who was also deputy prime minister, foreign minister, defense minister, and minister of the interior. In the imam's absence, al-Badr liberalized the life-and-death powers of the ruler, extensively reshuffled army and administrative leaders, and introduced a number of measures to reform the government and the country along lines proposed by "free Yemeni students" educated in more modern Arab lands.

However, army elements mutinied in San'a on May 22 and burned the residence of the director of public security. Al-Badr had removed the police chief and the army commander and had formed an 8-man parliamentary council. He quelled the revolt and arrested nearly 200 soldiers. In mid-August the imam returned from Italy and re-established his control. A number of persons were beheaded, others were mutilated, and the crown prince was placed under house arrest. The imam, in a public address, charged that the rebels had been tools of foreign countries and that he intended to rule Yemen according to Moslem law. Whether the imam would be able to smash completely the reform movement in Yemen was open to question.

Of a more constructive nature was the assistance being rendered in 1959 by the U.S. State Department in the building of a new highway connecting Mocha and Ta'izz to spur trade and agriculture in southern Yemen.

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YUGOSLAVIA. Largest of the Balkan states of southeastern Europe, Yugoslavia has an area of 99,380 square miles and a population of 18,448,000 (June 30, 1959, est.). More than 16 million persons are South Slavs; among these more than 13 million in the central portion speak Serbo-Croatian dialects, about 1,500,000 in the north speak Slovene, and more than 800,000 in the extreme south speak the Macedonian Slavic language. National minorities comprise about 12% of the population (census of 1953); the most important among these are the Albanians, the Magyars, and the Turks.

Belgrade (Beograd), the capital, has a population of 484,600 (1956 est.). Among the larger cities are Zagreb, 405,000; Ljubljana, 143,500; Sarajevo, 139,000; and Skoplje, 149,000.

Government.—Following the seizure of power by the Communists at the end of World War II, a constitution, modeled on that of the Soviet Union, was adopted by the Communist-controlled Constituent Assembly on Jan. 31, 1946, and was amended on Jan. 13, 1953. It provides that Yugoslavia is a federal people's republic consisting of 6 constituent republics.[1] The bicameral National Assembly comprises a Federal Council (including the previous Council of Nationalities) and a Council of Producers, made up of delegates representing various sectors of the economy. A Federal Executive Council has replaced the old cabinet, and the collegial Presidium has given way to the president of the republic. On April 19, 1958, Marshal Tito began his third four-year term as president, having been unanimously re-elected by Parliament.

Despite a façade reminiscent of democracy, the center of political power is to be found in the Communist Party of Yugoslavia, since 1952 called the Yugoslav League of Communists. With a membership approximating 780,000, it imposes its will through the secret police, propaganda, and a welter of "mass organizations," the largest and most far-reaching of which is the Socialist Alliance of the Working People of Yugoslavia.

The administrative division of the country includes, besides the federal and republican bodies, the so-called "people's committees" existing on two levels: communal and district. Drastically reduced in number in 1955, there were in 1957, 100 districts and 1,193 communes. The role of the latter is to be the basic cell of society, a "new social-economic unity."

Religion and Education.—Historically, three religions took root in Yugoslavia. They are, with percentages of the population (census of 1953) affiliated with each: Serbian Orthodox, 41.4%; Roman Catholic, 31.8%; and Moslem, 12.3%. Protestants totaled 0.9%, and 12.3% were reportedly without religious affiliation. Although religious freedom is constitutionally guaranteed, the Communist regime has persistently waged a campaign against all major religious denominations. The main effort has been concentrated to achieve a cleavage between the churches' hierarchies and the rank and file of the priesthood. The official priests' associations, offering some material advantages to their members, were set up in opposition to the churches' main authorities.

In 1956–57, Yugoslavia had (exclusive of similar schools provided for national minorities) 14,113 elementary schools with 1,660,000 pupils; 2,466 secondary schools with 598,500 students; 82 teacher-training colleges with 20,930 students; 1,103 technical schools with 174,500 students; 173 art, music, and dramatic schools with 20,500 students; and 98 institutions of higher learning (including five universities with 51 departments) with a total enrollment of 71,852. Statistical surveys show that while the number of pupils and students is increasing, the physical facilities are deteriorating.

Foreign Aid and Standard of Living.—Since 1950, Yugoslavia has received over $750 million in Western aid (mainly from the United States and exclusive of military assistance), as well as $400 million in long- and medium-term credits. Nonmilitary United States aid consisted essentially of technical assistance, surplus food gifts, and surplus wheat, cotton, lard, tallow, and edible fats to be paid for in Yugoslav currency (U.S.$1 = 300 dinars). To this should be added the fact of renewed Soviet assistance of all sorts which was valued at $465 million in the period between July 1955 and December 1957. Military aid, estimated at between $500 and $900 million since 1950, was brought to a virtual standstill in 1956, pending clarification of Tito's relations with Moscow, and terminated in 1958, after Tito asserted that he no longer needed military assistance. During the first half of 1959 the U.S. Development Loan Fund financed the creation of several plants and projects in Yugoslavia, amounting to $56.5 million.

In spite of all this aid, and as a consequence of a continuous but contradictory economic experimentation, the standard of living of the population remains low. The consumer, earlier plagued by food shortages, found later that with a greater supply of basic foodstuffs the cost of nonedible commodities continued to increase. Discrepancies between wages, salaries, and prices, together with inflationary pressures and housing difficulties in the cities, are basic scourges for large masses of the population.

The record postwar harvest of the year 1959, together with the continuous growth of industrial production, inspires exceedingly optimistic official pronouncements about the rise in the standard of living.

Economic System.—Following World War II, Yugoslavia's Communist rulers nationalized all industry and trade, with virtually no compensation to the owners. Seeking to imitate the Soviet Union, they concentrated on rapid development of heavy industry. At the same time they undertook a strenuous campaign to collectivize the peasants.

Following the conflict with the Cominform (June 1948), Yugoslav Communists felt compelled to modify their economic system, which was based on centralized and bureaucratic planning. After 1950 they introduced the principle of a decentralized economy and the system of worker-management. Henceforth a central Federal Planning Institute had only to propose a general five-year economic plan for the whole country and to supervise its fulfillment, but each enterprise had to determine its own norms as far as production, investment funds, prices, wage scale regulations, and working conditions were concerned. The so-called workers' councils gained general responsibility for operating the enterprises, while a management board, together with the manager, had to administer the work. This system, considered as the essential characteristic of Tito's brand of communism, was devised to stimulate workers' material interests in the progress of their factories, and tried to introduce some elements of free-market economy within an increasingly collectivistic society.

While under the new system the overall industrial production continues to increase (official figures for 1959

[1] Of the total population (1953 census), the six republics have the following percentages: Serbia, 41.3; Croatia, 23.1; Bosnia-Hercegovina, 16.8; Slovenia, 8.6; Macedonia, 7.7; and Montenegro, 2.5.

state an increase of 12% over 1958 in industrial production), it shows some basic weaknesses. The first is that the theoretically autonomous workers' councils are actually dominated by their Communist members, who control at the same time the trade-union organizations. There is waste and idleness in many industries (due in part to grandiose plans which did not take into account the difficulties of importing raw material from abroad), and an increasing pressure from local and sectional interests. Unnecessary investments and a tendency to enlarge the earnings of the workers regardless of the needs of the enterprises themselves, may be included in the list of shortcomings. To remedy such a situation, the National Assembly adopted in October 1959 a "law on social bookkeeping," introducing a new central system of financial control and inspection over the national economy.

Agriculture.—The majority of the population (about 60%) is still engaged in farming. The postwar collectivization limited individual peasants' plots to 10 hectares (1 hectare = 2.471 acres), while about 22% of the arable land was collectivized in 1951. A resolute peasants' opposition forced the regime to retreat and to dismantle a majority of kolkhozes, or collective farms (of some 6,800 collectives existing in 1951, fewer than 1,000 were in operation in 1958). The consequence of these experiments were serious shortages of food from domestic production, and the unprecedented phenomenon that Yugoslavia, before the war a large exporter of wheat, had now to import foodstuffs and other kinds of consumer goods. How greatly this influenced the foreign balance of payments is best shown by the fact that from 1954 to 1958 the imports of food accounted for 70 to 79% of the foreign trade deficit. Earlier neglect by the regime of agriculture is indicated by the fact that in 1952 investments in agriculture accounted for only 4.2% of the capital outlays.

When the primitive collectivization failed (of the 2,375,989 agricultural holdings of all types in 1956, 2,319,709 belonged to private farmers), the regime tried to find other ways to achieve its avowed socialist transformation of agriculture. Besides a sharp political discrimination against peasantry in connection with its representation in "producers' councils," the regime increased investments (18% in 1958) in the remaining socialist sector of agriculture. The latter, composed of larger collective farms and holdings of general agricultural cooperatives which represented only about 15% of cultivated land, was aided by application of modern methods of cultivation and new technological discoveries. The aim is that by its superior productivity the socialist sector should progressively attract and include private farmers. Thus, the Yugoslav Communists hope to implement and adapt Marxist-Leninist ideas to Yugoslav conditions.

Extremely favorable weather conditions contributed to a record postwar harvest in 1959. The production of wheat and rye was officially estimated at about 4 million tons, which is about one fourth more than in 1957 (the year with the highest annual agricultural yields of the postwar period). The average wheat yields for the whole of Yugoslavia were about 18.5 metric quintals per hectare. The production of maize (corn), of sugar beets, and of fruit and vegetables was also greater than in 1957. As a consequence, the authorities estimate that available quantities of grain will satisfy the country's requirements in 1960, so that no wheat need be imported.

Industry.—According to official statistics, production gains in the first half of 1959 were most notable in the chemical, electric, wood, building material, and metal industries, as well as in the production of crude petroleum and ferrous metallurgy. Yugoslav mineral production in 1958 (in thousands of metric tons) was: coal, 1,108; lignite, 17,778; copper ore, 2,268; lead-zinc ore, 1,796; iron, 1,997; bauxite, 733; and crude petroleum, 462.

Foreign Trade.—Total exports in 1958 were valued at $441.4 million (an increase of 12% over 1957), while imports rose to $685 million (an increase of 3.6% over 1957). The United States remained Yugoslavia's principal supplier, as well as the main market for her lead and zinc, which are among Yugoslavia's major dollar-earners. In total imports from Yugoslavia, however, Italy, West Germany, and the Soviet Union were ahead of the United States, while as suppliers the United States was followed by West Germany, the Soviet Union, and Italy. Trade with the Soviet Union, which dropped markedly in 1958, increased again in 1959. Major imports (in terms of value) during the first half of 1959 included machinery and transport equipment, food, raw material, manufactures, chemicals, and fuels. Major exports during the same period were wood products, cattle, shipbuilding, and nonferrous metallurgy.

Principal Events, 1959.—In foreign affairs, the year 1959 (unlike 1958) was marked by the improvement of relations between Yugoslavia and the Soviet bloc. This was especially true in regard to the Soviet Union. Although at the beginning of the year Yugoslav officials and the press reacted vigorously against a paragraph dealing with Yugoslavia in the final resolution of the 21st Congress of the Communist Party of Soviet Union, and also against scornful remarks which Soviet Vice Premier Mikoyan made in the United States concerning Yugoslavia, subsequent altercations between the two Communist countries diminished.

UPI

On his visit to Khartoum, Sudan, in February, President Tito (right) of Yugoslavia demonstrates one of a set of guns he presented Sudanese President Ibrahim Abboud (center). Tito's wife, Mme. Jovanka Broz, looks on at left.

Contrary to many expectations, Soviet Premier Khrushchev, during his visit to Albania in May, took a very conciliatory attitude toward Yugoslavia. Tito reacted in the same way, espousing the general diplomatic line of the Soviet bloc concerning the denuclearization of the Balkans, protesting the installment of missile bases in Italy and Greece, and declaring that the "Balkan Pact has been asleep for many years and we don't intend to stir it up." Later in the year, Tito and the Yugoslav press hailed without reserve Premier Khrushchev's ideas, speeches, and behavior while visiting the United States. In a speech in Montenegro on September 20, Tito declared that relations with the Soviet Union and other eastern European countries were good. This was demonstrated also by the increased volume of trade with the Soviet bloc and the extensive exchange of official visits. It should be added, however, that relations with Communist China and Albania remained cool, and mutual disparagements in the press continued through the year.

It is true that the campaign against Yugoslav Communist "deviation and revisionism" continued in the Soviet and satellite press. Its tone, however, was markedly less offensive than in 1958, and the Yugoslav leaders continued to stress their fidelity to Marxism-Leninism. This easing of relations was particularly emphasized in the flood of public meetings and speeches celebrating the 40th anniversary of the foundation of the Yugoslav Communist Party.

Again in the field of foreign relations, the year was marked by an extraordinary exchange of contacts. Between December 1958 and March 1959, Tito visited many Asiatic and African countries (Indonesia, Burma, India, Ceylon, Ethiopia, Sudan, United Arab Republic), as well as Greece, and stressed everywhere his conception of a peaceful solution of international problems, active coexistence and nonparticipation in world blocs. Later in the year, Deputy Chairman Edvard Kardelj visited Scandinavian countries, while a "mission of good will" toured 10 states of Central and Latin America. In October, Foreign Minister Koča Popovich visited Cuba and relations between the two countries seem to have become quite close.

In a lighter vein, audiences in Belgrade and

Zagreb warmly applauded Leonard Bernstein and the New York Philharmonic during their visit on September 23–24.

On the parliamentary level, several legislative measures were introduced, increasing the collectivist aspects of social life. A law nationalizing apartment houses and building lots was voted on Dec. 25, 1958. Measures to implement this law, as well as those dealing with the suppression of private medical practice, followed. In May 1959 a drastic increase in tariffs on merchandise which citizens import or receive from abroad discriminated against families receiving aid from exiled relatives.

In internal politics, celebration of the party's anniversary and congresses of local Communist parties in all six federal republics emphasized again the monopoly of political power the Communists enjoyed. In May, however, an unexpected event occurred. Massive students' demonstrations in Zagreb and Skoplje, allegedly to protest against bad conditions in students' restaurants, caused a long and angry commentary by Tito. This students' protest and the continuous flow of refugees from the country are indicative of popular dissatisfaction with the Communist regime.

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YUKON TERRITORY. The Yukon Territory, comprising the northwestern part of the mainland of Canada, is bounded on the north by the Arctic Ocean, on the east by the Northwest Territories, on the south by British Columbia, and on the west by Alaska. Its area is 207,076 miles, and its population, 12,190 (1956 census). Whitehorse (1957 pop., 2,570) is the capital; Dawson (851) and Mayo (240) are the principal towns.

Government.—The government of the Yukon Territory is administered by a commissioner (F. H. Collins, appointed June 15, 1955) and an elective council of five members having a three-year term. The commissioner acts under instruction from the governor-in-council or from the minister of northern affairs and national resources. The territory is represented in the federal Parliament by one member (Erik Nielsen, a Conservative, re-elected in 1958).

Finance.—Revenue for the fiscal year ended March 31, 1959, totaled $2,375,000; expenditures amounted to $2,638,640.

Education.—In the 1957–58 academic year the territory's 16 schools had an enrollment of 1,953 pupils and employed 76 full-time and 3 part-time teachers. Expenditure for education totaled $566,086 in 1958.

Production.—Mining is the chief industry. Preliminary production figures for 1958 were: gold, 83,849 fine ounces; silver, 6,866,755 fine ounces; lead, 23,377,311 pounds; zinc, 18,709,330 pounds; cadmium, 228,082 pounds; coal, 4,344 tons. The total value of mineral production was estimated at $12,300,000. Trapping provides a livelihood for some residents of the territory, the chief fur-bearing animals being squirrel, beaver, and muskrat. Fur pelts taken in the 1957–58 season numbered 63,342 and were valued at about $109,000.

Transportation and Communications.—An all-weather gravel highway connects Keno, Elsa, and Mayo with the Alaska Highway and Whitehorse. Ore concentrates are hauled over this road from Elsa mines for shipment to the smelter at Trail, British Columbia. An all-weather road from Stewart Crossing on the Keno-Whitehorse highway leads to Dawson, and a summer road connects Dawson with Alaska at Boundary and with the Alaska Highway near Tok Junction. All-weather roads connect Carcross with the Alaska Highway. Whitehorse is connected with tidewater at Skagway, Alaska, by 110 miles of railroad. Connections are made there with regular summer services of the Canadian Pacific and the Canadian National steamship companies and with the year-round freight service by the White Pass and Yukon Route.

Canadian Pacific Airlines operates a daily service, except Sunday, from Vancouver and Edmonton to Whitehorse, and a semiweekly mail and passenger service from Whitehorse to Mayo and Dawson. Pan American World Airways makes semiweekly stops at Whitehorse on flights from Seattle and Juneau to Fairbanks, Alaska. Two independent air services operate scheduled and charter trips out of Whitehorse and Dawson, and a helicopter service operates out of Dawson. There are local telephone services in Dawson, Mayo, and Whitehorse, which is also connected with outside points.

Principal Events, 1959.—On July 18–20, the Yukon was honored by the visit of Queen Elizabeth II and Prince Philip.

Road construction and maintenance programs were accelerated, with reconstruction work continuing on the Stewart Crossing–Dawson road and the Mayo-Elsa road. Work commenced on a new road to run from Flat Creek (Dawson area) to the Eagle Plain area 140 miles to the north. A projected road from Watson Lake to Ross River and thence to Carmacks was under survey. The bridge across the Yukon River at Carmacks was completed.

The new $4 million hospital at Whitehorse was completed and opened. Also at Whitehorse a new school was constructed and a 15,000-horsepower hydroelectric plant was completed by the Northern Canada Power Commission.

It was announced in August that the first discovery of oil had been made in the territory. A Canadian company, Western Minerals, struck gas flows and light gravity oil in the Eagle Plain area at a point about 200 miles northeast of Dawson and 450 miles from the Pacific tidewater. Several other oil companies conducted field geological work in the same area and at Peel Plateau during 1959. The discovery makes possible the future development of a new and vitally important industry in the Yukon.

F. H. COLLINS,
Commissioner, Yukon Territory.

ZANZIBAR. See BRITISH EAST AFRICA.

ZINC. Primary zinc metal production for the past decade, in thousands of metric tons, is shown in the accompanying table compiled from data supplied by the U.S. Bureau of Mines.

Mine production of recoverable zinc in the United States in 1958 was 412,005 short tons, as compared with 531,735 tons in 1957. Mines in the Western states yielded slightly above 50% of the total domestic output of zinc. Output of primary metal declined from 985,796 tons in 1957 to 781,246 tons in 1958. Of the 1957 output, 346,240 tons were of domestic origin and 435,006 tons were from imported ore, including a small tonnage of slab zinc further refined into high-grade metal. The grand total, including the redistilled second-

Year	World	U.S.	% U.S.	Year	World	U.S.	% U.S.
1949	1,811	739.2	40.8	1954	2,450	727.9	29.7
1950	1,970	765.2	38.8	1955	2,690	874.1	32.5
1951	2,140	799.8	37.4	1956	2,830	892.3	31.5
1952	2,230	820.5	36.8	1957	2,930	894.3	30.5
1953	2,360	831.1	35.2	1958	2,730	708.7	25.9

ary zinc, declined from 1,058,277 tons in 1957 to 827,851 tons in 1958. Consumption of 868,327 tons of slab zinc (excluding that for industry and government stocks) was a decrease from 935,620 tons in 1957.

Imports of zinc declined from 795,021 tons in 1957 to 657,207 tons in 1958. Imports of ore (zinc content) totaled 462,008 tons, of which Mexico, Canada, and Peru supplied 90%. Slab zinc imports totaled 195,199 tons, of which 71% was supplied by Canada, Mexico, and Belgium-Luxembourg. On Oct. 1, 1959, the United States imposed quotas on imports of zinc, designed to give the domestic industry a larger portion of the United States market, according to the U.S. Bureau of Mines. Exports of slab zinc declined 84% to 1,736 tons in 1958, while sheets and plates declined only slightly.

In the first 10 months of 1959, recoverable zinc output in the United States totaled 339,996 short tons, compared with 412,005 tons in 1958. Of the 1959 tonnage, states east of the Mississippi River supplied 160,362 tons; the West-Central states, 494 tons; and the Western states, 179,140 tons. For the 16th consecutive month, the mines of the tri-state district of Kansas, Missouri, and Oklahoma remained closed.

(See MINERAL PRODUCTION for table showing output of major producing countries.)

ZOOLOGY. Size in Birds.—Among many groups of animals, including spiders, insects, fishes and some amphibians, the females are typically larger than the males. This disparity of size can be explained as an adaptation for carrying eggs inside the body. However, the male is usually larger than the female in the higher vertebrates, especially birds. Charles Darwin attributed this superior size of the male to the fact that males compete with each other for mates. In such competition the larger, stronger male could secure more mates and leave more offspring. Its larger size, then, being hereditary, would be preserved by natural selection.

Recent support to Darwin's explanation has been given by Dean Amadon,[1] who points out that greater sexual size dimorphism is more prevalent among polygamous or promiscuous birds than among monogamous ones. In such promiscuous or polygamous groups the struggle between males is exaggerated, the successful males obtaining several mates and producing many offspring, and the unsuccessful ones leaving few if any progeny. In the grouse family (Tetraonidae), for example, the males of the monogamous species like the ptarmigans are only slightly larger than the females. Yet the male, polygamous capercaillie weighs more than twice as much as the female. This phenomenon also is generally true among song birds of the family Icteridae, which includes orioles and blackbirds. While there is an advantage to size for fighting between males, there are disadvantages which limit size, such as inefficient flight. Also there is evidence that among such dimorphic species as turkeys and pheasants the males are more vulnerable than the smaller females to predation and climatic extremes such as cold.

In considering groups of birds where the male is the smaller of the two sexes, the female often is the more aggressive and plays the dominant role in courtship. The male performs the incubation and cares for the young. Examples of this are found among the rheas, emus, cassowaries, phalaropes, button quail, and sandpipers.

[1] Amadon, D., "The Significance of Sexual Differences in Size Among Birds," *Proceedings of the American Philosophical Society*, 103:531–536, 1959.

Invertebrate Hormones.—Gonad-regulating hormones, or those that control the production of eggs in the ovaries or spermatozoa in the testes, have been well known in the vertebrates. It has been known also that the insects and probably the crustaceans possess such hormones. Only recently, however, Wells and Wells[2] have discovered such a system in the cephalopod, *Octopus*. These investigators observed that when parts of the brain were removed or the optic nerve was cut, the ovaries or testes of young animals became rapidly enlarged, and sexually immature females produced mature eggs soon following such surgery. The males used in the experiment were producing mature spermatozoa before treatment. It also was observed that when the above operations were performed, a gland on the optic stalk between the eye and the brain grew larger. When this optic gland was removed, severance of the optic nerve and/or removal of the appropriate parts of the brain was not followed by growth of the ovaries or testes. It was concluded, therefore, that maturation of the gonads is determined by a secretion of the optic glands which is normally inhibited by a nerve supply from the brain (the subpedunculate/dorsal basal lobe area). The action of this brain area then depends on the intact optic nerve and presumably on light.

Wells and Wells point out a remarkable similarity among all of the divergent groups of animals possessing glands which secrete gonad-regulating hormones; namely, that the vertebrate pituitary, the insect corpus allatum, the X-organ-sinus gland complex of crustaceans, and now the octopus optic gland are all regulated directly by the highest centers of the central nervous system.

Carlisle and Knowles[3] in their new book discuss recent advances in hormone functions among the crustaceans. For example, the sinus gland in the eye stalks of several crabs appears to release a hormone which helps in maintaining the blood sugar level above a minimum. Also, a hormone has been found in the eye stalks of crabs and crayfish which assists the animal in maintaining the proper amount of body water. In the cavity surrounding the heart of several types of Crustacea, including lobsters, shrimps, and crabs, have been found structures (pericardial organs) which secrete chemicals serving to control the strength and rate of the heart beat. The active substance can be detected in the blood after it has passed over the pericardial organs but has not reached the heart. It is absent from blood which has passed through the heart. Apparently the response of the heart removes or alters the chemical.

Median Eye.—Paired, laterally placed eyes are common to all vertebrates. However, ancestral vertebrates also commonly possessed what is believed to be a third eye medially located on the top of the head and directed upward. Evidence in the form of an opening in the skull is present in fossils of ancient bony fishes, older amphibians, and early reptiles. Although in later times this structure disappeared in most vertebrates, it nevertheless persists in a few modern animals including the lamprey eel, the tuatara lizard (*Sphenodon*), and in some true lizards. Microscopic examination of this "third eye," the pineal or parapineal organ in the above three groups, may reveal a miniature cornea, lens, and retina. Even though such an eye-like pineal organ is absent in the higher vertebrates (birds and mammals) it persists in the brain as a

[2] Wells, M. J., and Wells, J., "Hormonal Control of Sexual Maturity in *Octopus*," *The Journal of Experimental Biology*, 36:1–33, 1959.

[3] Carlisle, D. B., and Knowles, F., *Endocrine Control in Crustaceans*, Cambridge Monographs in Experimental Biology No. 10 (London 1959).

remnant, glandular-like structure, and has been suspected of being an endocrine gland.

For some time it has been known that the median eye of the lamprey larva is sensitive to light and thus responsible for a daily rhythm of color change, the animals being dark in the daytime and pale at night. Only recently Stebbins and Eakin[4] have demonstrated that the median eye in four species of the lizard *Sceloporus* serves to assist in regulating the amount of exposure to sunlight and consequently the general activity level of the animal. When the "eye" was surgically removed or covered by aluminum foil the animals spent more time in sunlight than normally. No increase in body temperature was shown, however, which was surprising because these animals are heliotherms, depending directly on the sun for elevation of their body temperature to desired levels. Rather, there was a noted increase in the locomotory activity. No nerve connections between "eye" and brain were found, but the retina appears to be secretory, and it is probable that the secretory activity is influenced by solar radiation. It is concluded that the "third eye" is sensitive to light and that it has an inhibitory role which functions to prevent excesses of activity and to insure conservation of energy reserves.

A similar investigation was conducted on two specimens of the rare tuatara, *Sphenodon punctatum*,[5] but results produced no evidence that the median eye of this species serves the same function as was demonstrated for true lizards. *Sphenodon* is particularly important for this study, not only because it is the only living reptile other than lizards possessing a median eye, but more because it is a reptilian type which appears to have remained relatively unchanged since the time of the dinosaurs. A knowledge of the function of the median eye in this form might give some insight into function of such structures in the ancient reptiles.

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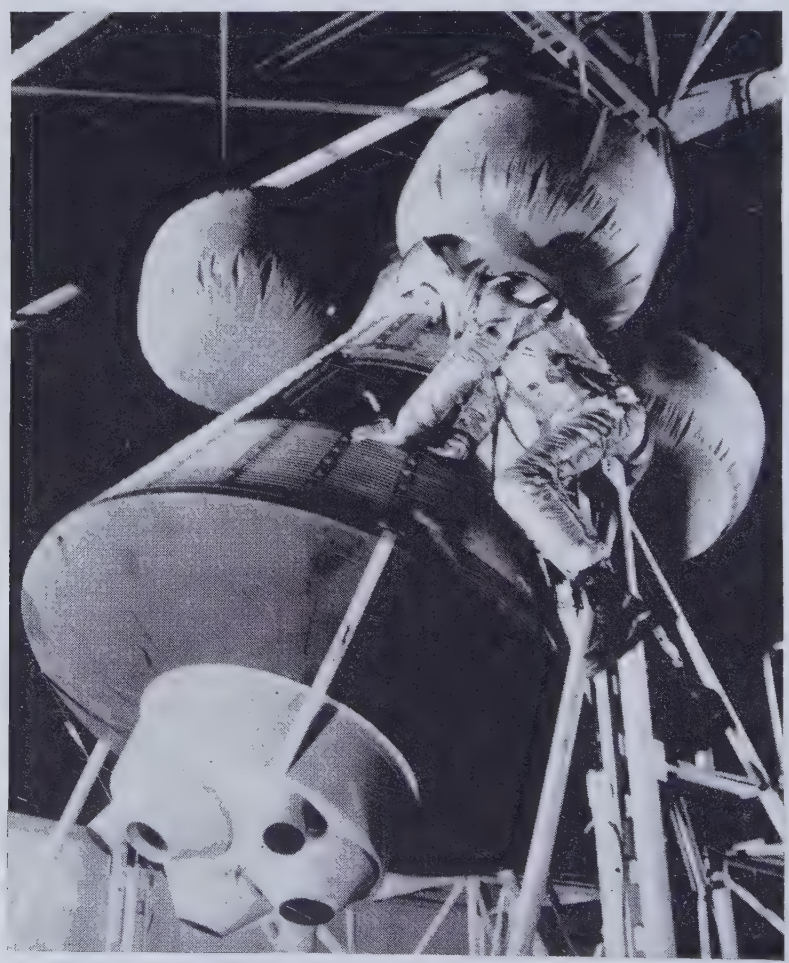
[4] Stebbins, R. C., and Eakin, R. M., "The Role of the 'Third Eye' in Reptilian Behavior," *American Museum Novitates* (1870), 1–40, 1958.

[5] Stebbins, R. C., "Experimental Study of the 'Third Eye' of the Tuatara," *Copeia* (3), 183–190, 1958.



The dream of man's first voyage into outer space moved closer to reality in 1959. In both the United States and the Soviet Union, elaborate programs were preparing the way for placing a man in orbit around the earth. The United States' Project Mercury made significant advances in the training of the first astronauts, the development of the space capsule which will carry them on their historic journey, and the perfection of recovery techniques. Here, a mock-up of the Mercury capsule shows a pilot about to climb through the entrance hatch. Retro rockets (lower left) will help guide the craft back to earth, and the flotation bags (top) will provide buoyancy and stability after it lands in the water. (For details of the man-in-space program, see the articles *National Aeronautics and Space Administration* and *Space Flight*.)

WIDE WORLD

NECROLOGY . . . 1959

Prominent Persons Who Died During the Year

Following is a selected list of more than five hundred of the most prominent persons who died in 1959. Separate biographical articles on those individuals whose names are preceded by an asterisk (*) may be found under their own headings in this volume.

Adams, Wayman (75), portraitist and art teacher; winner of 1943 Carnegie Institute exhibition prize: d. Austin, Texas, Apr. 7.

Adrian, Gilbert (56), couturier for film actresses; former costume designer for M-G-M: d. Los Angeles, Sept. 13.

Agron, Gershon (65), Israeli newspaperman and world Zionist leader; founder of the Jerusalem *Post* and mayor of Jerusalem after 1955: d. Jerusalem, Nov. 1.

Alexander, Jerome (82), chemist; author of standard works on colloids: d. New York City, Jan. 18.

Allred, James V. (60), jurist; governor of Texas, 1935–39: d. Laredo, Texas, Sept. 24.

Anderson, John A. (83), astronomer and educator; supervised construction of Hale telescope on Mt. Palomar and was executive officer of California Institute of Technology's observatory council, 1928–48: d. Altadena, Calif., Dec. 2.

Anderson, Gen. Sir Kenneth (67), British Army officer; governor of Gibraltar, 1947–52; commander of British First Army in North Africa in World War II: d. Gibraltar, Apr. 29.

*Anderson, Maxwell (70), American playwright; winner of Pulitzer Prize (1933): d. Stamford, Conn., Feb. 28.

Anderson, Wendell W. (58), Detroit industrialist and investment banker; administrator of NATO in Paris, 1954–55: d. Philadelphia, Oct. 20.

Angwin, Sir Stanley (75), British authority on communications; played important role in establishing transatlantic telephone system: d. Welwyn Garden City, Eng., Apr. 21.

Antheil, George (58), American composer noted for *Ballet mécanique* (1924) and other modernist compositions; created film scores: d. New York City, Feb. 12.

Apperson, Edgar L. (89), pioneer designer and builder of automobiles: d. Phoenix, Ariz., May 12.

Ashida, Hitoshi (71), premier of Japan, 1948; president of Japan *Times*, 1933–40: d. Tokyo, June 20.

Astor, (William) Vincent (67), American businessman: b. New York, N.Y., Nov. 15, 1891; d. New York, Feb. 3, 1959. In 1912, when his father, John Jacob Astor IV, perished in the *Titanic* disaster, Vincent became head of the American branch of the Astor family and directed its real estate and other business interests throughout his career. Astor served as an officer in the U.S. Navy in World Wars I and II; was a founder of *Today*, which was merged with *Newsweek* magazine in 1936; and was principal director of the United States Lines Company. He left most of his fortune, estimated at $100 million, to the Vincent Astor Foundation, which he established in 1948 for the alleviation of "human misery."

Baccouche, Salah Eddine (74), pro-French premier of Tunisia, 1943–47 and 1952–54: d. Tunis, Dec. 25.

Back, Ernest A. (78), entomologist with U.S. Department of Agriculture for 40 years; played important role in fight against citrus fruit fly: d. Chaplin, Conn., May 21.

Baer, Max(imilian Adelbert) (50), American prize fighter: b. Omaha, Nebr., Feb. 11, 1909; d. Hollywood, Calif., Nov. 21, 1959. He won the world's heavyweight title in 1934 by an 11th-round technical knockout of Primo Carnera. One year later, in a 15-round decision, he lost the championship to James J. Braddock. For his antics in the ring he was known as boxing's "Clown Prince of Clout." Of 80 bouts, he won 66, including 51 by knockout. In later years he appeared in films and nightclubs and on radio and television.

Bailey, Truman E. (57), American artist, craftsman, and designer of fabrics; revived ancient Peruvian and Polynesian handicraft techniques: d. Lima, Peru, Dec. 24.

Bairnsfather, Capt. Bruce (71), British cartoonist noted for World War I cartoon sketches; creator of beloved character, "Old Bill": d. Norton, Eng., Sept. 29.

Ball, Gordon R. (61), Canadian financier; president of Bank of Montreal after 1952: d. Montreal, Feb. 28.

Bandaranaike, Solomon West Ridgeway Dias (60), Ceylonese political leader: b. Colombo, Ceylon, Jan. 8, 1899; d. Colombo, Sept. 26, 1959. Bandaranaike, Ceylon's prime minister since 1956, was shot by an assassin on Sept. 25, 1959, and died of his wounds the next day. A member of Ceylon's self-government movement, which he joined soon after receiving a law degree from Oxford University's Christ Church College (1925), he was named minister for local administration in 1937, and in 1947 became minister of health and local government, as well as leader of the newly formed House of Representatives. (Ceylon achieved independent dominion status in 1948.) In 1951 he resigned from the cabinet and founded the Sinhale Maha Sabha. He dissolved this party before the 1952 election and established the Sri Lanka (Freedom) party. Following the election he became leader of the opposition. The elections of April 1956 swept out the pro-Western incumbents and brought in the neutralist regime of Bandaranaike, who hoped to make Ceylon "the Switzerland of Asia."

Bardoux, Jacques (84), French historian, editor, and former deputy; author of books on British history and international affairs: d. Paris, Aug. 15.

Barnes, John P. (78), judge of U.S. District Court for Northern Illinois, 1931–57; noted for decisions against New Deal legislation: d. Elgin, Ill., Apr. 10.

Barnes, Julius S. (86), wheat industrialist; adviser to Presidents Wilson and Hoover; president of U.S. Chamber of Commerce, 1921–24: d. Duluth, Minn., Apr. 17.

*Barrymore, Ethel (79), veteran actress of stage, films, and television: d. Hollywood, Calif., June 18.

Bassler, Anthony (85), physician who specialized in and wrote on gastroenterology: d. New York City, Aug. 20.

Bateman, James (65), English artist noted for farmyard scenes; member of Royal Academy: d. London, Aug. 2.

Bechet, Sidney (68?), American Jazz musician: b. New Orleans, La.; d. Garches (near Paris), France, May 14, 1959. Beginning at an early age as a clarinetist, he later took up the soprano saxophone, which he played with such jazz greats as Bunk Johnson, Clarence Williams, Louis Armstrong, and Noble Sissle. A Negro, he frequently appeared in Europe, as well as in the United States. In 1950 he settled permanently in France.

Becker, Gustave L. (97), American pianist, composer, and music educator: d. Epsom, Surrey, Eng., Feb. 25.

Beebe, Maj. Gen. Royden E., Jr. (50), U.S. Air Force officer; chief of staff, Allied Air Forces, Southwest Pacific, in World War II: d. near Washington, D.C., Apr. 29.

Beinum, Eduard Alexander van. See van Beinum.

Belbenoit, René L. (59), French-born author of *Dry Guillotine* (1938): d. near San Bernadino, Calif., Feb. 26.

Bell, DeBenneville (Bert) (65), commissioner of National Football League from 1946: d. Philadelphia, Oct. 11.

Benedum, Michael L. (90), oil prospector who made major oil strikes (Permian Basin and Yates Field) in Texas and elsewhere: d. Pittsburgh, Pa., July 30.

Benoit-Levy, Jean (71), French film producer, teacher, and author; pioneer in documentary and educational films; producer of *La Maternelle* (1933): d. Paris, Aug. 2.

*Berenson, Bernard (94), Lithuanian-born authority on Italian Renaissance art: d. Settignano, near Florence, Italy, Oct. 6.

Berger, Meyer (60), American journalist: b. New York, N.Y., Sept. 1, 1898; d. New York, Feb. 8, 1959. At the age of 12 he joined the New York *World* as a copy boy, and, after serving with the U.S. Army in France in 1917–19, was a police reporter for that newspaper until 1922, when he became a reporter and rewrite man for the Standard News Association. From 1928 he was associated with the New York *Times* as rewrite man and reporter, except for one year (1937–38), when he worked for *The New Yorker* magazine. His well-known column of human interest stories, "About New York," appeared in the *Times* in 1939–40 and after 1953. He was awarded a 1950 Pulitzer Prize for distinguished local reporting for his sensitive, 4,000-word account (written in 2½ hours under the pressure of a deadline) of the slaying of 13 persons by an insane war veteran in Camden, N.J., on Sept. 7, 1949. Some of Berger's best journalistic pieces on New York City are included in his book *The Eight Million: Journal of a New York Correspondent* (1942); he also wrote *Men of Maryknoll* (with James G. Keller, 1943) and *The Story of the New York Times, 1851–1951* (1951).

Berggrav, Eivind (74), Norwegian Lutheran bishop and former primate of State Lutheran Church: d. Oslo, Norway, Jan. 14.

Bergmann, Werner (55), German-born professor of chemistry, Yale University, after 1949; expert on chemical study of marine life: d. New Haven, Conn., Nov. 2.

Berkson, Seymour (53), publisher of The New York *Journal-American* after 1953: d. San Francisco, Jan. 4.

Best, Richard I. (87), Irish authority on Irish philology, mythology, and literature; former director, National Library of Ireland: d. Dublin, Sept. 26.

Bethell, Frank H. (56), hematologist; professor of internal medicine, University of Michigan, after 1948, and director of university's medical research center: d. Ann Arbor, Mich., Apr. 21.

*Bloch, Ernest (78), Swiss-born composer: d. Portland, Oreg., July 15.

Blom, Eric W. (70), English music critic and editor of *Grove's Dictionary of Music and Musicians:* d. London, Apr. 11.

Blore, Eric (71), English-American actor: b. London, England, Dec. 23, 1887; d. Hollywood, Calif., March 1, 1959. He made his first appearance on the London stage in *All the Winners* (1913) and in New York in the hit play *Little Miss Bluebeard* (1923). His success as a waiter in Cole Porter's *Gay Divorce* (1932), which was transferred to the screen as *The Gay Divorcée* in 1934 with Blore in the same role, resulted in his being typecast as a "gentleman's gentleman." His other films included *Flying Down to Rio* (1933), *Top Hat* (1935), *Abie's Irish Rose* (1946), and *Bowery to Bagdad* (1955).

Blücher (Bluecher), Franz (63), West German political leader: b. Essen, Germany, March 24, 1896; d. Bad Godesberg, West Germany, March 26, 1959. A business executive and bank director, he was one of the founders, after World War II, of the Free Democratic Party (FDP). In 1949 he was appointed vice chancellor in Dr. Konrad Adenauer's coalition cabinet, also serving as minister for Marshall Plan (ERP) Affairs (later Economic Cooperation) and representative to the Organization for European Economic Cooperation. In 1956, when the FDP split with Dr. Adenauer and his Christian Democratic Union, largely on the matter of foreign policy, Blücher left the FDP to form, with other dissidents, the pro-Adenauer Free People's Party (later merged with the German Party). He was replaced in the cabinet formed in October 1957, after the new party's defeat in the previous month's elections. At his death he was West German representative (named in January 1958) to the High Authority of the European Coal and Steel Community.

Boganda, Barthélémy (48), premier of Central African Republic (formerly French territory of Ubangi-Shari): d. (air crash) near Bangui, Central African Republic, Mar. 29.

Bojer, Johan (87), Norwegian novelist: b. Orkdalsøren, near Trondheim, Norway, March 6, 1872; d. Oslo, Norway, July 3, 1959. Often called the Joseph Conrad of Norway, Bojer was well known in the United States, as well as in Scandinavia, for such works as *The Great Hunger* (1918), *The Last Viking* (1921), *Our Own Breed* (1924), and *The King's Men* (1940). *Our Own Breed,* for which he did research in the United States, concerned Norwegian emigrants who settled in North Dakota in the 1880's.

Bone, Sir David (84), British master mariner, commander of wartime troopships, and author of books on seafaring: d. Farnham, Eng., May 17.

Booth, Albie (Albert James) (51), American athlete: b. New Haven, Conn., Feb. 1, 1908; d. New York, N.Y., March 1, 1959. One of Yale University's great all-around athletes, he scored 22 touchdowns and gained 2,826 yards in three seasons as his team's quarterback. After graduation in 1932 he coached football briefly at Yale and New York University and then became a successful business executive, as well as one of the nation's outstanding football referees.

Bottai, Giuseppe (63), Italian minister of national education (1936–43) in Mussolini regime: d. Rome, Jan. 9.

Bottomley, James L. (59), star first baseman for St. Louis Cardinals in 1920's: d. St. Louis, Mo., Dec. 11.

Boyd, William R., Jr. (74), oil industry leader; president of American Petroleum Institute, 1941–49: d. Teague, Texas, Nov. 6.

Brady, Matthew F. (66), Roman Catholic bishop of Manchester, N.H., after 1944: d. Burlington, Vt., Sept. 20.

Bremer, John L. (85), Hersey Professor Emeritus of Anatomy, Harvard Medical School; authority on embryology and author of textbook on histology: d. Boston, Dec. 25.

Brosseau, Grace L. H. (87), national president general of D.A.R., 1926–29: d. Greenwich, Conn., Apr. 20.

Brown, Boyce (47), jazz saxophonist noted as a creator of Chicago style: d. Chicago, Jan. 30.

Brown, Charles L. (60), dean of Hahnemann Medical College, 1946–54, and of Seton Hall University College of Medicine after 1955: d. Jersey City, N.J., Dec. 4.

Brown, Edward E. (74), board chairman of First National Bank of Chicago; chairman of Federal Advisory Council of Federal Reserve System, 1939–55: d. Chicago, Aug. 24.

Brown, James W. (85), chairman, *Editor & Publisher,* and a leader in American journalism: d. New York City, May 30.

Bryson, Lyman (Lloyd) (71), American teacher, writer, and radio and television commentator: b. Valentine, Nebr., July 12, 1888; d. New York, N.Y., Nov. 24, 1959. Professor of education at Teachers College, Columbia University, 1934–53, and professor emeritus thereafter, he was known to millions of radio listeners as moderator of *Invitation to Learning,* a discussion of ideas found in philosophic and other kinds of literature. He moderated other radio programs, including *Of Men and Books,* and *You and the World,* and the television program, *Lamp Unto My Feet.* Author of several books, he founded the Readability Laboratory at Teachers College for simplifying the basic texts in the social sciences. He served in an advisory capacity to THE ENCYCLOPEDIA AMERICANA.

Buck, Dudley A. (32), assistant professor of electrical engineering, M.I.T.; developed the cryoton and worked on computer development projects: d. Winchester, Mass., May 21.

Buckley, Oliver E. (72), engineer noted for work on high-speed submarine telegraph cables; chairman of board of Bell Telephone Laboratories, 1951–52: d. Newark, N.J., Dec. 14.

Burke, Thomas H. (55), Democratic representative from Ohio (1949–51): d. Alexandria, Va., Sept. 12.

Burlingham, Charles Culp (100), American lawyer: b. Plainfield, N.J., Aug. 31, 1858; d. New York, N.Y., June 6, 1959. After graduating from Harvard College in 1879 and from Columbia University's law school in 1881, he practiced law in New York City. In a crusading civic career remarkable for both its length and its scope, he became known as "a one-man good-government party" and "the godfather of city reform." In 1913 he helped organize the reform group which succeeded in ousting the Tammany Hall incumbents and in electing Mayor John Purroy Mitchel on a Fusion Party ticket. As president (1929–31) of New York City's Bar Association, he spearheaded investigations that led to Mayor James J. Walker's resignation in 1932. Burlingham was a leader in the Fusion movement which brought in Mayor Fiorello La Guardia in 1933. He was also a lifetime crusader in the cause of court reform and social betterment.

Burnett, Adm. Sir Robert L. (71), British naval hero noted for role in guarding convoys to USSR in World War II: d. London, July 2.

Buset, Max (63), president of Belgian Socialist Party; a leader in campaign forcing abdication of King Leopold III (1951): d. Brussels, Belgium, June 28.

Bush, Alvin R. (66), Republican representative from Pennsylvania after 1951: d. Williamsport, Pa., Nov. 5.

Cahill, George F. (69), urologist and founder of J. Bentley Squier Urological Clinic, Presbyterian Hospital; on Columbia University faculty, 1917–55: d. New York City, July 24.

Cahill, John J. (68), Australian political leader; Labour premier of New South Wales after 1953: d. Sydney, Oct. 22.

Callender, Harold (67), correspondent for New York *Times* for over 30 years; economics specialist: d. Paris, Oct. 8.

Canonica, Pietro (90), Italian sculptor and composer of operas; member of Italian Academy: d. Rome, June 8.

Canzoneri, Anthony (Tony) (51), world featherweight and lightweight boxing champion in late 1920's and in 1930's elected to boxing's Hall of Fame: d. New York City, Dec. 8.

Carroll, Eber M. (66), historian and author; chairman of history department, Duke University, 1954–59: d. Bussum, Netherlands, Dec. 29.

Carroll, John (67), American artist: b. Wichita, Kans., Aug. 14, 1892; d. Albany, N.Y., Nov. 7, 1959. Primarily a portraitist of women, Carroll studied with Frank Duveneck, and by the mid-1920's was well known for his moonlit, ethereal portraits of women. He taught at New York's Art Students League (1926–27 and 1944–55) and, for a time after 1930, at the Detroit Society of Arts and Crafts. His paintings, for which he received many awards, hang in many American museums, including the Metropolitan and the Whitney museums in New York City.

Carroll, Patrick J. (84), Roman Catholic clergyman, educator, and author; vice president of University of Notre Dame, 1926–29: d. South Bend, Ind., Nov. 18.

Carter, Jesse W. (70), justice of California Supreme Court after 1939; noted for vigorous dissenting opinions: d. San Rafael, Calif., Mar. 15.

Casper, Leopold (99), German-born urologist and onetime professor at University of Berlin; author of standard works on urology and cystoscopy: d. New York City, Mar. 16.

Cates, Louis S. (77), copper industrialist; chairman of Phelps Dodge Corp., after 1947: d. New York City, Oct. 29.

Catto, Lord (Thomas S. Catto) (80), British banker; governor of Bank of England, 1944–49: d. Surrey, Eng., Aug. 23.

Chandler, Raymond Thornton (70), American author: b. Chicago, Ill., July 23, 1888; d. La Jolla, Calif., March 26, 1959. A leading and popular exponent of the "tough guy" school of American crime fiction, he created the hard-boiled but sentimental "private eye," Philip Mar-

lowe, whose lurid exploits amid human depravity were first recounted in *The Big Sleep* (1939). Chandler's many other mystery novels include *Farewell, My Lovely* (1940), *The Lady in the Lake* (1943), *The Long Goodbye* (1954), and *Playback* (1958). He also wrote film scenarios, including *Double Indemnity* (1944), an adaptation of James M. Cain's novel, and *The Blue Dahlia* 1946).

Christopher, George H. (70), Democratic representative from Missouri, 1949–50 and after 1955: d. Washington, D.C., Jan. 23.

Clark, Dwight E. (49), medical educator noted for research on use of radioactive iodine; chairman of Department of Surgery, University of Chicago, after 1958: d. Chicago, July 24.

Clauson, Clinton A. (64), Democratic governor of Maine (elected on Sept. 8, 1958): d. Augusta, Me., Dec. 30.

Cleghorn, Sarah N. (83), American poet and novelist: d. Philadelphia, Apr. 4.

Cloonan, John J. (75), educator, financier, and architect; president of St. John's University (Brooklyn, N.Y.), 1925–31: d. Allentown, Pa., Apr. 16.

Close, Harold W. (70), physical chemist and educator; dean, School of Arts and Sciences, American University of Beirut (Lebanon), 1942–53: d. Princeton, N.J., Jan. 1.

Coady, Michael M. (77), Canadian Roman Catholic educator; founder of cooperative movement in Maritime Provinces: d. Antigonish, N.S., July 28.

Coblentz, Edmond D. (76), publisher of The New York *American*, 1934–40, and of The San Francisco *Call-Bulletin*, 1940–50: d. Sonoma, Calif., Apr. 16.

Cochrane, Vice Adm. Edward L. (67), chief of U.S. Navy's Bureau of Ships in World War II; vice president of M.I.T., 1954–57: d. New Haven, Conn., Nov. 14.

Cody, Sherwin (90), author of books on how to write and speak better English; noted for correspondence course: d. Brooklyn, N.Y., Apr. 4.

Cohen, Octavus Roy (67), American author: b. Charleston, S.C., June 26, 1891; d. Los Angeles, Calif., Jan. 6, 1959. After an early career as a journalist and lawyer, he became a full-time writer. A frequent contributor to *The Saturday Evening Post*, he was noted for his numerous Negro dialect stories and for his mysteries. Among his many books, plays, and radio and motion picture scripts were: *The Crimson Alibi* (1919), *Polished Ebony* (1919), *Come Seven* (1920). *Assorted Chocolates* (1922), *Jim Hanvey, Detective* (1923), *The Backstage Mystery* (1930), *Child of Evil* (1936), *East of Broadway* (1938), *Don't Ever Love Me* (1947), *Borrasca* (1953), and *Love Can Be Dangerous* (1955).

Cole, George Douglas Howard (69), English economist and writer: b. Cambridge, England, Sept. 25, 1889; d. London, Jan. 14, 1959. He was educated at St. Paul's School, London, and at Oxford University, with which he had a long association, including posts as fellow of University College (1925–44) and, from 1944 until his retirement in 1957, fellow of All Souls College and Chichele professor of social and political theory. In his youth he joined the Labour Party and the Fabian Society, serving as chairman of the latter from 1939 to 1946, and as its president from 1952. A brilliant and prolific writer, he produced more than 50 books of political and economic theory and history, some in collaboration with his wife, Margaret Isabel Postgate Cole, with whom he also wrote more than 30 popular detective stories. According to his widow, Professor Cole considered the following to be among his most important works: *The World of Labour* (1913), *The Intelligent Man's Guide Through World Chaos* (1932), *A Short History of the British Working Class Movement, 1789–1947* (1948), and the multivolume (1953–58) *History of Socialist Thought* from 1789 to 1931. He also wrote frequently for the *New Statesman and Nation* and was a contributor to THE ENCYCLOPEDIA AMERICANA.

Collier, Harry D. (83), petroleum and banking leader; board chairman, Standard Oil Company of California, 1945–49: d. San Francisco, Jan. 30.

Colligan, Eugene A. (71), president of Hunter College, 1933–39: d. Plandome Manor, N.Y., Oct. 15.

Colvin, D. Leigh (79), Prohibitionist Party presidential candidate, 1936: d. Bronxville, N.Y., Sept. 7.

Cone, William (62), American-born Canadian brain surgeon; chief of neurosurgery service, Montreal Neurological Institute: d. Montreal, May 4.

Conway, Carle C. (81), board chairman of Continental Can Co., 1930–50: d. Lake Placid, N.Y., Aug. 18.

Cook, Joe (Joseph Lopez) (69), comedian of vaudeville and Broadway stage: d. Clinton, N.Y., May 16.

Coolidge, T. Jefferson (65), Boston banker and business leader; undersecretary of Treasury, 1932–36: d. Beverly, Mass., Aug. 6.

Cooper, Lane (83), professor of English language and literature, Cornell University, 1915–43; author of works on Greek philosophers: d. Ithaca, N.Y., Nov. 27.

Corbin, John (89), author of books on historical and literary subjects; editorial writer and drama critic for The New York *Times*: d. Briarcliff Manor, N.Y., Aug. 30.

Cornwallis, Sir Kinahan (76), British diplomat and expert on Middle East; ambassador to Iraq, 1941–45: d. Basingstroke, Eng., June 3.

Costello, Lou (real name Louis Francis Cristillo) (52), American motion picture comedian: b. Paterson, N.J., March 6, 1906; d. Beverly Hills, Calif., March 3, 1959. After appearing as a solo vaudeville performer, he formed the comedy team of Abbott and Costello with William (Bud) Abbott in 1930 and toured vaudeville, burlesque, and night club circuits until 1938, when the team became a regular feature on Kate Smith's radio program. In 1939, the two appeared in *The Streets of Paris* on Broadway and at the New York World's Fair. The team's first successful film was *Buck Privates* (1941), which was followed by more than 30 films, including *Hold That Ghost* (1941), *Lost in a Harem* (1944), *In Society* (1944), and *Africa Screams* (1949). The comedy team broke up in 1957.

Costolow, William E. (66), cancer specialist; director of Los Angeles Tumor Institute: d. Los Angeles, Nov. 22.

Couch, Herbert N. (59), professor of classics (after 1945) at Brown University: d. Providence, R.I., June 6.

Coulondre, Robert (73), French diplomat; ambassador to USSR, 1936–38, and to Germany, 1938–39: d. Paris, Mar. 10.

Craigie, Sir Robert (75), British diplomat and naval expert; ambassador to Japan, 1937–41: d. Winchester, Hampshire, Eng., May 16.

Croil, Air Marshal George M. (65), chief of Air Staff (1934–40) and inspector general (1940–44) of Royal Canadian Air Force: d. Vancouver, B.C., Apr. 8.

Cross, Hardy (74), professor of civil engineering, Yale University, 1937–51; innovator in structural engineering analysis: d. Virginia Beach, Va., Feb. 11.

Crouch, George F. (80), designer of speedboats and other craft; government consultant and executive of shipbuilding companies: d. New Britain, Conn., June 4.

Crum, Bartley Cavanaugh (59), American lawyer: b. Sacramento, Calif., Nov. 28, 1900; d. New York, N.Y., Dec. 10, 1959. A liberal Republican, he gained a wide reputation as a lawyer specializing in civil rights cases. He was a campaign manager for Wendell L. Willkie in the 1940 presidential race; acted as consultant to the U.S. delegation in the drafting of the United Nations charter in 1945; and served on the Anglo-American Commission of Inquiry on Palestine in 1946. An advocate of a Jewish state in Palestine, he urged partition of the Holy Land in his book, *Behind the Silken Curtain* (1947). He became publisher of *PM*, a New York City tabloid, in 1948, but the paper, renamed *The Star*, was forced to close in 1949 because of financial difficulties.

Daly, Edward J. (67), chief justice of Connecticut Supreme Court of Errors: d. Hartford, Conn., July 20.

Daubin, Rear Adm. Freeland A. (73), commander of U.S. submarine forces in Atlantic in World War II: d. Bethesda, Md., Oct. 24.

Davey, Wheeler P. (73), research professor of physics and chemistry, Pennsylvania State University, 1931–49; specialist in X-rays and conductivity of metals: d. Bellefonte, Pa., Oct. 12.

Davis, Hassoldt (52), explorer in Africa and South America; author of *The Jungle and the Damned* (1952) and other books: d. Boston, Mass., Sept. 10.

Day, George P. (83), treasurer of Yale University, 1910–42, and founder of Yale University Press: d. New Haven, Conn., Oct. 24.

de Fouquieres, André Becq (83), French leader of fashion and author of books on manners and elegance: d. Paris, Jan. 13.

de Herrera, Luis Alberto (85), Uruguayan rightist political leader; led Nationalist Party to victory in 1958: d. Montevideo, Uruguay, Apr. 8.

Deiss, Charles F. (56), head of Department of Geology, Indiana University, after 1945: d. Indianapolis, Ind., June 13.

*De Mille, Cecil B. (77), motion picture pioneer and film producer: d. Hollywood, Calif., Jan. 21.

de Nicola, Enrico (81), Italian lawyer and politician: b. Naples, Italy, Nov. 9, 1877; d. Torre del Greco, Italy, Oct. 1, 1959. He retired from politics in the 1920's, in protest against Mussolini's regime, but returned after World War II to take part in the formation of the first republican Italian government, becoming its provisional head in 1946 and first president of the republic in 1948. He was also a law scholar and the author of many widely used textbooks.

Denny, George V., Jr. (60), founder and moderator (1935–52) of immensely popular radio program, *America's Town Meeting of the Air:* d. West Cornwall, Conn., Nov. 11.

Derwent, Clarence (75), English actor and director: b. London, England, March 23, 1884; d. New York, N.Y., Aug. 6, 1959. In 57 years on the stage he appeared in an estimated 500 plays in England and the United States, directed productions in both countries, and appeared in several films. After 1915 he resided mostly in the United States, but he retained his British citizenship. His recent appearances on the New York stage included *Uncle Vanya* (1956), and *Lute Song* (1959). In 1944 he established the annual Clarence Derwent Awards of $500 each for the best supporting actor and actress in the United States and England. He was president of Actors' Equity Association from 1946 to 1952 and of the American National Theatre and Academy (ANTA) from 1952 until his death. His autobiography, *The Derwent Story*, was published in 1954.

Dodds, Bernice L. (56), dean of University of Illinois College of Education after 1953: d. Urbana, Ill., Mar. 23.
Dodds, Warren (Baby) (64), pioneer jazz drummer; member of Louis Armstrong's Hot Five: d. Chicago, Feb. 14.
Donahue, Joseph P. (88), Roman Catholic Bishop; a vicar general of archdiocese of New York: d. New York City, Apr. 26.
Donnelly, Francis P. (89), Jesuit educator and author; professor of rhetoric and classics, Fordham University, 1929–52: d. Poughkeepsie, N.Y., Apr. 18.
*Donovan, Maj. Gen. William J. (76), wartime director of Office of Strategic Services: d. Washington, D.C., Feb. 8.
Douglas, Paul (52), American actor: b. Philadelphia, Pa., April 11, 1907; d. Hollywood, Calif., Sept. 11, 1959. He was a successful radio sports announcer until 1946, when producer Garson Kanin picked him to play the leading male role, as a wealthy junk dealer, in *Born Yesterday.* The comedy ran for more than two and one-half years and made Douglas a star. The movie version of the play was equally popular and started Douglas on a film career that included *A Letter to Three Wives* (1948), *Executive Suite* (1954), *The Solid Gold Cadillac* (1956), and *The Mating Game* (1959). He also appeared frequently on television, and scored another hit on Broadway in *A Hole in the Head* (1957).
Draper, George (79), internist and pioneer in scientific constitutional medicine; former associate professor of clinical medicine, College of Physicians and Surgeons, Columbia University: d. New York City, July 1.
DuBois, Eugene F. (76), emeritus professor of physiology, Cornell University Medical College; authority on metabolism: d. New York City, Feb. 12.
Dukes, Ashley (73), English playwright, translator, and drama critic: d. London, May 4.
*Dulles, John Foster (71), secretary of state, 1953–59: d. Washington, D.C., May 24.
Dunbar, Flanders (57), psychiatrist and author; pioneer in psychosomatic medicine: d. South Kent, Conn., Aug. 21.
Dunning, William B. (85), founder of Columbia School of Dental and Oral Surgery: d. Englewood, N.J., July 21.
Duplessis, Maurice Le Noblet (69), Canadian government official: b. Trois Rivières, Quebec, April 20, 1890; d. Schefferville, Quebec, Sept. 7, 1959. Educated at Quebec's Laval University (B.A. and LL.B.) and admitted to the bar in 1913, he practiced law in Trois Rivières until his election in 1927 as Conservative representative in the provincial legislature. In 1936 he founded Quebec's Union Nationale Party, whose victory in that year's elections carried him to the provincial premiership. His party was defeated in 1939, largely on the issue of his opposition to Canada's participation in World War II, but recovered in 1944, returning him to the premiership, which he then held until his death. His insistence on preserving the province's autonomy led to frequent brushes with the federal government on such matters as taxes, religious freedom, and federal support of education. But to the French-speaking people of the province, whose economy, culture, and identity he fought endlessly to promote, he was "Le Chef."

Eastwood, Lieut. Gen. Sir Ralph (68), British military leader; head of Home Guard, 1940–44; governor general and commander in chief of Gibraltar, 1944–47: d. Cannes, France, Feb. 15.
Eckersley, Thomas L. (72), British scientist; researcher on radio waves and ionosphere: d. London, Feb. 15.
Ed, Carl F. L. (69), cartoonist; creator of "Harold Teen" comic strip: d. Evanston, Ill., Oct. 10.
Edwards, John (55), British Labour M.P., educator, and government aide; president of Consultative Assembly of Council of Europe: d. Strasbourg, France, Nov. 23.
Ehmke, Howard J. (64), American League pitcher who in 1929 set World Series record (broken in 1953) by striking out 13 batters in one game: d. Philadelphia, Mar. 17.
Eisenberg, George M. (47), bacteriologist, author, and teacher; chief of Division of Bacteriology and Immunology, Philadelphia General Hospital, after 1949: d. Philadelphia, Oct. 26.
Elkins, Davis (82), Republican senator from West Virginia, 1919–25: d. Richmond, Va., Jan. 5.
Elliott, A. Roland (64), director of immigration services of Church World Service; aided in resettlement of some 106,000 refugees in U.S.: d. Marlboro, N.H., July 1.
Emanueli, Luigi (75), Italian engineer-inventor; designed improved submarine cables: d. Milan, Italy, Feb. 17.
Enckell, Carl J. A. (82), Finnish foreign minister, 1918–19, 1922, 1924, and 1944–50: d. Helsinki, Finland, Mar. 27.
Engel, Albert J. (71), Republican representative from Michigan, 1935–51; noted for investigations of excessive federal spending: d. Grand Rapids, Mich., Dec. 3.
*Epstein, Sir Jacob (78), New York-born English sculptor noted for controversial works: d. London, Aug. 19.
Evans, Alexander W. (91), professor emeritus of botany, Yale University; authority on lichens: d. New Haven, Conn., Dec. 6.

Farrand, Beatrix (86), landscape architect and consultant; designed Dumbarton Oaks grounds and other notable sites: d. Bar Harbor, Me., Feb. 27.
Ferguson, Fred S. (72), newspaperman; president of NEA Service, Inc., 1926–58: d. Huntington, N.Y., Dec. 6.
Fields, Benny (Benjamin Geisenfeld) (65), vaudeville, nightclub, and radio performer: d. New York City, Aug. 16.
Fineman, Hayim (73), professor emeritus of English literature, Temple University; authority on Shakespeare and Milton: d. Philadelphia, Apr. 18.
Finesinger, Jacob E. (57), psychiatrist and educator; founder and head of Psychiatric Department, University of Maryland: d. Baltimore, Md., June 19.
Finnegan, Philip J. (72), judge of U.S. Circuit Court of Appeals in Chicago: d. New Rochelle, N.Y., Jan. 4.
Fitch, Florence M. (84), educator and author of children's books on religion; professor of Biblical literature, Oberlin College, 1903–40: d. Oberlin, Ohio, June 2.
Fitch, John A. (78), labor specialist, arbitrator, and author of books on labor problems; professor, New York School of Social Work, 1940–46: d. New York City, June 15.
Fletcher, Henry Prather (86), American diplomat: b. Greencastle, Pa., April 10, 1873; d. Newport, R.I., July 10, 1959. He served almost 30 years in the United States diplomatic corps in widely scattered posts around the world, including ambassadorships to Mexico (1916–20), Belgium (1922–24), and Italy (1924–29). He was under secretary of state in 1921–22, and in 1930–31 headed the U.S. Tariff Commission. Active in Republican Party affairs, he was chairman of its national committee (1934–36) and general counsel to the committee and member of the party's executive committee (1936–44).
*Flexner, Abraham (92), reformer of medical education in U.S.; founded Institute for Advanced Study at Princeton, N.J.: d. Falls Church, Va., Sept. 21.
Flores da Cunha, Gen. José Antonio (79), Brazilian military leader who aided Getulio Vargas' seizure of presidency in 1930, but later opposed Vargas: d. Pôrto Alegre, Brazil, Nov. 4.
Flynn, Errol (50), Australian-American film star: b. Hobart, Tasmania, June 20, 1909; d. Vancouver, British Columbia, Oct. 14, 1959. His many starring roles in swashbuckling adventure films were paralleled by personal adventures and escapades that earned him the sobriquets "soldier of fortune" and "charming rogue." He set out at 17 as cook on a schooner, and had held such jobs as constable, plantation overseer, newspaperman, pearl fisher, and boxer, when, as master of a South Pacific schooner in the early 1930's, he was spotted by film makers. Seeing the possibility of a movie career, he went to England, where he played several major stage roles before being signed by a Warner Brothers scout in 1935. Stardom came quickly in the United States, and he became a citizen in 1942. His pictures included *Captain Blood* (1935), *Charge of the Light Brigade* (1936), *The Adventures of Robin Hood* (1938), *Dawn Patrol* (1938), *The Adventures of Don Juan* (1948), *Against All Flags* (1952), and *The Sun Also Rises* (1957). He published three books—*Beam Ends* (1937), *Showdown* (1946), and a posthumously issued autobiography, *My Wicked, Wicked Ways* (1959).
Forbes, W(illiam) Cameron (89), American businessman and diplomat: b. Milton, Mass., May 21, 1870; d. Boston, Mass., Dec. 24, 1959. He was graduated from Harvard College in 1892, and later acquired widespread business interests in Boston. In 1904 he was appointed to the Philippine Commission, which he served until 1908, when he became vice governor of the islands. From 1909 until his resignation in 1913 he was governor general. In 1921 he was a member of the Wood-Forbes Commission to the Philippines. From 1930 to 1932, during the Manchurian crisis, he was ambassador to Japan. His two-volume *Philippine Islands* was published in 1929.
Fotitch, Constantin A. (67), Yugoslav diplomat; ambassador to U.S., 1942–44: d. Washington, D.C., Feb. 14.
Franklin, Lewis B. (80), banker and Episcopal leader; treasurer of National Council of Protestant Episcopal Church, 1920–48: d. Stamford, Conn., Mar. 21.
Freytag, Walter (60), German Protestant theologian; professor of missions and ecumenical studies, University of Hamburg: d. Heidelberg, Germany, Oct. 24.
Frost, Frances (53), poet, novelist, and writer of children's books: d. New York City, Feb. 11.
Frothingham, Channing (78), Boston physician; chairman of Committee for the Nation's Health; former chairman of Department of Medicine, Harvard University, and an overseer of Harvard College: d. Boston, Aug. 11.
Frye, Jack (54), leader in air transport; a founder and president (1934–47) of Trans World Airlines: d. (auto crash) Tucson, Ariz., Feb. 3.

Gallie, William E. (77), Canadian surgeon noted for "living suture" technique; professor of surgery, University of Toronto, 1929–47: d. Toronto, Sept. 25.
Galvin, Paul V. (64), radio and electronics industrialist; founder of Motorola, Inc.: d. Evanston, Ill., Nov. 5.
Gamble, James L. (75), professor of pediatrics, Harvard University, 1929–50: d. Boston, May 28.
Gamble, Ralph A. (73), Republican representative from New York, 1937–56: d. Port Deposit, Md., Mar. 3.
Gans, Baby Joe (Gerald Slaughter) (59), leading lightweight and welterweight boxer of 1920's and early 1930's: d. Milwaukee, Wis., Apr. 20.
García Calderón, Ventura (73), Peruvian author and diplomat; novels and other works translated from Spanish into several languages: d. Paris, Oct. 28.
Gemelli, Agostino (81), Italian Franciscan psychologist and

philosopher; founder and president of University of the Sacred Heart (Milan): d. Milan, Italy, July 15.

Ghoneim, Mohammed Zakaria (48), Egyptian archaeologist; in 1952 discovered the unfinished Step Pyramid at Saqqara: d. (body found in the Nile River) Cairo, Egypt, Jan. 11.

Gifford, Edward W. (71), professor of anthropology, University of California, 1945–57; authority on California Indians: d. Paradise, Calif., May 16.

Gleason, James (72), American actor: b. New York, N.Y., May 23, 1886; d. Woodland Hills, Calif., April 12, 1959. After an early start as a child actor, he appeared on Broadway as Hap Hurley in *Is Zat So?* (1925), a long-running hit, which he co-authored with Richard Taber. He also wrote *The Fall Guy* (with George Abbott, 1925) and motion picture scenarios, including *Broadway Melody* (1929) and *Two-Fisted* (1935). Gleason appeared often on the screen after 1928, becoming noted for kind-hearted, tough-guy roles. His films included *Count of Ten* (1928), *Down to Earth* (1932), *Arsenic and Old Lace* (1944), *A Tree Grows in Brooklyn* (1945), *The Life of Riley* (1949), *What Price Glory?* (1952), and *The Last Hurrah* (1958).

Glenn, Otis F. (79), Republican senator from Illinois, 1929–33: d. Manistee, Mich., Mar. 11.

Godwin, Frank (69), illustrator and creator of syndicated cartoon strip, *Rusty Riley*: d. New Hope, Pa., Aug. 5.

Gordon, George A. (73), U.S. diplomat and adviser at international conferences: d. New York City, May 11.

Gordon, Mack (real name Morris Gittler) (54), American lyricist: b. Warsaw, Poland, June 21, 1904; d. New York, N.Y., Feb. 28, 1959. With composer Harry Revel he did the songs for the *Ziegfeld Follies of 1931*. In Hollywood, after 1933, he wrote lyrics for many motion picture hit songs, including *You'll Never Know*. His other popular lyrics include *Time on My Hands, Did You Ever See a Dream Walking?*, and *Chattanooga Choo Choo*.

Gordon, Myron (59), geneticist and cancer researcher; authority on melanoma and cancer of fish: d. New York City, Mar. 12.

Gordon, Thomas S. (65), Democratic representative from Illinois, 1943–58; chairman of House Foreign Affairs Committee after 1957: d. Chicago, Jan. 22.

Graham, Dorothy (Dorothy Graham Bennett) (65), author of *The China Venture* and other novels and nonfiction works dealing with China: d. New York City, June 22.

Grahame-White, Claude (79), British aviator; racer and stunter; Britain's first airmail pilot: d. Nice, France, Aug. 19.

Granfield, William J. (69), Democratic representative from Massachusetts, 1931–37: d. Springfield, Mass., May 27.

Gray, Charles H. (67), director of division of academic studies, Juilliard School of Music, after 1953; president of Bard College, 1944–47: d. New York City, May 14.

Gray, Gilda (Marianne Michalski) (58), dancer and singer of 1920's, noted as creator of shimmy dance: d. Hollywood, Calif., Dec. 22.

Greene, Jerome D. (84), investment banker and executive of Rockefeller Foundation and other educational institutions; secretary of Harvard Corporation, 1905–10 and 1934–43: d. Cambridge, Mass., Mar. 29.

Greenslet, Ferris (84), author of biographies and other works; literary editor of Houghton Mifflin Co. for 35 years: d. Cambridge, Mass., Nov. 19.

Greenstein, Jesse P. (56), biochemist noted for contributions to cancer research; chief of biochemistry laboratory, National Cancer Institute, after 1946: d. Bethesda, Md., Feb. 12.

Grente, Georges François Xavier (86), French cardinal: b. Percy, France, May 5, 1872; d. Le Mans, France, May 4, 1959. Ordained in 1895, he was first assigned to educational work, serving as a professor of literature and an administrator. In 1918 he was named bishop of Le Mans, and the personal title of archbishop was conferred on him in 1943. He was created cardinal in 1953. He was the author of a number of books on literary and religious subjects, and he directed the preparation of the *Dictionnaire des Lettres Françaises*. The French Academy elected him to membership in 1936. He was an active supporter of the French resistance movement during World War II.

Griffin, Carroll W. (58), chairman of Department of Chemistry, Vassar College; textbook author: d. Poughkeepsie, N.Y., May 4.

Griscom, Lloyd C. (86), diplomat, newspaper publisher, and author; ambassador to Brazil, 1906–07, and Italy, 1907–09: d. Thomasville, Ga., Feb. 8.

Griscom, Ludlow (68), research ornithologist, research curator, and editor, Harvard Museum of Comparative Zoology, 1927–53: d. Cambridge, Mass., May 28.

Grock (Adrian Wettach), Swiss-born clown famed throughout Europe as pantomimist: d. Imperia, Italy, July 14.

*Grosz, George (65), German-born painter noted for savage caricatures: d. Berlin, July 6.

Guérard, Albert Léon (79), historian, teacher, and writer: b. Paris, France, Nov. 3, 1880; d. Stanford, Calif., Nov. 13, 1959. Educated in France, he began his career in the United States in 1906 as a teacher at Williams College. After teaching there, and at Stanford and Rice Institute, he returned to Stanford where he remained until retiring as professor emeritus in 1946. From 1950 to 1953 he served at Brandeis University as professor of comparative literature. A specialist in French civilization and modern European history, he had most recently written *France: A Short History* (1946), *Napoleon III* (1955), and *Testament of a Liberal* (1956).

*Guest, Edgar A. (77), poet whose verses appeared in some 300 newspapers: d. Detroit, Mich., Aug. 5.

Guffey, Joseph Finch (88), American political leader: b. Westmoreland County, Pa., Dec. 29, 1870; d. Washinton, D.C., March 6, 1959. After attending Princeton University (1890–92), he went into the public utilities business and later he was also a successful oil operator. He entered Pennsylvania politics in 1912, becoming acting chairman of the Democratic State Committee in 1916. When his state Democratic organization backed Franklin D. Roosevelt's victorious presidential candidacy in 1932, he became a nationally recognized political leader. As United States senator from 1935 to 1946, he was ardently prolabor in his actions and voting record. His main legislative contribution was the Bituminous Coal Stabilization Act (known as the Guffey-Vinson Coal bill) of 1937.

Guggenheim, Col. M. Robert (74), metals industrialist and ambassador to Portugal, 1953–54: d. Washington, D.C., Nov. 16.

Gwenn, Edmund (83), English actor: b. London, England, Sept. 26, 1875; d. Woodland Hills, Calif., Sept. 6, 1959. In his more than 60 years on the stage and in films, his roles ranged from parts in the plays of Ibsen, Chekhov, and J. M. Barrie to the benign Santa Claus in the American film, *Miracle on 34th Street*, for which performance he won the 1947 Academy Award as the best supporting actor. His first success on the London stage was as the chauffeur in *Man and Superman* in 1904. After settling permanently in Hollywood in 1940, he acted in more than 30 motion pictures between 1942 and 1958. Among his best-known films are *Pride and Prejudice* (1940), *The Keys of the Kingdom* (1945), *Mister 880* (1950), and *The Trouble with Harry* (1956).

Haggard, Howard Wilcox (67), American physiologist and educator: b. La Porte, Ind., July 19, 1891; d. Fort Lauderdale, Fla., April 22, 1959. He received his M.D. from Yale University in 1917 and was appointed instructor of physiology there in the same year. In 1938 he became director of the university's noted Laboratory of Applied Physiology and held this post until his retirement in 1956. An authority on alcoholism and related problems, he founded the Yale Center of Alcohol Studies (1940), whose Yale Plan Clinic has done pioneering research in the treatment of alcoholism. Dr. Haggard was editor of the *Quarterly Journal of Studies on Alcohol*, published by the Yale Center; his books include the popular *Devils, Drugs, and Doctors* (1929), *The Doctor in History* (1934), and *Man and His Body* (1938).

Hakimi, Ibrahim (89), premier of Iran in 1940's; strongly opposed USSR in dispute over Azerbaijan: d. Iran, Oct. 20.

*Halifax, Earl of (Edward F. L. Wood) (78), British foreign secretary, 1938–40; ambassador to U.S., 1941–46: d. near York, Eng., Dec. 23.

*Halsey, Fleet Adm. William F. (76), naval commander in World War II: d. Fishers Island, N.Y., Aug. 16.

Hanes, Robert M. (68), North Carolina banker and legislator; head of Marshall Plan mission to West Germany, 1949–50: d. Winston-Salem, N.C., Mar. 10.

Harcourt, Adm. Sir Cecil (67), British naval commander who accepted Japanese surrender of Hong Kong in 1945: d. London, Dec. 19.

Harrison, Ross Granville (89), American zoologist and educator: b. Germantown, Pa., Jan. 13, 1870; d. New Haven, Conn., Sept. 30, 1959. His success, in 1907, in growing embryonic animal tissue independently of the parent organism was an initial step toward the development of the Salk vaccine years later. A member of the Yale University faculty from 1907 until his retirement in 1938, he also served as director (1918–38) of Yale's Osborn Zoological Laboratory and as chairman (1938–46) of the National Research Council.

Hart, James (62), professor of political science, University of Virginia; wrote works on administrative law and on the American presidency: d. Charlottesville, Va., Sept. 14.

Harvey, E. Newton (71), professor of biology, Princeton University, 1919–56; authority on bioluminescence: d. Woods Hole, Mass., July 21.

Hatoyama, Ichiro (76), former premier of Japan: b. Tokyo, Japan, Jan. 1, 1883; d. Tokyo, March 7, 1959. Trained as a lawyer, he was elected to the Diet in 1915 and subsequently served as chief cabinet secretary (1927–29) and as minister of education (1931–34). In the late 1930's he lost his bid for control of the powerful Seiyukai Party to a militarist clique which opposed his pro-Western ideas. His book *Sekai no kao* (*The Face of the World;* 1938), containing portions in praise of Hitler and Mussolini, was used by the Allied Supreme Command as evidence to purge him from politics in 1946, despite proof that he had lived in retirement during World War II. Permitted to return to politics in 1951, Hatoyama was re-elected to the Diet in 1952. Leaving the Liberal Party he had helped to form at the end of the war, he founded the conservative Democratic Party and was elected premier on Dec. 9, 1954. In Moscow on

Oct. 19, 1956, he personally concluded negotiations ending the Soviet-Japanese state of war. On December 20 of that year he retired from the premiership because of ill health.

Hayes, Thomas S. (57), librarian of University of Puerto Rico, after 1942; contributor to ENCYCLOPEDIA AMERICANA and AMERICANA ANNUAL: d. San Juan, P.R., May 18.

Heal, Sir Ambrose (87), English furniture designer and author on decorative arts: d. Beaconsfield, Eng., Nov. 15.

Heck, Oswald D. (57), Republican speaker of New York State Assembly after 1937: d. Schenectady, N.Y., May 21.

Heely, Allan V. (62), headmaster of Lawrenceville School after 1934: d. Lawrenceville, N.J., July 7.

Helburn, Theresa, (72?), American theatrical producer: b. New York, N.Y., 1887? d. Norwalk, Conn., Aug. 18, 1959. An enthusiastic and tireless promoter of drama, Theresa Helburn was the Theatre Guild's executive director from 1920 to 1932, and its coadministrator thereafter. She and Lawrence Langner, the Guild's founder (in 1918), were instrumental in the production of plays by O'Neill, Shaw, Maxwell Anderson, Elmer Rice, Sidney Howard, and Robert Sherwood. They managed to hold the Theatre Guild together during its lean years in the 1930's and made it financially successful in the early 1940's by producing Rodgers and Hammerstein's great musical, *Oklahoma!* Her later productions for the Guild included such successes as *Come Back Little Sheba* (1950) and *Picnic* (1953).

Helfer, Walter (62), composer and chairman of Music Department, Hunter College, 1938–50: d. New Rochelle, N.Y., Apr. 16.

Herzog, Isaac Halevi (70), Israeli rabbi: b. Lomza, Poland, Dec. 2, 1888; d. Jerusalem, Israel, July 25, 1959. Ordained in England in 1910, he served for 21 years in Ireland, as rabbi to the Jewish communities of Belfast (1915–19) and Dublin (1919–25), and was chief rabbi of the Jewish community in the Irish Free State from 1925 to 1936. In the latter year he became chief rabbi of Palestine and of the Ashkenazi Orthodox Jews. An ardent Zionist, he worked vigorously for Israeli independence, and when it was achieved in 1948, became chief rabbi of Israel for the Ashkenazi sect. Dr. Herzog was an authority on the Talmud and Jewish law. Among his publications was the five-volume *Main Institutions of Jewish Law.*

Himmelstein, Aaron (45), specialist in cardiovascular surgery; contributor to cardiac-catheter research: d. New York City, Dec. 18.

Hines, Duncan (78), American gourmet and author: b. Bowling Green, Ky., March 26, 1880; d. Bowling Green, March 15, 1959. During three decades of travel throughout the United States as a printing salesman, he kept listings of superior restaurants as a hobby. Deluged with requests for his recommendations, he published in 1936 a book of listings, *Adventures in Good Eating,* and the signpost "Recommended by Duncan Hines" soon became a guide to travelers. Two years later he wrote *Lodging for a Night* and left his sales job to devote full time to his publishing enterprises. His *Adventures in Good Cooking and the Art of Carving in the Home* (1939) added to his reputation.

Hinton, William A. (75), professor of bacteriology, immunology, and preventive medicine, Harvard Medical School, 1912–53; developed syphillis test: d. Canton, Mass., Aug. 8.

Hoare, Samuel John Gurney. See Templewood.

Holiday, Billie (real name Eleanora Fagan) (44), American jazz singer: b. Baltimore, Md., April 7, 1915; d. New York, N.Y., July 17, 1959. Sporting a swatch of white gardenias in her hair, Billie Holiday sang her way to fame with an originality and earthiness that won for her the title, "first lady of the blues," and recognition as a leading Negro jazz singer. She began her career as a vocalist in a Harlem night club, and, in November 1933, backed by a band which included Benny Goodman, Jack Teagarden, and Gene Krupa, she made her first record, *Your Mother's Son-in-Law.* Miss Holiday later sang at numerous night clubs and with various bands, including those of Artie Shaw and Count Basie. In 1938 she introduced the bitter, haunting lyrics of *Strange Fruit,* the song by which she was perhaps best known. Her other notable records include *Billie's Blues, Fine and Mellow,* and *The Man I Love.* Her personal life was a long and generally unsuccessful attempt to rid herself of the drug habit; she was arrested several times on narcotics charges and voluntarily served terms in federal rehabilitation institutions. Her autobiography, *Lady Sings the Blues,* written with William Dufty, was published in 1956.

Holloway, William G. (72), shipping leader; board chairman, W. R. Grace & Co., 1945–55: d. Old Westbury, N.Y., Jan. 7.

Holman, Rufus C. (82), Republican senator from Oregon, 1933–45: d. Eugene, Oreg., Nov. 27.

Holmes, Taylor (80), veteran actor of Broadway stage, films, and television: d. Hollywood, Calif., Sept. 30.

Hoppe, Willie (William Frederick) (71), American billiard champion: b. Cornwall on the Hudson, N.Y., Oct. 11, 1887; d. Miami, Fla., Feb. 1, 1959. In 1906, at 18, he won the world 18.1 balkline championship by defeating Maurice Vignaux of France, at Paris. In 1907 he won his first 18.2 balkline championship, and in 1936 his first three-cushion world title, which he last defended in 1952, shortly before his retirement from tournament play. Often called the greatest all-round billiard player of all time, Hoppe won 51 world billiard championships. He wrote *Thirty Years of Billiards* (1925) and *Billiards as It Should Be Played* (1941).

Hopper, Edna Wallace (85?), American actress: b. San Francisco, Calif., ?1874; d. New York, N.Y., Dec. 14, 1959. From the 1890's through World War I, the tiny actress was the darling of the American stage, appearing in a series of light comedies and musicals, such as *The Club Friend* (1891, her first), *The Girl I Left Behind Me* (1893), *Floradora* (1900), *Jumping Jupiter* (1911), and *Girl O'Mine* (1918). In the 1920's she made a second successful career, giving lectures on beauty and cosmetics. She married comedian DeWolf Hopper in 1893 (divorced 1898) and broker Albert O. Brown in 1908.

Horne, Adm. Frederick J. (79), vice chief of naval operations, 1942–46, who played important role in logistics planning of Pacific operations in World War II: d. San Diego, Calif., Oct. 18.

Housman, Laurence (93), English author: b. Bromsgrove, England, July 18, 1865; d. near Glastonbury, England, Feb. 20, 1959. He studied art as a youth but soon turned to writing. His first success was *An Englishwoman's Love Letters,* published in 1900. Over the years, he produced prodigious amount of material, ranging from mystical verse and legends, through novels of political satire, to dramas based on religious and royal figures. Among the latter were the *Little Plays of St. Francis* (1922; second series 1931) and *Victoria Regina* (1934), which was at first banned from the English stage as dealing too familiarly with royalty. Produced on Broadway in 1935, with Helen Hayes in the title role, *Victoria Regina* ran for 604 performances. His autobiography, *The Unexpected Years,* was published in 1936, and his memoirs of his noted brother, poet A. E. Housman (1859–1936), appeared in 1937 under the title *A.E.H.*

Howells, John M. (91), architect who helped design Daily News Building (New York City) and other noted structures: d. Kittery Point, Me., Sept. 22.

Howland, Leroy A. (80), Fisk Professor of mathematics, Wesleyan University, 1913–47; dean, 1935–47: d. Middletown, Conn., Aug. 26.

Huff, Charles H. (71), writer (as Drexel Drake) of "Falcon" detective stories: d. Yonkers, N.Y., July 15.

Hunziker, Otto F. (85), professor of dairying, Purdue University, 1905–16; researcher, author, and publisher of dairying studies: d. Lagrange, Ill., Nov. 15.

Ibrahim ibni Al-Marhum Abu Bakar, Sir (85), sultan of Johore: b. Johore Bharu, Malay state of Johore, Sept. 17, 1873; d. London, England, May 8, 1959. One of the world's wealthiest men and an ardent sportsman, Sir Ibrahim became sultan of Johore at the age of 22, in 1895. He was a lifelong admirer of the British and governed his state in close association with them. In World War II, following the Japanese conquest of Malaya, he remained in Johore. After the war he came into conflict with his ministers on the question of independence, which he opposed, and in 1955, two years before the country became the independent Federation of Malaya, he left Johore and thereafter lived mostly in London.

Ironside, Field Marshal Lord William Edmund (79), British military leader; b. Ironside, Scotland, May 6, 1880; d. London, England, Sept. 22, 1959. During World War I he served in France and later commanded an Allied expedition against Bolshevik forces at Archangel, Russia, in 1918–19. He became chief of Britain's Imperial General Staff in 1939 and after the outbreak of World War II, in 1940, commander in chief of Home Forces and field marshal. In 1941 he was made a baron.

Irwin, Wallace A. (83), humorist; newspaper columnist and author of magazine articles, novels, and verse: d. Southern Pines, N.C., Feb. 14.

Jackh, Ernest (84), German-born author, educator, and authority on Middle East; contributor to ENCYCLOPEDIA AMERICANA: d. New York City, Aug. 17.

Jackson, John G. (79), lawyer and civic leader; life trustee of Columbia University: d. New York City, Apr. 27.

Jackson, Walter Clinton (80), chancellor of Woman's College of University of North Carolina, 1934–59: d. Greensboro, N.C., Aug. 12.

Jackson, Wilfrid J. (58), physicist and radar authority; chairman of Physics Department, Douglass College, after 1946: d. New Brunswick, N.J., Mar. 13.

James, Herman G. (72), president of University of North Dakota, 1929–35, and of Ohio University, 1935–43; author of books on municipal government: d. St. Petersburg, Fla., Nov. 26.

Jansen, Ernest G. (78), governor general of South Africa after 1951: d. Pretoria, South Africa, Nov. 25.

Jenkins, Thomas A. (79), Republican representative from Ohio, 1925–59: d. Worthington, Ohio, Dec. 21.

Joham, Josef (70), Austrian financier; head of state-operated Kreditanstalt-Bankverein: d. Vienna, Apr. 7.

Johnson, Charles F., Jr. (71), board chairman of Endicott Johnson Company, shoe manufacturers: d. Johnson City, N.Y., Aug. 9.

*Johnson, Edward (80), general manager of Metropolitan Opera Co., 1935–50: d. Guelph, Ont., Apr. 20.

Jones, Col. Byron Q. (70), aviator; chief of Army aviation training in World War I: d. Washington, D.C., Mar. 30.
Jones, Harold W. (68), professor emeritus of clinical medicine and hematology, Jefferson Medical College; contributor to ENCYCLOPEDIA AMERICANA: d. Philadelphia, Sept. 2.
Jordan, Sara M. (75), gastroenterologist and cofounder of Lahey Clinic: d. Boston, Nov. 21.

Kahn, Morton C. (63), bacteriologist, public health specialist, and explorer; chief bacteriologist, St. Vincent's Hospital, New York City, after 1955; authority on Djuka, bush Negroes of Surinam: d. New York City, May 30.
Karpovich, Michael (71), Russian-born economist and authority on Russian culture; professor of Slavic languages, Harvard University, 1927–57: d. Cambridge, Mass., Nov. 7.
Katay D. Sascrith (55), pro-Western premier of Laos, 1954–56: d. Vientiane, Laos, Dec. 29.
Kelly, Sir David V. (67), British diplomat and author; ambassador to USSR, 1949–51: d. Inch, Ireland, Mar. 27.
Kelly, Fred C. (77), humorist, newspaper columnist, and author: d. Kensington, Md., May 23.
Kemp, Robert (74), French critic and reviewer; member of French Academy after 1956: d. Paris, July 3.
Kendall, Kay (Justine Kay Kendall McCarthy) (33), English stage and film comedienne: d. London, Sept. 6.
Kendall, Messmore (86), president general of National Society of the Sons of the American Revolution; authority on George Washington: d. West Palm Beach, Fla., May 1.
King, Samuel Wilder (72), former governor of the Territory of Hawaii: b. Honolulu, Hawaii, Dec. 17, 1886; d. Honolulu, March 24, 1959. His political career was closely allied with Hawaii's fight for statehood, in which he was a leading figure. He was Hawaii's delegate to the U.S. Congress from 1935 to 1941; was a member of the Hawaiian Statehood Commission from 1947 to 1953 (chairman, 1949–53); and, as president of the Constitutional Convention of 1950, played a major part in drafting Hawaii's constitution. He served as territorial governor from 1953 to 1957. From 1958, he was a representative in the territorial legislature.
Kirkwood, John G. (52), chairman of Department of Chemistry, Yale University; authority on statistical mechanics of gases and liquids: d. New Haven, Conn., Aug. 9.
Kitchel, Anna T. (77), professor of English, Vassar College, 1930–48; authority on 19th century English literature: d. Toledo, Ohio, May 28.
Kitson, Harry D. (73), professor of psychology, Teachers College, Columbia University, 1925–51; author of books on vocational guidance: d. Mishawaka, Ind., Sept. 25.
Knipper-Chekhova, Olga (88), Russian actress and widow of Anton Chekhov; noted for portrayals of Chekhov roles: d. Moscow, Mar. 22.
Knoch, Ernst (83), German-born opera conductor, teacher, and coach of singers; specialist in Wagnerian opera: d. New York City, Mar. 20.
Knoles, Tully C. (83), president of College of the Pacific, 1919–46: d. Stockton, Calif., Nov. 29.
Knowlson, James S. (75), automotive industrialist and government aide; president (1939–54) and chairman (after 1954) of Stewart-Warner Corp.: d. Chicago, Mar. 6.
Knudson, John I. (70), professor of history and economics, Brooklyn Polytechnic Institute, 1930–55; specialist in international law: d. Battle Creek, Mich., Aug. 25.
Koehler, Wilhelm R. (75), Estonian-born authority on French Romantic sculpture and Roman painting; professor of fine arts, Harvard University, 1932–53: d. Munich, Germany, Nov. 3.
Kopeloff, Nicholas (69), research bacteriologist at New York State Psychiatric Institute, 1920–56, and author of books in field: d. New York City, Sept. 4.
Kovacs, Bela (55), Hungarian political leader; former leader of Smallholders Party and minister of agriculture under Imre Nagy (1956): d. Pecs, Hungary, June 21.
Krauss, Werner (75), Austrian actor; appeared on London and New York stages and in films: d. Vienna, Oct. 20.
Krzhizhanovsky, Gleb (87), Russian revolutionist and associate of Lenin; a director of First Five-Year Plan and a leading power engineer: d. USSR, (announced) Mar. 31.
Kyster, Maj. Gen. Olaf H., Jr. (56), member of the U.N. Military Armistice Commission in Korea, 1957–58: d. Washington, D.C., Sept. 14.

La Gorce, John Oliver (80), American editor: b. Scranton, Pa., Sept. 22, 1879; d. Washington, D.C., Dec. 23, 1959. He began free-lance writing in 1903, later starting a syndicated column largely devoted to geographical topics. In 1907 he was named assistant editor of *The National Geographic Magazine*, and within a few years became associate editor and vice president of the National Geographic Society. From 1954 until his retirement in 1957, Dr. La Gorce served as president of the society and editor of the magazine. He was instrumental in organizing Adm. Donald B. MacMillan's Arctic expedition (1925) and the late Adm. Richard E. Byrd's Antarctic expeditions in 1929 and 1933. He wrote many popular books and articles on geography and fish.
Laistner, Max L. W. (69), English-born professor of ancient history, Cornell University, 1925–58; authority on early Christian intellectual history: d. Ithaca, N.Y., Dec. 10.
Lajoie, Napoleon (83), American baseball player: b. Woonsocket, R.I., Sept. 5, 1875; d. Daytona Beach, Fla., Feb. 7, 1959. One of the original members of baseball's Hall of Fame (elected in 1937), he compiled a lifetime batting average of .339 in 21 seasons. He joined the Philadelphia Phillies in 1896 and moved to the Philadelphia Athletics in 1901 and to Cleveland in 1902. Lajoie remained with the latter club (named the "naps" in his honor) for 13 years, and was its manager from 1905 to 1909. He closed out his career with the Athletics in 1915–16. A right-handed batter, he posted a .422 average in 1901, which stood as the American League record at the time of his death, and he also won batting titles in 1903 (.355) and 1904 (.381). Lajoie's lifetime total of 3,251 hits was exceeded by that of only four other players in the modern era.
Lamb, Albert R. (78), professor emeritus of clinical medicine, Columbia University; president of medical board, Presbyterian Hospital, 1940–46: d. Pine Orchard, Conn., Nov. 22.
Land, Frank S. (69), founder of Order of De Molay, fraternal group for youth: d. Kansas City, Mo., Nov. 8.
*Landowska, Wanda (80), Polish-born pianist and harpsichordist: d. Lakeville, Conn., Aug. 16.
*Langer, William (73), Republican senator from North Dakota after 1941: d. Washington, D.C., Nov. 8.
Lansing, Ambrose (67), Egyptologist; curator emeritus, Metropolitan Museum of Art; uncovered 3,800-year-old tomb near Memphis, Egypt: d. near Apache Junction, Ariz., May 28.
Lanz Duret, Miguel (50), Mexican newspaper publisher; president of Mexico City *El Universal;* former head of Inter-American Press Association: d. Mexico City, Mar. 24.
Lanza, Mario (real name Alfred Arnold Cocozza) (38), American singer: b. Philadelphia, Pa., Jan. 31, 1921; d. Rome, Italy, Oct. 7, 1959. After making his singing debut in 1942 at the Tanglewood Music Festival, Lenox, Mass., he was drafted into the Army Air Force. While in the service (1942–45) he appeared in the shows *On the Beam* and *Winged Victory*. He later attracted a wide following by his concerts in Chicago's Grant Park (1946) and the Hollywood Bowl (1947). In 1948 he launched a recording career which produced such notable successes as *Be My Love* and *The Loveliest Night of the Year*. Making his motion picture bow in *That Midnight Kiss* (1949), he became a major box-office star, perhaps reaching the peak of his fame in *The Great Caruso* (1951). His other films ranged from *The Toast of New Orleans* (1950) to *Seven Hills of Rome* (1958) and *For the First Time* (1959). Despite his rich, powerful tenor voice, many critics found his singing lacking in artistry and discipline. Temperamental in nature, he was plagued by problems stemming from efforts to reduce his weight.
Larsen, Lisa (Mrs. Niels Rasmussen) (34), photographer for *Life* and other magazines: d. New York City, Mar. 8.
Laurel, José P. (68), Philippine public official: b. Tanauan, Batangas, the Philippines, March 9, 1891; d. Manila, the Philippines, Nov. 6, 1959. Successively a lawyer, undersecretary and secretary of the interior, senator, and associate justice of the Supreme Court, he offered his services to the Japanese occupying forces in 1942, and was made president of their puppet regime in 1943. After the war, when he was to stand trial for treason, he claimed that he had collaborated with the Japanese only to mitigate the lot of the Filipinos. He was granted amnesty in 1948 before the trial was held, and ran unsuccessfully for the presidency in 1949. Two years later he won an impressive election victory to the Senate, where he served until his retirement in 1957.
Laurencena, Eduardo (73), Argentine banker and provincial governor; president of Central Bank of Argentina after 1956: d. Paraná, Argentina, July 19.
Lazrus, S. Ralph (61), a founder and president of Benrus Watch Co., Inc.: d. New York City, Sept. 4.
*Leahy, Adm. William D. (84), personal chief of staff to Presidents Roosevelt and Truman: d. Bethesda, Md., July 20.
Leber, Charles T. (60), Presbyterian clergyman, author, and administrator of ecumenical mission work for Presbyterian Church in the U.S.A.: d. São Paulo, Brazil, July 30.
Lemkin, Raphael (58), Polish-born professor of law, Rutgers University; a leader in movement to outlaw genocide: d. New York City, Aug. 28.
Lessner, Erwin (61), Austrian-born newspaper publisher and writer on European politics: d. New York City, Dec. 24.
Leverich, Henry P. (52), director of State Department's Office of Eastern European Affairs: d. Washington, D.C., Aug. 11.
Lewin, Samuel (69), Polish-born author of novels, short stories, and plays in Yiddish; works translated into several languages: d. New York City, June 3.
Lewis, Samuel M. (76), writer of lyrics for *Dinah, Mammy,* and other popular songs: d. New York City, Nov. 22.
Lewisohn, Frederick (77), American financier and copper industrialist: d. Monte Carlo, Monaco, July 4.
Li Chi-shen (75), Chinese military and political leader;

vice chairman of National People's Congress Standing Committee and chairman of Revolutionary Committee of Kuomintang: d. Peking, Oct. 8.

Lincoln, John C. (92), inventor who pioneered in shielded arc welding: d. Phoenix, Ariz., May 24.

Lindsay, Samuel McC. (90), professor of social legislation, Columbia University, 1907–39; former chairman of National Child Labor Committee and president of Academy of Political Science: d. Orlando, Fla., Nov. 11.

Litchfield, Paul W. (83), board chairman (1930–58) of Goodyear Tire and Rubber Co.: d. Phoenix, Ariz., Mar. 18.

Loeb, Leo (90), American pathologist: b. Mayen, Germany, Sept. 21, 1869; d. St. Louis, Mo., Dec. 28, 1959. After receiving his M.D. at the University of Zurich in 1897, he went to the United States, set up practice in Chicago, and became a citizen in 1902. He soon abandoned his practice to concentrate on research, and while teaching experimental pathology at the University of Pennsylvania (1904–10) he discovered the role of heredity in breast cancer in mice. In 1910–15 he headed the department of Pathology at the Barnard Free Skin and Cancer Hospital, St. Louis, and from 1915 until he retired as professor emeritus in 1937 he served on the faculty of Washington University, St. Louis (from 1924 as head of the pathology department). One of the early workers in tissue culture, he also demonstrated the relation of sex hormones to cancer, and many of his major contributions to pathology came in the area of cancer research.

López, Alfonso (73), former president of Colombia: b. Honda, Tolima, Colombia, Jan. 31, 1886; d. London, England, Nov. 20, 1959. Elected as a deputy to the Colombian Congress in 1915, López succeeded in unifying the Liberal Party and in bringing it to power in 1930. He served as president of Colombia in 1934–38, and again in 1942–45. His government's popularity was partly due to the social reforms it inaugurated. He represented Colombia at the United Nations in 1946–48, and was president of the U.N. Security Council in 1947. At the time of his death he was ambassador to Great Britain.

Lowe, Titus (81), Methodist bishop; president of Council of Bishops of Methodist Church, 1946–48: d. Indianapolis, Ind., Nov. 27.

Lowrie, Walter (91), American theologian: b. Philadelphia, Pa., April 26, 1868; d. Princeton, N.J., Aug. 12, 1959. After graduating from Princeton University (B.A., 1890; M.A., 1893) and the Princeton Theological Seminary (1893), he was ordained (1896) a priest in the Protestant Episcopal Church and served as rector of St. Paul's American Church at Rome (1907–30). Dr. Lowrie was noted for his studies and translations of the works of the Danish philosopher Søren Kierkegaard (1813–55). The best known of his 38 books include *Monuments of the Early Church* (1901), *Problems of Church Unity* (1924), *Kierkegaard* (1938), and *What is Christianity?* (1953).

Lukens, Hiram S. (74), professor of chemistry, University of Pennsylvania, 1921–53; authority on electrochemistry and analytical chemistry: d. Ventnor, N.J., Nov. 25.

Luque, Crisanto (70), Colombian cardinal: b. Tenjo, Colombia, Feb. 1, 1889; d. Bogotá, Colombia, May 7, 1959. Ordained in 1916, he was titular bishop of Croe and bishop of Tunja prior to his consecration as archbishop of Bogotá and primate of Colombia in July 1950. He was created cardinal on Jan. 12, 1953, thereby becoming the first Colombian to receive this honor. An uncompromising opponent of the dictator Gustavo Rojas Pinilla, he was said to have exercised great influence on the events which resulted in Rojas' fall from power in May 1957.

Lyon, Leverett S. (73), educator, economist, and Chicago civic leader: d. Chicago, Sept. 7.

McBey, James (75), Scottish-born American etcher and portraitist: d. Tangier, Morocco, Dec. 1.

McCollom, Vivian C. (57), chairman of national board of Young Men's Christian Associations of U.S. after 1956: d. Ridgewood, N.J., Aug. 12.

McCornack, Richard B. (39), professor of history, Dartmouth College, after 1958; specialist and author on Latin American affairs: d. Hanover, N.H., May 14.

McCosker, Alfred J. (72), pioneer in radio broadcasting industry; former president and board chairman of station WOR: d. Miami Beach, Fla., July 1.

McDonald, Philip B. (70), professor of English, New York University, 1938–54; author of *English and Science* and other books: d. New York City, Oct. 23.

McElhany, J. L. (79), president of General Conference of Seventh-Day Adventists, 1936–50, and general field secretary after 1950: d. Glendale, Calif., June 25.

McElroy, Robert (86), chairman of Department of History and Politics, Princeton University, 1912–16; professor of American History, Oxford University, 1925–39; author of works on American history: d. Lihue, Hawaii, Jan. 15.

McGrigor, Adm. Sir Rhoderick (66), British naval officer; first sea lord and chief of naval staff, 1951–55: d. Aberdeen, Scotland, Dec. 4.

McIntire, Vice Adm. Ross T. (70), personal physician to President Franklin D. Roosevelt, 1935–45; surgeon general of Navy and chief of Bureau of Medicine and Surgery, 1938–46: d. Chicago, Dec. 8.

McKay, Donald C. (57), professor of history, Harvard University, 1946–56; author and editor of works on European history: d. Amherst, Mass., Apr. 2.

McKay, (James) Douglas (66), American public official: b. Portland, Oreg., June 24, 1893; d. Salem, Oreg., July 22, 1959. He was graduated from Oregon State College (B.S., 1917), served with the U.S. Army in France during World War I, and in 1927 opened an automobile sales agency in Salem. A Republican, he served as mayor of Salem in 1933–34 and was subsequently elected to four terms in the state Senate. He was governor of Oregon from 1949 to 1953. McKay was appointed in 1953 as secretary of the interior in President Eisenhower's first administration. The secretary favored state rather than federal control of offshore oil rights, and attempted to implement the administration's "partnership" policy of power development, under which private industry would construct and operate most hydroelectric power stations while the federal government would control only those too large for industry to handle. His political opponents often accused him of advocating a "give-away" program by which federal resources would be turned over to private interests. In 1956 he resigned from the cabinet to campaign for the U.S. Senate, but was defeated by incumbent Wayne Morse.

McKay, Frederick S. (85), dentist whose studies contributed toward practice of fluoridating water to reduce tooth decay: d. Colorado Springs, Colo., Aug. 21.

McLaglen, Victor (72), English-American motion picture actor: b. Tunbridge Wells, England, Dec. 11, 1886; d. Newport Beach, Calif., Nov. 7, 1959. The son of an Anglican bishop, McLaglen ran away from home to serve in the Boer War. He later prospected unsuccessfully for gold in Canada; toured the provinces as a professional boxer, wrestler, and side-show strong man; and hunted for pearls in the South Seas. After serving in the British Army in World War I, he became a movie actor, first in London, then in Hollywood. *What Price Glory?* (1926) was his first popular success; *The Informer* (1935), his greatest artistic success. For his portrayal of the informer, Gypo Nolan, he was awarded an Oscar in 1935. He appeared in nearly 150 films before his death.

Maclaurin, W. Rupert (52), professor of economics, Massachusetts Institute of Technology; authority on economic aspects of technological change: d. (suicide) Boston, Aug. 17.

McLeod, Clarence J. (63), Republican representative from Michigan, 1920–21, 1923–35, 1939–41: d. Detroit, May 15.

McMullen, Maj. Gen. Clements (66), U.S. Air Force officer; commanding general of Far Eastern Air Service Command in World War II: d. San Antonio, Texas, Jan. 9.

McNulty, John L. (60), Catholic educator; president of Seton Hall University: d. Suffern, N.Y., May 27.

Mahmoud Khan Ghazi, Marshal Sardar Shah (73), premier of Afghanistan, 1946–53: d. Kabul, Afghanistan, Dec. 24.

Malan, Daniel François (84), former prime minister of the Union of South Africa: b. near Riebeek West, Cape Colony (now Cape Province), South Africa, May 22, 1874; d. Stellenbosch, Cape Province, Union of South Africa, Feb. 7, 1959. A doctor of divinity (University of Utrecht, Holland, 1904), he was a minister in South Africa's Dutch Reformed Church until 1915, when he was made editor of the National Party newspaper, *Die Burger*. Elected to parliament in 1918 (he represented Calvinia district, 1918–38, and Piquetberg district, 1938–54), he became a leader of the National Party and was minister of the interior, health, and education (1924–33) in the cabinet of J. B. M. Hertzog. Resigning from the cabinet to lead the National Party into opposition after Hertzog formed a coalition with Jan Christiaan Smuts, Malan succeeded Smuts as prime minister following his party's victory in the general elections in May 1948. A lifetime advocate of apartheid (racial segregation) of Europeans and non-Europeans, he implemented these policies with a series of enforcing acts before retiring on Nov. 30, 1954.

Mallory, Cassius C. (68), shipping leader; board chairman, Grace Line, Inc., 1955–57: d. Lake Wales, Fla., Jan. 2.

Mannes, David (93), violinist, conductor, and music teacher; cofounder (1916) of Mannes College of Music: d. New York City, Apr. 24.

Manuilsky, Dmitri Z. (75), Soviet Communist leader; member of presidium of Comintern for 20 years and foreign minister of Ukraine, 1944–52: d. Kiev, USSR, Feb. 22.

°Marshall, Gen. George C. (78), chief of staff of U.S. Army in World War II; secretary of state, 1947–48: d. Washington, D.C., Oct. 16.

Martinez Trueba, Andres (75), president of Uruguay, 1951–52: d. Montevideo, Uruguay, Dec. 19.

Martinů, Bohuslav (68), Czechoslovak composer: b. Polička, Bohemia, Dec. 8, 1890; d. Liestal, Switzerland, Aug. 28, 1959. The prolific and largely self-taught Martinů was one of the best known of contemporary composers, as well as a skilled orchestrator. He created a wide variety of music, including orchestral works, chamber music (he was himself a violinist), ballets, operas, and radio and motion picture music. After studying and playing intermittently with the Czech Philharmonic Orchestra in Prague, he lived in Paris from 1923 until 1940, when he and his wife fled to the United States. His music was introduced to American audiences by the Boston Symphony Orchestra, under Serge Koussevitzky, who later ar-

ranged for the commissioning of Martinů's First Symphony (1942), one of the Czech's most successful works. Martinů taught at the Summer Berkshire Music Center and at Princeton University. After 1953 he lived mostly in Europe. His compositions include String Sextet (1932), Double Concerto (1938), Concerto Grosso (1938), and *Memorial to Lidice* (1943).

Masson, Pierre (79), French-born Canadian tumor expert; professor of pathological anatomy, University of Montreal: d. Montreal, May 11.

Matthai, John (73), Indian economist, educator, industrialist, and cabinet minister: d. Bombay, India, Nov. 2.

Matthews, (Wilmot) Donald (52), Canadian government official and diplomat: d. Ottawa, Mar. 14.

May, Andrew J. (84), Democratic representative from Kentucky, 1931–47; chairman of House Military Affairs Committee in World War II; convicted of accepting bribes (1947): d. Prestonsburg, Ky., Sept. 6.

Mergendahl, Charles (40), author of *The Bramble Bush* and other fiction: d. Glen Cove, N.Y., Apr. 27.

*Meyer, Eugene (83), banker, publisher, and government aide; board chairman of The Washington *Post* and The Washington *Times Herald:* d. Washington, D.C., July 17.

Meyer, George W. (74), composer of *For Me and My Gal* and other popular songs: d. New York City, Aug. 28.

Milbank, Dunlevy (81), philanthropist and business leader; noted for aid to Children's Aid Society and other causes: d. New York City, Oct. 16.

Millar, Robert W. (82), legal scholar and author of works on law; professor of law, Northwestern University Law School, 1915–42: d. Evanston, Ill., Feb. 9.

Miller, Francis T. (82), historian; author of 10-volume *Photographic History of the Civil War* and other books: d. Old Greenwich, Conn., Nov. 7.

Milligan, Maurice M. (74), United States attorney, 1934–45; noted for successful fight against Pendergast political machine in Missouri: d. Kansas City, Mo., June 16.

Mims, Edwin (87), educator and author: head of the Department of English, Vanderbilt University, 1912–42: d. Nashville, Tenn., Sept. 15.

Mitchell-Hedges, Frederick A. (76), English explorer and author; codiscoverer of ruins of Mayan city in British Honduras (1924): d. Shaldon, Eng., June 12.

Mollison, James A. (54), British aviator; first man to fly solo across Atlantic, east to west: d. near London, Oct. 30.

Moranzoni, Roberto (78), Italian operatic conductor; conductor at Metropolitan Opera House, 1917–24: d. Desio, Italy, Dec. 13.

Morris, Wayne (45), actor in films, on stage, and in television: d. Oakland, Calif., Sept. 14.

Morrison, Donald H. (44), educator and political scientist; dean of faculty, Dartmouth College, 1947–55, and provost after 1955: d. Princeton, N.J., Mar. 17.

Morshead, Lieut. Gen. Sir Leslie J. (70), Australian commander of Tobruk garrison during siege by Afrika Corps in 1941; leader of Australian forces in battle of El Alamein: d. Sydney, Australia, Sept. 26.

Mosher, A(aron) R(oland) (78), Canadian labor leader; president of Canadian Congress of Labour, 1940–51: d. Lake Bernard, Canada, Sept. 26.

Moursund, Walter H. (74), dean of Baylor University College of Medicine, 1923–53: d. Houston, Texas, Apr. 2.

Muir, Edwin (71), Scottish poet, novelist, and critic: b. Deerness, Pomona Island, Orkney Islands, Scotland, May 15, 1887; d. Cambridge, England, Jan. 3, 1959. After his marriage in 1919 to Willa Anderson, he worked as a journalist in London for two years. Muir served as warden of Newbattle Abbey College in Dalkeith, Scotland, from 1950 to 1955, and as Charles Eliot Norton professor of poetry at Harvard University in 1955–56. His work includes: (novels) *The Marionette* (1927), *The Three Brothers* (1931), and *Poor Tom* (1932); (poetry) *First Poems* (1925), *Journeys and Places* (1937), *The Narrow Place* (1943), *The Voyage, and Other Poems* (1946), *The Labyrinth* (1949), *Collected Poems, 1921–1951* (1952), and *One Foot in Eden* (1956); (criticism and biography) *Latitudes* (1924), *Transitions: Essays on Contemporary Literature* (1926), *John Knox: Portrait of a Calvinist* (1929), *Scott and Scotland: The Predicament of the Scottish Writer* (1936), and *Essays on Literature and Society* (1949). *An Autobiography,* originally published as *The Story and the Fable* in 1940, appeared in expanded form in 1954. With his wife, Muir was the translator of European writers, notably Franz Kafka.

Muir, Sir Robert (94), Scottish pathologist; professor at Glasgow University and author of standard works on pathology and bacteriology: d. Edinburgh, Mar. 30.

Muller, Henri F. (80), French-born professor of Romance philology, Columbia University, 1928–46; author of works on philology: d. Westerly, R.I., Sept. 10.

Munford, Walter F. (59), president of U.S. Steel Corporation after May 5, 1959: d. Hyannis, Mass., Sept. 28.

Munnings, Sir Alfred J. (80), English artist noted for paintings of horses, landscapes, and portraits; president of Royal Academy, 1944–49: d. Dedham, Essex, Eng., July 17.

Murphy, Walter J. (60), editor of publications, American Chemical Society; lecturer and writer on scientific subjects: d. Washington, D.C., Nov. 26.

Murray, Thomas C. (86), Irish playwright associated with Abbey Theatre in its early years: d. Dublin, Mar. 7.

Namatjira, Albert (57), Australian aboriginal artist noted for primitive paintings: d. Alice Springs, Australia, Aug. 8.

Neal, John R. (83), chief defense counsel in Scopes trial of 1925: d. Rockwood, Tenn., Nov. 23.

*Nelson, Donald M. (70), chairman of War Production Board, 1942–44: d. Los Angeles, Sept. 29.

Nettleton, George H. (84), professor of English, Yale University, 1916–43, and dean of Yale College, 1937–39; author on English drama: d. New Haven, Conn., Feb. 5.

Neville, Keith (75), Democratic governor of Nebraska, 1917–19: d. North Platte, Nebr., Dec. 4.

Newman, Ernest (90), English music critic and author: b. Liverpool, England, Nov. 30, 1868; d. Tadworth, Surrey, England, July 7, 1959. Through his writings on music he gained worldwide fame. His columns appeared in the Manchester *Guardian* (1905–06), the Birmingham *Daily Post* (1906–19), the London *Observer* (1919–20), and the London *Sunday Times,* for which he was music critic from 1920 to 1958. A scholar of great erudition, and an authority on Richard Wagner and the opera, he was also a superb stylist, whose wit and pungency made his works a delight to read. Among his books are *Gluck and the Opera* (1895), *Hugo Wolf* (1907), *Richard Wagner* (4 vols., 1933–46), and *Essays from the World of Music* (1957).

Newman, Henry W. (52), professor of medicine, Stanford University Medical School; authority on multiple sclerosis and researcher in neurophysiology and pharmacology: d. San Francisco, Sept. 19.

Niles, Blair (71), explorer and author of travel books, novels, and other writings: d. New York City, Apr. 13.

Norton, Mary T. (84), Democratic congresswoman: b. Jersey City, N.J., March 7, 1875; d. Greenwich, Conn., Aug. 2, 1959. A New Jersey representative from 1925 to 1951, Mary Norton was the first woman to be elected to the House by the Democratic Party and the first to head a congressional committee. A solid supporter of New Deal labor legislation, she was chairman of the House Labor Committee from 1937 to 1947. When she retired, she had served longer in the House than any other woman.

Norworth, Jack (80), writer of *Take Me Out to the Ball Game* and other songs: d. Laguna Beach, Calif., Sept. 1.

Noyes, Pierrepont B. (88), industrialist and author; president, Oneida, Inc., manufacturers of silverplate, 1910–50: d. Oneida, N.Y., Apr. 15.

Nuñez y Dominguez, José de Jesus (64), Mexican diplomat and writer; ambassador to Chile after 1953, and author of poetry, biographies, and other works: d. Santiago, Chile, Mar. 31.

Nurkse, Ragnar (51), Estonian-born professor of economics, Columbia University, after 1947; author and expert on international finance: d. Vevey, Switzerland, May 6.

O'Connor, Una (real name Agnes Teresa McGlade) (78), Irish actress: b. Belfast, Ireland, Oct. 26, 1880; d. New York, N.Y., Feb. 4, 1959. Famous for her portrayals of temperamental, wasp-tongued maids, or eccentric, sad-faced spinsters, she studied at the Abbey Theatre School in Dublin and made her stage debut there in 1911 in Bernard Shaw's *The Shewing-Up of Blanco Posnet.* She first appeared in London in *The Magic Glass* (1913), and subsequently was seen there or on Broadway in plays that included *Paddy the Next Best Thing* (1920), *The Man Who Was Thursday* (1926), *Macbeth* (1928), *The Silver Box* (1928), *The Passing of the Third Floor Back* (1928), *Cavalcade* (1931), *The Linden Tree* (1948), and *Witness for the Prosecution* (1954). She played in numerous motion pictures, including *Cavalcade* (1933), *David Copperfield* (1935), *The Informer* (1935), *Rose Marie* (1936), *How Green Was My Valley* (1941), *Of Human Bondage* (1946), and *Witness for the Prosecution* (1957).

Ogburn, William Fielding (72), American sociologist and educator: b. Butler, Ga., June 29, 1886; d. Tallahassee, Fla., April 27, 1959. After attending Mercer University (B.S., 1905) and Columbia University (M.A., 1909; Ph.D., 1912), Ogburn taught sociology and economics at Reed College in Oregon (1912–17), the University of Washington (1917–18), Columbia University (1919–27) and the University of Chicago (1927–51). From 1953 until his death he was a visiting professor of sociology at Florida State University. Especially interested in the social maladjustments that occur when man's overall cultural advance does not keep pace with his technological skill, Dr. Ogburn made use of his studies in posts with several government agencies, including the National War Labor Board (1918–19), the President's Research Committee on Social Trends (1930–33), and the National Resources Planning Board (1933–43). Ogburn's published works include *Progress on Uniformity in Child Labor Legislation* (1912), *Social Change with Respect to Culture and Original Nature* (1922), *Living with Machines* (1933), *You and Machines* (1934), and *Social Characteristics of Cities* (1937). He was president of the American Statistical Association (1931) and of the American Sociological Society (1929), and chairman of the Social Science Research Council (1937–39).

Ogden, Robert M. (81), dean of College of Arts and Sciences, Cornell University, 1923–45: d. Ithaca, N.Y., Mar. 2.

Owen, George (87), professor emeritus of naval architecture, Massachusetts Institute of Technology; yacht designer: d. Newton, Mass., Apr. 21.

Padmore, George (56), Trinidad-born Negro leader in movement for African freedom; political adviser to Prime Minister Kwame Nkrumah of Ghana: d. London, Sept. 23.

Pap, Arthur (37), associate professor of philosophy, Yale University; author of books on analytic philosophy: d. New Haven, Conn., Sept. 7.

Parke, Hiram H. (85), a founder, president (1933–53), and board chairman (1953–57) of Parke-Bernet Galleries, noted art auction house: d. Philadelphia, Apr. 1.

Parkhurst, Helen H. (71), professor of philosophy, Barnard College, 1944–1952; author and lecturer on art: d. New York City, Apr. 14.

Parkinson, Thomas Ignatius (77), American lawyer, educator, and business executive: b. Philadelphia, Pa., Nov. 27, 1881; d. Bay Shore, N.Y., June 17, 1959. In the midst of a distinguished career at Columbia University, where he was professor of legislation and, in 1923–24, dean of the law school, he joined the Equitable Life Assurance Society. He was the company's president from 1927 until 1953, when he became chairman of the board. He retired in 1954. Under his direction, Equitable's business quadrupled and its assets grew from less than $1 billion to $6.5 billion.

Parks, Lieut. Gen. Floyd L. (63), commander of U.S. occupation zone in Berlin, 1945; chief of information, Department of Army, 1949–53; commanding general, 2d Army, 1953–56: d. Washington, D.C., Mar. 10.

Pavelic, Ante (70), Croatian nationalist leader; head of Nazi puppet government in Croatia, Yugoslavia, in World War II: d. Madrid, Spain, Dec. 28.

Pearce, Louise (74), physician who helped develop cure for sleeping sickness; president, Women's Medical College of Philadelphia, 1946–51: d. New York City, Aug. 9.

Peele, William W. (77), Methodist bishop; president of Council of Bishops of Methodist Church, 1942–43; head of Methodist Commission on Overseas Relief, 1948–52: d. Laurinburg, N.C., July 1.

Penick, Edwin A. (72), bishop of Protestant Episcopal diocese of North Carolina after 1932: d. Chapel Hill, N.C., Apr. 6.

Perlman, Selig (70), professor of economics, University of Wisconsin, 1927–59; author of standard works on labor economics: d. Philadelphia, Aug. 14.

Philipe, (Albert) Gérard (36), French actor: b. Cannes, France, Dec. 4, 1922; d. Paris, France, Nov. 25, 1959. By the time he first appeared on the screen in the United States in 1948 as the hauntingly tragic prince in Dostoyevsky's *The Idiot*, Philipe had already established himself as a youthful romantic film idol in France. Among the other films in which he starred were *Devil in the Flesh* (1947), *Riptide* (American release, 1951), *Beauty and the Devil* (American release, 1952), and *Fanfan the Tulip* (American release, 1953). On the New York stage in 1958, in two plays performed by the Théâtre Nationale Populaire of Paris, he played the title role in Alfred de Musset's *Lorenzaccio* as well as Rodrigue in Corneille's *Le Cid*.

Pinski, David (87), Russian-born Yiddish playwright and novelist whose works have been translated into several languages: d. Haifa, Israel, Aug. 11.

Pochon, Alfred (80), Swiss violinist and composer; director of Lausanne Conservatory, 1941–57: d. Lutry, Switzerland, Feb. 26.

Polk, James G. (62), Democratic representative from Ohio, 1931–41 and after 1949: d. Washington, D.C., Apr. 28.

Porter, Sara L. (91), widow of O. Henry and writer of short stories for magazines: d. Weaverville, N.C., Aug. 14.

Post, Chandler R. (77), professor of fine arts, Harvard University, 1923–50; author and expert on Spanish painting and sculpture: d. Cambridge, Mass., Nov. 2.

Pratt, Richardson (65), investment banker; chairman of board of Pratt Institute: d. Glen Cove, N.Y., Aug. 16.

Proctor, Bernard E. (58), head of Department of Food Technology, Massachusetts Institute of Technology; noted for research on food dehydration: d. Cambridge, Mass., Sept. 24.

*Quarles, Donald A. (64), deputy secretary of defense after 1957: d. Washington, D.C., May 8.

Radin, Paul (75), head of Anthropology Department, Brandeis University, after 1957; author and authority on American Indian: d. New York City, Feb. 21.

Raines, George N. (51), psychiatrist and neurologist; director of the Department of Psychiatry, Georgetown University Medical Center: d. Washington, D.C., Sept. 16.

Read, Conyers (78), professor of history, University of Pennsylvania, 1934–51; author and authority on Elizabethan England: d. Philadelphia, Dec. 23.

Read, Grantly Dick (69), English physician who pioneered in development of natural childbirth techniques; author of *Childbirth Without Fear* (1942): d. Wroxham, Eng., June 11.

Reed, Daniel Alden (83), U.S. congressman: b. Sheridan, Chautauqua County, N.Y., Sept. 15, 1875; d. Washington, D.C., Feb. 19, 1959. Between 1903 and his election to Congress in 1918 as Republican representative from western New York's rural 43d District, he served about six years as an attorney for the New York State Excise Department and about seven years as a football coach at Cornell University (head coach, 1910–12). Throughout his congressional tenure, which continued uninterrupted until his death, Reed was closely identified with the conservative or "Old Guard" element in the Republican Party. In 1933, as a ranking Republican congressman, he became a member of the powerful House Ways and Means Committee (chairman, 1953–54), where he was a strong supporter of low taxes, high tariffs, and less government spending.

Regan, Kenneth M. (66), Democratic representative from Texas, 1947–55: d. Santa Fe, N.Mex., Aug. 15.

Reinert, Egon (50), minister president of Saar after 1957: d. (as result of auto crash) Saarbrücken, Apr. 23.

Reyes, Alfonso (70), Mexican author and diplomat: b. Monterrey, Mexico, May 17, 1889; d. Mexico City, Mexico, Dec. 27, 1959. He received a law degree in 1913 from the National University of Mexico, and served in his country's diplomatic service for 30 years. His diplomatic career included assignments as minister plenipotentiary to Argentina (1924; 1927), France (1924), and Spain (1926), and as ambassador to Argentina (1927; 1936–37) and Brazil (1930–36; on a special mission, 1938–39). Recognized in Mexico and other Spanish-speaking countries as a great poet, literary critic, and essayist, Reyes was noted in particular for his brilliant style. His prose works include *Cuestiones estéticas* (1911), *Visión de Anáhuac* (1917), *Capítulos de literatura española* (1939), *La experiencia literaria* (1942), *El deslinde* (1944), and, in English translation, *Position of America, and Other Essays* (1950). Among his volumes of poetry are *Huellas* (1922), *Ifigenia cruel* (1924), *Golfo de México* (1934), and *Cortesía* (1948).

Rhoads, Cornelius Packard (61), American pathologist: b. Springfield, Mass., June 20, 1898; d. Stonington, Conn., Aug. 13, 1959. A graduate of Bowdoin College (B.A., 1920) and Harvard University's medical school (1924), he spent several years in internship, research, and teaching before joining New York City's Rockefeller Institute for Medical Research in 1928. During his years with the institute (until 1939) he became interested in the study of leukemia, commonest form of blood cancer, and then in cancer research as a whole. From 1940 to 1950 he was director of the Memorial Hospital for Treatment of Cancer and Allied Diseases in New York City, and in 1945 was made director of the new Sloan-Kettering Institute for Cancer Research, connected with Memorial Hospital through the Memorial Center for Cancer and Allied Diseases, and one of the world's most comprehensive organizations for the study, treatment, and cure of cancer. He was also scientific director of the Memorial Center after 1953.

Richards, Vincent (56), tennis star of 1920's and 1930's; winner of many amateur and professional championships: d. New York City, Sept. 28.

Richardson, Sir Owen Willans (79), English physicist: b. Dewsbury, Yorkshire, England, April 26, 1879; d. Alton, Hampshire, England, Feb. 15, 1959. Educated at Cambridge and London universities, he was professor of physics at Princeton University (1906–14) and Kings College, London (1914–24), where he later served as director of research in physics (1924–44). He received the 1928 Nobel Prize in physics for his original research on the emission of electrons from heated bodies (thermionics). Richardson's law states the relation between the temperature of the cathode emitter and the rate of emission of the electrons, and has been of basic importance to the development of the electronics industry. He is the author of *Electron Theory of Matter* (1914), *The Emission of Electricity from Hot Bodies* (1916), and *Molecular Hydrogen and Its Spectrum* (1934).

Richardson, Sid W. (68), Texas oil producer and multimillionaire; owner of oil refineries and cattle ranches: d. St. Joseph Island, Texas, Sept. 29.

Richier, Germaine (55), French sculptor noted for abstract works in metal: d. Montpelier, France, July 30.

Ridenour, Louis Nicot, Jr. (47), American physicist: b. Montclair, N.J., Nov. 1, 1911; d. Washington, D.C., May 21, 1959. After studying at the University of Chicago (B.S., 1932) and the California Institute of Technology (Ph.D., 1936), he taught physics at Princeton University and at the universities of Pennsylvania and Illinois. During World War II he was assistant director of the radiation laboratory at the Massachusetts Institute of Technology, where his work in radar development won him the President's Medal for Merit. As chief scientist to the U.S. Air Force (1950–51) and as a research director for the Lockheed Aircraft Corporation (after 1955), he was associated with important developments in the United States missile program.

Robbins, Bernard S. (54), professor of clinical psychiatry, New York Medical College; a founder of American Academy of Psychoanalysis: d. New York City, Dec. 16.

Robbins, John J. (65), publisher of many hit tunes in 1930's and 1940's, and of music for films and Broadway shows: d. New York City, Dec. 15.

Roberts, Mary M. (82), nursing leader, author, and editor;

editor of *American Journal of Nursing*, 1921–49: d. New York City, Jan. 11.

Rohmer, Sax (real name Arthur Sarsfield Ward, or Wade) (76?), English author: b. Birmingham (?), England, 1883?; d. London, June 1, 1959. In his early days as a young journalist in London he caught a quick glimpse of a wealthy and mysterious Oriental whose image he developed into the famous fictional character Dr. Fu Manchu. Described as fiction's "most popular villain," Fu Manchu appeared in 14 mystery novels, from *Dr. Fu Manchu* (1913) to *Emperor Fu Manchu* (1959), and in many motion pictures and radio and television programs.

Rosenberg, Paul (78), American art dealer noted for purchases of French modernist paintings: d. Paris, June 29.

Rungius, Carl (90), American artist noted for paintings of wildlife and Rocky Mountains: d. New York City, Oct. 20.

Ryckmans, Pierre (67), Belgian public official; governor general of Belgian Congo, 1934–46; high commissioner for atomic energy after 1950: d. Brussels, Belgium, Feb. 18.

Saavedra Lamas, Carlos (80), Argentine lawyer, educator, and statesman: b. Buenos Aires, Argentina, Nov. 1, 1878; d. Buenos Aires, May 5, 1959. He received a law degree from the University of Buenos Aires in 1903, taught there periodically, and was the university's president from 1941 to 1943. In his active career in public service, he was minister of justice and education, president of the 11th International Labor Conference in Geneva (1928), president of the League of Nations Assembly (1936), and, from 1932 to 1938, Argentina's minister of foreign affairs. He drafted an antiwar pact (1932) signed by 13 American republics, including the United States. For his success in guiding the negotiations that ended the Chaco boundary war (1932–35) between Bolivia and Paraguay, he was awarded the 1936 Nobel Peace Prize.

Sachs, Curt (77), German-born musicologist and author of works on music, art, and dance; adjunct professor, Columbia University, after 1953; contributor to THE ENCYCLOPEDIA AMERICANA: d. New York City, Feb. 5.

Salomon, Alberto (74), Peruvian diplomat; foreign minister, 1920–28: d. Lima, Peru, Apr. 8.

Satterthwaite, Livingston L. (50), foreign service officer: d. (air crash) near Thule Air Base, Greenland, Aug. 26.

Scheidenhelm, Frederick W. (75), consulting engineer and hydraulics expert; inventor of anchoring wall for dams: d. East Stroudsburg, Pa., Oct. 17.

Schenck, Edgar C. (49), director of Brooklyn Museum, author of books on painting: d. Istanbul, Turkey, Nov. 16.

Schindler, Raymond C. (76), private detective who worked on famous murder cases, including that of Sir Harry Oakes (1943): d. North Tarrytown, N.Y., July 1.

Schneour, Zalman (72), Russian-born Hebrew-Yiddish novelist and poet; author of *Song of the Dneiper* and other works of fiction and verse: d. New York City, Feb. 20.

Seton, Grace G. T. (86?), author of travel books and other works, explorer, lecturer, and feminist leader: d. Palm Beach, Fla., Mar. 19.

Shaver, Dorothy (65), president of Lord & Taylor department store after 1945; a leader in developing American fashion talent: d. Hudson, N.Y., June 28.

Shaw, Frank H. (75), director of Conservatory of Music, Oberlin College, 1924–49: d. Oberlin, Ohio, Sept. 1.

Siegfried, André (83), French educator, political economist, and historian: b. Le Havre, France, April 21, 1875; d. Paris, France, March 28, 1959. He was educated in Paris at the Lycée Condorcet and the University of Paris. From 1911 he taught at the École Libre des Sciences Politiques (now the Institut d'Études Politiques), which, after 1945, was administered by the Fondation Nationale des Sciences Politiques, of which Siegfried became president. From 1932 to 1947 he was also a professor at the Collège de France. He wrote many historical books, as well as political and economic studies of France, New Zealand, Canada, and other countries. He won particular renown in the United States for his *Les États-Unis d'aujourd'hui* (1927; Eng. tr., *America Comes of Age*, 1927) and *Tableau des États-Unis* (1954; Eng. tr., *America at Mid-Century*, 1955). He was elected to the French Academy in 1944.

Silbert, Samuel (65), surgeon who specialized in diseases of vascular system; pioneer in study of role of tobacco in Buerger's disease: d. New York City, July 10.

Simkhovitch, Vladimir G. (85), Russian-born professor of economic history, Columbia University, 1904–42; author of works in social sciences: d. New York City, Dec. 9.

Sisavang Vong (74), king of Laos: b. Luang Prabang, Laos, July 14, 1885; d. Luang Prabang, Oct. 29, 1959. Ruler from 1905 to 1946 of the kingdom of Luang Prabang, a protectorate of France, and from 1946 the ruler of a united Laos, he reigned longer than any other 20th century sovereign. Always friendly to France, where he had been a student as a young man, he remained loyal throughout the Japanese occupation of his country in World War II. During his reign Laos became (1949) an independent state within the French Union. Because of ill health, he appointed his son and heir, Savang Vatthana, to be regent in August 1959.

Slichter, Sumner Huber (67), American economist and educator: b. Madison, Wis., Jan. 8, 1892; d. Cambridge, Mass., Sept. 27, 1959. After graduating from the University of Wisconsin (B.A., 1913; M.A., 1914) and the University of Chicago (Ph.D., 1918), he taught economics at Princeton University (1919–20), Cornell University (1920–30), and Harvard University, where he was professor of business economics (1930–40) and (from 1940) Lamont university professor and faculty member of the graduate school of business administration. As one of America's most influential economists, he frequently served both government agencies and private groups in an advisory capacity, particularly in the field of industrial relations and often as arbiter in labor disputes. He believed that certain so-called "inflationary" tendencies were necessary to spur the economy's growth, and favored tax cuts and planned-budget deficits to increase consumer demand. Among his books were: *Modern Economic Society* (1931), *Union Policies and Industrial Management* (1941), *The American Economy: Its Problems and Prospects* (1948), and *What's Ahead for American Business* (1951).

Smith, Gilbert M. (74), professor of botany, Stanford University, 1925–50; authority on algae: d. Palo Alto, Calif., July 11.

Smith, Henry G. (89), shipbuilding executive; board chairman of Shipbuilders Council of America after 1950: d. Bronxville, N.Y., June 2.

Smith, Sir Matthew (79), English painter: b. Halifax, Yorkshire, England, Oct. 22, 1879; d. London, England, Sept. 29, 1959. After studying at the Manchester School of Art, he went to Brittany in 1907 and to Paris in 1910, where he studied under Matisse. One of England's most famous post-impressionists, he gained renown for the vigorous coloring of his still lifes, nudes, and landscapes.

Smith, Robert Aura (60), editorial writer for The New York *Times* and author of books on Far East: d. New York City, Nov. 11.

*Smith, Sidney E. (62), Canadian secretary of state for external affairs after 1957: d. Ottawa, Mar. 17.

Sosman, Merrill C. (69), pioneer in use of X-ray as diagnostic tool in medicine; professor emeritus of radiology, Harvard Medical School: d. Boston, Mar. 28.

Speer, Robert K. (61), professor of education, New York University, after 1930; authority on school administration: d. New York City, Aug. 9.

Spencer, Sir Stanley (68), English artist noted for paintings of religious subjects: d. Buckinghamshire, Eng., Dec. 14.

Sprengling, Martin (81), professor emeritus of Arabic, University of Chicago; author of works on history and literature of Middle East: d. Philadelphia, Sept. 5.

Sprinzak, Joseph (73), Israeli political leader and world Zionist figure; speaker of Israeli Knesset after 1949: d. Jerusalem, Jan. 28.

Stadie, William C. (73), professor of research medicine, University of Pennsylvania, 1941–56; noted for diabetes research: d. Middletown, N.Y., Sept. 11.

Stead, William H. (60), economist, government aide, and author; dean, School of Business and Public Administration, Washington University (St. Louis), 1940–45: d. Washington, D.C., June 12.

Stearns, A. Warren (74), psychiatrist and educator; dean of Tufts Medical School, 1937–45: d. Billerica, Mass., Sept. 23.

Stevens, Wayne E. (66), professor of history, Dartmouth College, after 1930; specialist in Canadian history: d. Hanover, N.H., July 20.

Steward, James G. (78), mayor of Cincinnati, 1938–47, and judge of Ohio Supreme Court after 1947: d. Louisville, Ky., Apr. 3.

Stone, Abraham (68), American urologist and authority on birth control: b. Motol, Russia, Oct. 31, 1890; d. New York, N.Y., July 3, 1959. He went to the United States in his youth, attended New York University-Bellevue Medical College (M.D., 1912; B.S., 1917), and served on the faculty there from 1925 to 1930 and from 1951 until his death. A trail-blazer since the 1920's in the controversial field of birth control and an authority on family planning, he set up in 1931 the model marriage consultation center at New York's Community Church and succeeded his wife, Dr. Hannah Mayer Stone (1893–1941), as medical director of the Margaret Sanger Research Bureau. He was a leader in national and international planned parenthood groups and was a special consultant to the World Health Organization. Dr. Stone was editor (1935–47) of *The Journal of Human Fertility*. With his wife he wrote *A Marriage Manual* (1935), and with Dr. Norman Himes, *Planned Parenthood* (1951).

Stone, Fred (Andrew) (85), American actor: b. near Longmont, Colo., Aug. 19, 1873; d. North Hollywood, Calif., March 6, 1959. After apprenticing in circus troupes, minstrel shows, and vaudeville, he joined David Montgomery in forming a comedy and song-and-dance team in 1895. Their first Broadway success was *The Wizard of Oz* (1903), in which Stone created the role of the Scarecrow. Other hits included *The Red Mill* (1906) and *Chin-Chin* (1914). After Montgomery's death in 1917, Stone appeared on his own in a number of plays, from *Jack o'Lantern* (1917) to *Smiling Faces* (1932), and undertook serious dramatic roles in *Jayhawker* (1934) and in a revival of *Lightnin'* (1938). He also appeared in films. His memoirs, *Rolling Stone*, were published in 1945.

Stoughton, Bradley (86), professor of metallurgy, Lehigh University, 1923–39, and dean of College of Engineering, 1938–39: Bethlehem, Pa., Dec. 30.

Strabel, Thelma, novelist and short-story writer; author of *Reap the Wild Wind* and other works of fiction: d. Washington, D.C., May 28.

Strecker, Edward A. (72), professor of psychiatry and head of department, University of Pennsylvania Medical School, 1931–53; author of texts and other works: d. Philadelphia, Jan. 2.

Stringfield, Lamar E. (61), flutist and composer; winner of Pulitzer Prize (1928) for orchestral suite: d. Asheville, N.C., Jan. 21.

Stroud, William D. (68), heart specialist; chairman, Department of Cardiology, University of Pennsylvania Graduate School of Medicine: d. Bryn Mawr, Pa., Aug. 19.

Stuber, William G. (95), president (1925–34) and board chairman (1934–41) of Eastman Kodak Co.; expert on photographic emulsions: d. Rochester, N.Y., June 17.

Sturges, Preston (60), American playwright and motion picture writer, director, and producer: b. Chicago, Ill., Aug. 29, 1898; d. New York, N.Y., Aug. 6, 1959. He wrote the Broadway comedy, *Strictly Dishonorable* (1929), and an Academy Award-winning (1940) screen play, *The Great McGinty*, and wrote and directed *The Lady Eve* (1941), *The Miracle of Morgan's Creek* (1943), and other films.

Sturzo, Luigi (87), Italian priest, political leader, and author: b. Caltagirone, Sicily, Italy, Nov. 26, 1871; d. Rome, Italy, Aug. 8, 1959. He was ordained a Roman Catholic priest in 1894 and was graduated from the Gregorian Pontifical University in Rome in 1898. While serving (1905–20) as mayor of Caltagirone, Don Sturzo conceived the idea of a Roman Catholic political party. In 1919 he founded the Italian Popular Party, which in that year won 101 seats in the Italian Chamber of Deputies. The party was revived after World War II as the Christian Democratic Party and played a dominant role in postwar Italian governments. Don Sturzo was appointed a life member of the Italian Senate in 1952. During the Mussolini regime, he opposed Fascist rule and was forced into exile, in England (1924–40) and the United States (1940–46). His books in English translation include *Italy and Fascismo* (1926), *Church and State* (1939), *Inner Laws of Society—A New Sociology* (1944), *Spiritual Problems of Our Times* (1945), and *Nationalism and Internationalism* (1946).

Sweet, William W. (77), church historian and author of books on religion; professor of American Christianity, University of Chicago, 1927–46: d. Dallas, Texas, Jan. 3.

Taggart, Arthur F. (74), professor of mining, Columbia University, after 1919; authority on mineral engineering: d. White Plains, N.Y., Aug. 22.

Taylor, Myron Charles (85), American lawyer, industrialist, and diplomat: b. Lyons, N.Y., Jan. 18, 1874; d. New York, N.Y., May 6, 1959. A graduate of Cornell University (LL.B., 1894), he became a corporation lawyer, specializing in the reorganization and financial direction of large businesses. By 1927 he had made a fortune in textiles, banking, railroading, and other enterprises. In 1927, after serving for two years on the board of the U.S. Steel Corporation, he became chairman of its finance committee. Elected board chairman and chief executive officer in 1932, he made labor-management history in 1936 by being the first steel executive to negotiate with union leader John L. Lewis. Retiring as board chairman in 1938, he was named the next year as President Roosevelt's personal representative to Pope Pius XII, with the rank of ambassador without portfolio—the first American envoy to the Vatican in over 70 years. An Episcopalian, he served with distinction in the post for 10 years, and from 1950–53 acted as President Truman's representative on special diplomatic missions.

Tedeschini, Federico (86), Italian cardinal: b. Antrodoco, Italy, Oct. 12, 1873; d. Rome, Italy, Nov. 2, 1959. As bishop of Frascati (1951), he was one of the six cardinal bishops largely responsible for administration of the Roman Catholic Church. Ordained at 23, he entered the papal Secretariat of State, where during World War I he was in charge of assistance to prisoners of war. Appointed apostolic nuncio to Madrid in 1921, he occupied the post during the republic's secularization of Spanish society, and is credited with founding the Spanish Catholic Action organization. Secretly elevated to cardinal in 1933, and then formally in 1935, he returned to Rome to become the pope's datary (administrator of certain church benefices) and, later, archpriest of St. Peter's Basilica.

Templewood, 1st Viscount, of Chelsea (Samuel John Gurney Hoare) (79), former British foreign secretary and diplomat: b. London, England, Feb. 24, 1880; d. London, May 7, 1959. Educated at Harrow and at Oxford University, he was elected to Parliament in 1910 from Chelsea and represented this district until 1944, when he was elevated to the peerage. He was a cabinet minister almost continuously from 1922 to 1940, serving as secretary of state for air, for India, for foreign affairs, and for home affairs, and as lord privy seal and first lord of the Admiralty. As secretary of state for India (1931–35) he successfully negotiated a bill providing limited home rule for the former colony. He was forced to resign as foreign secretary in 1935, after it became known that he and French Premier Pierre Laval had secretly agreed to allow Mussolini to take, unchallenged, a part of Ethiopia. As ambassador to Spain (1940–44), he was successful in assuring that country's neutrality and the safety of Gibraltar during World War II.

Terpigorev, Aleksandr (86), Russian engineer noted for technical improvements in coal mining; played a leading role in restoration of Donets Basin after World War II: d. USSR, Nov. 8.

Thayer, Tiffany (57), author of *Thirteen Men* (1930), other novels, and film scenarios: d. Nantucket, Mass., Aug. 23.

Tizard, Sir Henry Thomas (74), English scientist: b. Gillingham, Kent, England, Aug. 23, 1885; d. Fareham, England, Oct. 9, 1959. He was graduated in 1908 from Magdalen College, Oxford University, and lectured in natural science at Oriel College, Oxford, from 1911 to 1921. During World War I he was assistant controller of experiments and research in the Royal Air Force. He later served as rector of the Imperial College of Science and Technology (1929–42) and president of Magdalen College (1942–46). Tizard played a major role in the Air Ministry's scientific organization, which developed radar and jet propulsion aircraft engines, and during World War II he contributed to the development of the atomic bomb. His important government positions included the chairmanships of the Aeronautical Research Committee (1933–43) and of the Advisory Council on Scientific Policy and the Defence Research Policy Committee (1946–52).

Tofel, Jennings (67), Polish-born American expressionist painter, and writer: d. New York City, Sept. 7.

Tolman, Edward C. (73), professor of psychology, University of California, 1928–50 and 1953–54; leader of fight against regents' loyalty oath for faculty: d. Berkeley, Calif., Nov. 19.

Tolstoouhov, Alexander V. (70), Russian-born research chemist and ophthalmologist; pioneer in study of pharmacological properties of drugs: d. New York City, July 9.

Townley, Arthur C. (79), agrarian reformer; founder of Non-Partisan League (1915): d. (auto crash) at Makoti, N.Dak., Nov. 7.

Troncoso, Manuel Uribe (91), Mexican-born ophthalmologist, teacher, and author on eye diseases and treatment; inventor of gonioscope: d. New York City, Jan. 21.

Tsankov, Alexander (80), premier of Bulgaria, 1923–26: d. Buenos Aires, Argentina, July 17.

Tucker, Henry St. George (85), American clergyman: b. Warsaw, Va., July 16, 1874; d. Richmond, Va., Aug. 8, 1959. After graduating from the University of Virginia (1895) and from the Theological Seminary of Virginia (1899), he was ordained a priest in the Protestant Episcopal Church and sent as a missionary to Japan. There he served as president of St. Paul's College, Tokyo, in 1903–12, and as bishop of the Kyoto diocese in 1912–23. Returning to the United States, he was bishop coadjutor of the Virginia diocese, 1926–27; bishop of Virginia, 1927–44; and presiding bishop of the Protestant Episcopal Church in the United States, 1938–46.

Tulloss, Rees E. (77), president of Wittenberg College, 1920–49; a codeveloper of touch system of typewriting: d. Springfield, Ohio, June 8.

Turner, Farrant L. (63), territorial secretary of Hawaii, 1953–58; commander of Hawaii's 100th Battalion of Nisei volunteers in World War II: d. Honolulu, Mar. 19.

Urban, Albert (50), German-born expressionist painter: d. New York City, Apr. 4.

van Beinum, Eduard Alexander (57), Dutch symphonic conductor: b. Arnhem, the Netherlands, Sept. 3, 1901; d. Amsterdam, the Netherlands, April 13, 1959. In 1931 he was chosen second conductor of the Amsterdam Concertgebouw Orchestra, advancing in 1938 to co-first conductor in 1945. Van Beinum appeared as a guest conductor with the Leningrad Philharmonic (1937), the London Philharmonic (1948–49 season), the Philadelphia Orchestra (1954), and the Symphony of the Air (1955). In 1956 he was appointed music director of the Los Angeles Philharmonic Orchestra and held this post simultaneously with the one in Amsterdam.

Vance, Harold S. (69), automobile executive and government aide; member of Atomic Energy Commission after 1955: d. Washington, D.C., Aug. 31.

Varian, Russell H. (61), scientist and coinventor of klystron tube used in radar: d. near Juneau, Alaska, July 28.

Vasconcelos, José (77), Mexican philosopher and educator; author of works on philosophy and political science: d. Mexico City, June 30.

Venini, Paolo (54), Italian glassmaker who pioneered in new methods and designs for glassmaking: d. Venice, July 20 (?).

Vestermark, Seymour D. (56), American psychiatrist: b. Dixon, Ill., Dec. 25, 1902; d. Baltimore, Md., Feb. 22, 1959. His entire career was devoted to the U.S. Public Health Service, which he joined in 1932. In 1948–58 he was chief of the Training and Standards Branch of the Public Health Service's National Institute of Mental Health. In January 1959 he was cited by the American Psychiatric Association for having "exerted a greater influence in the field of psychiatric training than any other one person."

Vidor, Charles (58), Hungarian-born Hollywood film director: d. Vienna, Austria, June 4.

*Villa-Lobos, Heitor (72), Brazilian composer and conductor: d. Rio de Janeiro, Nov. 17.

Vincent, Sténio (85), Haitian political leader: b. Port-au-Prince, Haiti, Feb. 22, 1874; d. Port-au-Prince, Sept. 3, 1959. Elected president of Haiti for a 6-year term in 1930, he negotiated and concluded in August 1933 the treaty with the United States which secured Haitian autonomy, and, a year later, he succeeded in terminating the 19-year-old occupation of Haiti by U.S. Marines. His tenure in office was extended for five years by a plebiscite in 1935.

Vincent, Walter (90), actor, writer, and producer; president of Actors Fund of America after 1940: d. New York City, May 10.

Vogt, Oskar (90), German brain surgeon and neurologist; director of Institute for Brain Research (Neustadt, Germany): d. Freiburg, Germany, Aug. 3.

Vollmer, Hermann (63), German-born pediatrician; developed Vollmer patch test for tuberculosis detection: d. (suicide) New York City, Oct. 11.

von Máday, Stefen (80), Hungarian psychiatrist noted for work in child guidance; author of works on individual psychology and animal psychology: d. Budapest, June 21.

Wadsworth, Eliot (82), financier, philanthropist, and government aide under five presidents; national treasurer of American Red Cross, 1921–26: d. Washington, D.C., May 29.

Walcott, Gregory D. (89), chairman of Philosophy Department, Long Island University, 1928–53; author of works on logic and other philosophical subjects: d. New York City, Mar. 20.

Walker, Frank Comerford (73), American businessman and political leader: b. Plymouth, Pa., May 30, 1886; d. New York, N.Y., Sept. 13, 1959. A successful lawyer (LL.B., 1909, University of Notre Dame) and motion picture executive, he was treasurer of the Democratic National Committee in 1932, U.S. postmaster general from 1940 to 1945, and chairman of the Democratic National Committee in 1943–44.

Walker, George A. (79), Canadian railroad leader; chairman of Canadian Pacific Railways, 1948–55: d. Montreal, June 7.

Walsh, Ed(ward Augustin) (78), American baseball player: b. Plains, Pa., May 14, 1881; d. Pompano Beach, Fla., May 26, 1959. With the Chicago White Sox from 1904 to 1916, he became one of baseball's top right-handed pitchers. In 1908 he won 40 games (1 short of the modern record) while losing 15, and pitched 464 innings for a major league mark which remained at his death. Walsh appeared that season in 66 games, starting 49, completing 42, pitching 12 shutouts, and registering 269 strikeouts—all club records. Famous for his "spitball" (a pitch since outlawed), he had a lifetime record of 195 wins and 128 losses. He was elected to the Baseball Hall of Fame in 1946.

Watson, Edward F. (66), engineer and inventor in telegraphy and telephotography; executive of Bell Telephone Laboratories, New York: d. Haworth, N.J., July 23.

Wehle, Louis B. (78), corporation lawyer, government aide, and author; assistant to secretary of war in World War I: d. New York City, Feb. 13.

Welch, Paul S. (77), professor of zoology, University of Michigan, 1928–1952; noted for research in limnology and entomology: d. Ann Arbor, Mich., Oct. 1.

Wemyss, Gen. Sir Colville (67), British director of mobilization at start of World War II; head of British Army Staff in Washington, 1941–42: d. Hampshire, Eng., Apr. 2.

White, Thomas R. (84), corporation lawyer, authority on constitutional law, and crusader for good government in Philadelphia: d. Philadelphia, Dec. 16.

Whiting, Frederic A. (87), first director of Cleveland Museum of Art: d. Framingham, Mass., Dec. 20.

Whitley, James L. (86), Republican representative from New York, 1929–35: d. Rochester, N.Y., May 17.

Whorf, John (56), American artist: b. Winthrop, Mass., Jan. 10, 1903; d. Hyannis, Mass., Feb. 13, 1959. At the age of 14 he entered the school of the Boston Museum of Fine Arts; he later studied art at Provincetown, Mass., and abroad. He was greatly influenced by one of his teachers, John Singer Sargent (1856–1925), and by Winslow Homer (1836–1910). His early oil paintings won acclaim, but he is best known for his later water colors, particularly for realistic seascapes such as *Back Water*, *Winter Waterfront*, and *Southern Ocean*.

Wilder, Russell M. (74), nutritionist and diabetes specialist; member of Mayo Clinic staff for 30 years: d. Rochester, Minn., Dec. 16.

Wilkins, J. Ernest (64), member of Civil Rights Commission; assistant secretary of labor, 1954–58: d. Washington, D.C., Jan. 19.

Wilkinson, Charles F., Jr. (47), chairman of Department of Medicine, Post-Graduate Medical School, New York University-Bellevue Medical Center; authority on arteriosclerosis: d. (suicide) Westport, Conn., Sept. 29.

Williams, Samuel M. (90), newspaperman for over 50 years; helped establish Joseph Pulitzer School of Journalism, Columbia University: d. Hendersonville, N.C., May 11.

Williams, Walter (117), reputedly the last Civil War veteran (although many doubted his story); claimed to have served as foragemaster under Gen. John B. Hood; President Eisenhower proclaimed national day of mourning on his death: d. Houston, Texas, Dec. 19.

Willoughby, Edwin E. (59), librarian, Shakespeare scholar, and author; chief bibliographer, Folger Shakespeare Library (Washington, D.C.), 1935–58: d. Pitman, N.J., Oct. 2.

Wilson, Charles Thomson Rees (90), Scottish physicist: b. Glencorse, Midlothian, Scotland, Feb. 14, 1869; d. near Edinburgh, Scotland, Nov. 15, 1959. Educated at Owens College (Manchester) and Sidney Sussex College (Cambridge) in England, he was professor of natural philosophy at Cambridge University from 1925 until his retirement in 1934. Beginning in 1895 he studied the condensation of tiny drops of water on gaseous ions, the properties of ionized particles, and the nature of atmospheric electricity. For his invention of the Wilson cloud chamber, an instrument which made it possible to track electrons and other subatomic particles, Professor Wilson (together with Professor Arthur H. Compton of the United States) was awarded the 1927 Nobel Prize in physics.

Wilson, George (70), clinical professor of neurology, University of Pennsylvania Medical School and Woman's Medical College: d. Philadelphia, Mar. 23.

Wilson, Samuel K. (77), Jesuit educator; dean of Graduate School (1925–33) and president (1933–52) of Loyola University of Chicago: d. French Lick, Ind., Apr. 2.

Windaus, Adolf Otto Reinhold (82), German biochemist: b. Berlin, Germany, Dec. 25, 1876; d. Göttingen, West Germany, June 9, 1959. He taught for two years at the University of Innsbruck before he was appointed in 1915 as professor and director of the chemical institute at the University of Göttingen, where he remained for the rest of his life (emeritus after 1944). His work included research in heart disease stimulants and drugs, and in sex hormones. He was best known, however, for his investigation of the chemistry of foods, especially for his success in converting ergosterol by ultraviolet irradiation into the antirachitic vitamin D, and it was this work that won him the 1928 Nobel Prize in chemistry.

Winslow, Anne Goodwin (84), novelist, poet, and short-story writer; noted for Southern themes: d. Memphis, Tenn., Nov. 25.

Winternitz, Milton C. (74), dean of Yale School of Medicine, 1920–35; specialist in pathology: d. Hanover, N.H., Oct. 3.

Wise, Jonah B. (77), leader of Reform Judaism; rabbi of Central Synagogue (New York City) after 1925, and a founder and chairman of United Jewish Appeal: d. New York City, Feb. 1.

Wood, Hadyn (76), English composer of *Roses of Picardy* and other songs: d. London, Mar. 11.

Woods, Erville B. (81), professor of sociology, Dartmouth College, 1919–49; authority on city: d. Hanover, N.H., May 30.

*Wright, Frank Lloyd (89), architect, author, and teacher: d. Phoenix, Ariz., Apr. 9.

Wright, William H. (87), astronomer who pioneered in use of infrared photography; director of University of California's Lick Observatory, 1935–42: d. San Jose, Calif., May 16.

Wu, Hsien (65), Chinese-born biochemist who helped develop Folin-Wu system of blood analysis; professor at University of Alabama, 1949–53: d. Boston, Aug. 8.

Wylie, Ida A. R. (74), author of novels, short stories, poetry, and nonfiction: d. Princeton, N.J., Nov. 4.

Yarnell, Harry Ervin (83), American naval officer: b. Independence, Iowa, Oct. 18, 1875; d. Newport, R.I., July 7, 1959. He was graduated in 1897 from the U.S. Naval Academy and rose through the grades to the rank of full admiral in 1942. Appointed commander in chief of the Asiatic Fleet in 1936, he upheld United States naval prestige in the Pacific against Japanese encroachments. Admiral Yarnell secured an indemnity from Japan following the sinking of the American gunboat *Panay* on the Yangtze in 1937, and he refused to obey a Japanese order to evacuate an American destroyer from Swatow harbor in 1939. He retired in the latter year, but returned to active duty during World War II as a consultant.

Young, Lester (49), jazz tenor saxaphonist who played in Count Basie's bands and other leading ensembles: d. New York City, Mar. 15.

Young, Sir Robert A. (87), British physician; authority on respiratory illnesses: d. London, Aug. 22.

Zabriskie, Edwin G. (84), neuropsychiatrist; professor of clinical neurology, College of Physicians and Surgeons, Columbia University, 1925–48: d. New York City, Jan. 13.

Zaritsky, Max (74), labor union leader and a founder of Liberal Party (1944): d. Boston, May 10.

Zathureczky, Ede (56), violinist and director of Liszt Academy of Music, Budapest, 1942–57: d. Bloomington, Ind., May 31.

Zholtovsky, Ivan V. (92), Russian architect; designer of Moscow's Metropole Hotel: d. USSR, July 16.

Zilboorg, Gregory (68), Russian-born psychiatrist and educator; noted for studies of suicide: d. New York City, Sept. 17.

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CUMULATIVE INDEX TO THE AMERICANA ANNUAL, 1956-1960 · INDEX

This Index covers editions of THE AMERICANA ANNUAL from 1956 to the present volume (1960), inclusive. Cumulative indexes to all editions of THE ANNUAL, 1923 to 1932, inclusive, will be found in the 1933 ANNUAL; for the years 1933 to 1941, inclusive, in the 1942 ANNUAL, and for the years 1942 to 1945, inclusive, in the 1946 ANNUAL. Beginning with the 1950 ANNUAL, indexes are cumulative for five years, covering the current and preceding four editions.

Main article headings appear in this Index as bold-faced capitals; subjects within articles appear as lower-case entries. Article page numbers and general references appear at the beginning of each entry; the subentries which follow them direct the reader to related topics appearing elsewhere. Both the general references and the subentries should be consulted for maximum usefulness of this Index. Maps, charts, etc. are indexed herein; halftone illustrations in this edition are indexed on pages 862–864. Figures in bold-faced type indicate the year of the volume; page numbers are in light type. Cross-references, unless otherwise noted, are to entries in this Index.

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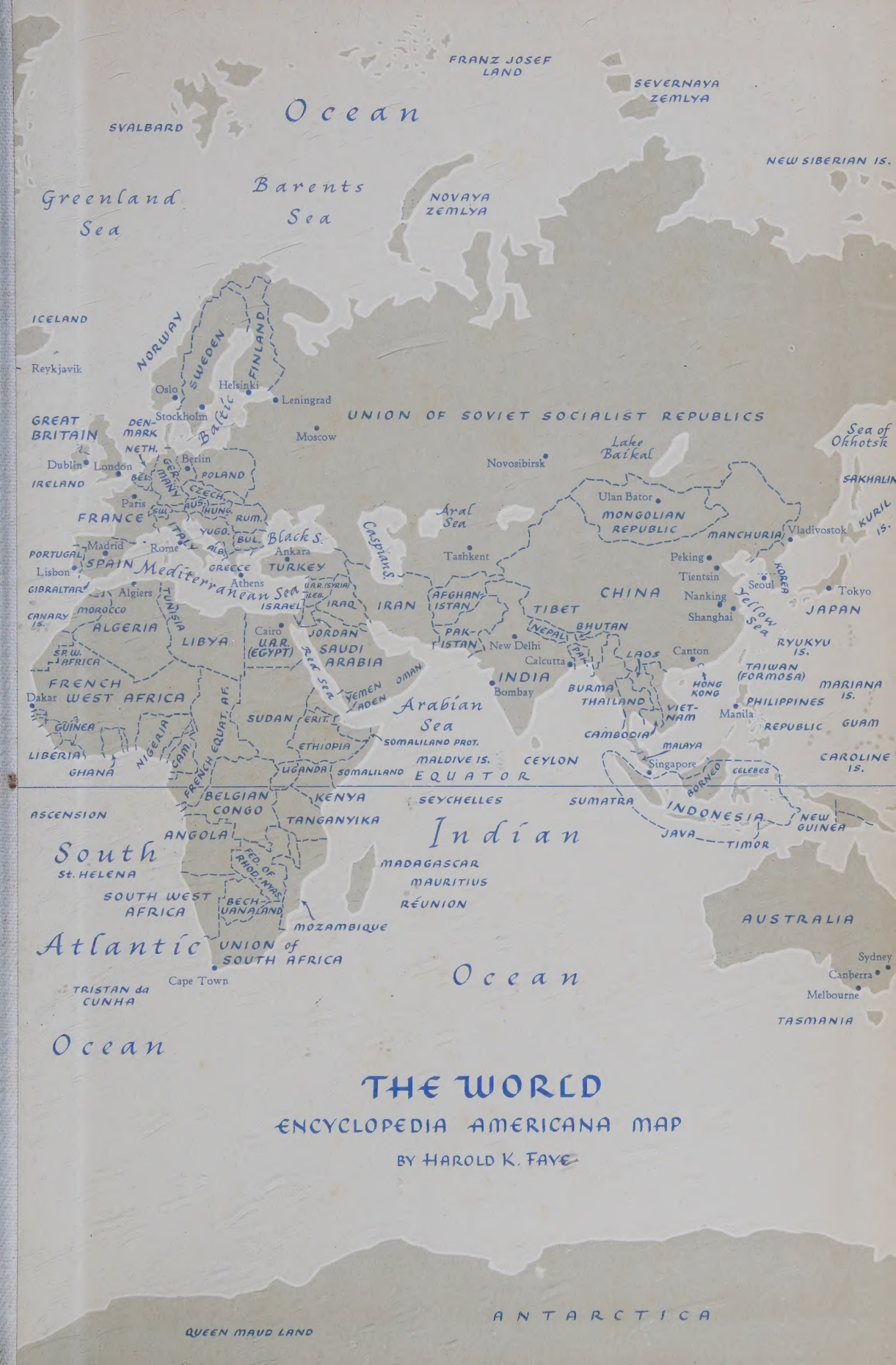

THE WORLD

ENCYCLOPEDIA AMERICANA MAP

BY HAROLD K. FAYE